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## AND ENGINEERING JOURNAL.

### ARCHITECTURAL SPECIALITIES.

**P**ERIODICAL reviews of the progress made in technical details and decorative accessories are necessary to the architect, and in commencing a new year it may be of interest to call attention to some of the improved appliances of value to the builder and architect. Many of these are not altogether new, others are improvements upon old systems, or are revivals of old arts and industries. For the purpose of grouping and classification, we may consider the specialities of building and architecture under those heads into which all buildings may be divided—namely, walls, floors, ceilings, roofs, chimneys, decoration. Under the structural head of walls, a variety of materials may be noticed. Bricks and terracotta occupy an important place, to say nothing of stone. To confine ourselves to the two first materials, we must admit that very considerable improvements have been effected in brick manufacture of late years, owing to improved kilns and appliances, to which we need not here refer. The modifications made in kilns for burning bricks are as varied as the kind of bricks produced. The architect looks to the result more than the means; he likes his bricks to be evenly burnt, and of fairly uniform colour, though the latter is not always to be desired from an artistic point of view. To grind the clay dry, mix it thoroughly with sand, and then press it, is the formula we gave some years ago for good manufacture. Several firms now turn out excellent bricks in red, white, buff, and other tints. Such are those manufactured by the Hathern Station Brick Company, the Suffolk wire-cut bricks of the Woolpit Brick Co., the white facing-bricks made at Aylesford, near Maidstone, and other sorts. The gault clay makes a heavy brick, to lessen the weight of which perforations are introduced, or a "frog" is formed, as in the last named; but this material has the merit of being very hard and durable, and of good colour. The famed Suffolk bricks are of the gault clay, so are the patent bricks made near Hitchin. Architectural effect now is obtained in many ways; white and red rubbers, hand made, moulded bricks, and terracotta, are used. The Bracknell T.L.B. rubbers are well known, and the sand-faced hand-made facing-bricks made at Bracknell are equal to any. Many manufacturers supply facing-bricks of uniform colour, hard, and well burnt, and others in two shades of red, as a red and pink, or red and puce coloured. The moulded and pressed bricks are made in a variety of patterns, and moulded to shapes suited to any situation. Terracotta has advanced to a high state of perfection. We can point to the excellent terracotta supplied by Messrs. Gibbs and Canning for the Natural History Museum, and other buildings by Mr. Alfred Waterhouse, R.A.; the red and buff

coloured material manufactured by J. C. Edwards, of Ruabon, to show how the uncertain shrinkage of the clay has been overcome by dexterous admixture with other clays, or ingredients like glass and sand, and by careful drying. Recent improvements have been made in the baking and patterns, so that large blocks and castings are produced, which a few years ago would have been impossible. Nor can we dismiss these materials without reminding the reader of the vast variety of clay-made appliances, and what a large part they play in building; bricks and terracotta are now used for arch voussoirs to suit any curve, hollow bricks for building walls, for fire-proof partitions and floors, perforated air bricks, pavings, copings, plinths, strings, and cornices. Confining our attention to the wall, we may point to the value of this material when specially prepared for templates and seatings for beams, the value of the damp-proof course, as manufactured by the Broomhall Company, besides the other materials, such as Claridge's patent asphalt, which can be employed in a number of ways to walls not only to prevent damp rising, but to check damp descending, to line basement walls and reservoirs. In wall construction various specialities have been introduced; we have "breeze" or concrete bricks, wood bricks for fixing joinery work, cramps for tying together hollow walls. Several patent inventions for constructing hollow walls have been before the profession, though they have not met with the encouragement which the ingenuity of their inventors has deserved.

Under the generic head of Floor, are naturally suggested various kinds of improved flooring. In brick and tile floorings there is nothing very new to mention; but the architect of large and public buildings is now of necessity obliged to lay his vestibules and corridors in a hard and durable material, either of real marble or in some form of artificial stone or "mosaic," of which the "marble mosaic pavement" is the highest form, such as that laid by Burke and Co. Encaustic tile pavements will always maintain their position as an architectural decoration, and the Messrs. Minton's (Stoke-upon-Trent) tiles, the Godwin tiles, the Ruabon, and other Staffordshire tiles are favourably known for their truth, pattern, and colour. Next in architectural value come the various kinds of wood floorings, such as block flooring and parquet, and other modifications having the peculiarities of each of these kinds. Of wood-block floors their name is legion; two or three varieties deserve to be remembered by architects in specifying. One of the oldest and best is Lowe's improved system, in which the blocks are thick and laid in various ways, such as the herring-bone pattern found in many school floors, churches, drill-halls, and basement floors, in which each block is

secured to a concrete bed by a patent composition which prevents "dry rot" or the permeation of moisture. We have described this system on several occasions. A parquet effect can be given to this sort of floor in the more ornamental patterns. In another kind the blocks are also laid on an adhesive composition upon cement concrete; but the blocks are secured to each other by means of dowel pins, and the fixing is effected by dovetailed sleepers let into the concrete, and by grooves at the bottom edge of each block. Such is Duffy's "Immovable Acme" system, which has been largely employed. In a recently-introduced system—the "Westminster Patent Flooring Company"—each block is keyed to six other blocks, and the whole is fixed to a concrete bed at intervals. The keys are small discs of metal, which are inserted in grooves at the corners of each block. Various ornamental hardwoods are used, and the patterns can be varied, as any sized blocks can be used, and the system appears to be specially suitable for thin floors. The "Pavodilos" is now a recognised improvement in flooring of a superior character, on which the secret nailing is required, and as a fancy floor it is of less cost than parquet. Parquet floors of the more ornamental kinds enter largely into new buildings, and as they can be applied to old as well as floors, they are a valuable accessory new to decorative effect. The improved machinery and modes of manufacture have contributed to render parquetry, whether as floors, dadoes, or wall linings, a very durable and inexpensive kind of interior decoration.

The ceiling has been the object of a great many improved modes of decoration and not a few plasters. One of the most recent is that known as the "Adamant" plaster, a material now used by many leading architects and builders. Its advantages are that it does not fall, crack, nor shrink, and the walls and ceilings on which it is used present a hard and durable surface for decoration. This plaster can resist almost any kind of injurious action, and it can be applied before the building is quite dried. In this connection we may refer to "Anaglypta," a material now largely employed for ceiling and wall decoration, in which a low relief is obtainable. Few decorative materials can surpass this for ceilings, in which the depth and relief of plaster or wood is not desired. We have lately seen it applied with good effect in the vestibule, ceilings, and rooms in Baker-street, by Messrs. Campbell, Smith, and Co., and its cheapness is in its favour. The readiness with which it can be applied and its extreme lightness and ornamental effect make it a useful decoration for old buildings.

Under Roofs, we may notice improvements in coverings; but we wish rather to note the



modifications that have been introduced in the form of ventilating expedients. Boyle's air-pump ventilators have overcome the prejudices of architects to ventilating appliances on ridges and other conspicuous parts of buildings. The varied types of roof ventilators now made, based on the only efficient pneumatic principle of inducing an air current or vacuum, make it possible for architects to specify a system of ventilation. Whether it be the turret form, the ridge form, or the concealed-roof ventilator, the architect can have no valid excuse for omitting a means of escape for the vitiated air. In this latter class we must place the "Honeyman" system, in which a horizontal tube is carried through the roof transversely in connection with an upright tube, the horizontal current of air from the openings in the roof creating a vacuum in the top of the inner vertical tube, and drawing out the vitiated air in the latter, which escapes on the leeward side of roof. Improved means of adjusting skylights may be named, but we can only mention the various kinds of lever, rack, and pinion adjustment, or a cogged rack actuated by a screw and pulley, as in Leggott's patent. Improvements in glazing roofs are numerous, of which Rendle's system may be mentioned as being one of those largely employed.

The chimney has been long the subject of quack doctoring in various shapes. The most important desideratum is a mode of constructing a stack of several flues so that they may occupy a small compass above the roof. The ordinary brick "with" takes up a large space; but by introducing fire-clay tubes or iron pipes, economy is secured in the building of stacks. Messrs. Doulton are manufacturers of combined smoke-and-air flues to be built into chimney breasts. A great deal of unnecessary room can be saved by introducing this kind of tubular flues, and in outside stacks cast-iron socketed flues are built within the outside brick case of the stack. The French are ahead of us in chimney construction, and the French chimney-builder can erect stacks of great height and perfectly true. Of chimney cowl and appliances for preventing smoke, the simplest forms of inducing an up-draught are undoubtedly the best, and many ventilating firms make cowls for this purpose or preventing a blow-down.

We can only very briefly touch on the large and increasing number of general building appliances. Of mechanical appliances, the lift is an important item in the fitting up of modern buildings. Such firms as R. Waygood and Co. have made it a speciality of manufacture. Then we have a host of structural appliances and ironwork, such as Dennett's fireproof floors and constructive ironwork for preventing the spread of fire, which are being used very extensively in modern buildings; iron staircases, and treads for stairs, such as Hawksley's, patent semi-prism lights for lighting basements, as those of Hayward's, electric lighting appliances and fittings, a new branch of internal fittings which promises to develop into a large and lucrative business, all kinds of ventilating gas appliances, heating stoves and apparatus, and numerous sash fasteners, casements and water-bars, asbestos paints, such as Bell's Aquol paints, fire resisting and washable, and a catalogue of builders' ironmongery and sanitary apparatus. The field covered by these specialities is so large that it would take a volume to simply describe them. Heating and ventilating patents and inventions alone make up a very important branch of these specialities. The architect, no less than the builder, has to master the technical merits of these inventions, for the purpose of specifying them; he has further to make himself master of the principles on which they are made, to discover how far they answer the objects they are intended to serve, and to

introduce them in his design in the most desirable manner. With respect to decorative woodwork and materials, which we have barely found space to notice, the architect's functions in specifying are no less onerous. He must see that the wall linings, the parquet floors, the modelled plasterwork, and the fittings of an ornamental character are in correct taste and not offensively introduced.

#### IMPROVEMENT SCHEMES AND BUILDING LEGISLATION.

THESE are now the order of the day. We have plans for widening thoroughfares, removing obstructions, forming public parks, making subways, in all of which alterations the architect is much concerned, and it may be personally interested. Several Bills have been prepared and sanctioned by the London County Council for various Metropolitan schemes. The principal of these deals with the proposed Strand Improvement; a General Purposes Bill includes several schemes—one for the removal and reconstruction of Barking-bridge, for the purchase of Brockwell Park, for the construction of subways, for the removal of bars between Euston-road and the south, and other matters. In all these schemes we may be sure the architect, engineer, and builder, and a large train of skilled experts will find employment, and therefore we may hail these measures as auguries of good for the New Year. Whether they will actually turn out to be improvements will depend on various circumstances. The Strand Improvement is an important question, though it affects only a few people directly, its main object being the removal of the block of houses between Holywell-street and the Strand, and the improvement of the locality on the north side of that thoroughfare. The block which now divides a portion of the Strand into two streets has long been a disfigurement, and as it now stands there can be little said for its continuance, save that it contains two or three very interesting remains of Old London houses of the last century, and that it has been from time immemorial a favourite haunt of book collectors and curiosos. Shut off from the noise and bustle of the traffic of the Strand, Holywell-street has enjoyed a kind of literary immunity of its own, and many prefer to saunter through its narrow street for a few yards to enjoy the comparative quiet of its precincts. But these by-ways and nooks of Old London are, we are afraid, doomed to disappear before the march of progress and reform. The chief question is, Will the widening at this point be an unqualified improvement? There is undoubtedly a too narrow roadway and a very inadequate foot pavement along the Strand at this part; but the addition of another 15ft. to 20ft. would make a very considerable difference. Beyond this, the widening would be injudicious, unless the space now occupied by the obstruction were converted into a green plot of grass or a pavement. The Bill proposes to deal with the locality to a greater extent than the limits of the block of houses referred to, and to embrace an area extending east and west from Wellington-street on the west to the Law Courts on the east, and northwards of the Strand.

We do not intend now to enter into the proposed scheme, which is fraught with many difficulties of a practical nature, not the least being the principle involved in the 12th clause of the Bill, which has been termed the "betterment" clause. The principle is new; but certainly debatable, if not impracticable. The valuation and assessment would be attended with much trouble as applied to the Strand property. One thing seems clear, and that is that before the principle of "betterment" can be applied it should be demonstratively proved whether the

scheme is of Metropolitan as well as of local value, or otherwise any proposal to levy a rent-charge on property within a certain area of the property immediately benefited would be unfair.

Much may be argued for improving streets and thoroughfares from an architectural point of view. New frontages are opened for the display of architectural skill and taste. The possibilities are great, but unfortunately routine and the vexatious regulations of the Building Act interpose to prevent the carrying out of important schemes. A new street from the Law Courts through Lincoln's Inn-fields into Holborn is one of the desirable lines of new thoroughfares, and we could name a dozen other localities where architectural openings might be made with effect. The proposed amendments of the Metropolitan Building Acts have an important bearing upon the future schemes of the Metropolis. We may refer here to the proposed clause giving power to appeal against the certificate of the superintending architect as to the general line of buildings. By this amendment the vestry or district board, or any person deeming himself "aggrieved" by the certificate, may, within fourteen days after notice of such certificate, appeal to a tribunal composed of one member of the County Council, one of the Institute of British Architects, one of the Institution of Surveyors, and this tribunal is to have power to confirm or reverse or vary the architect's certificate, and the decision is to finally determine the general line of building. By this proposed provision the public may look for some guarantee that their rights will be protected in the future. Any aggrieved individual who finds that the proposed advanced line of new building will obstruct his view, or cut off the sun from his front garden, will have the means of making his complaint heard. It will not be possible for a building to project several feet before the adjoining houses, as we know has been sanctioned in instances of late. But we hope some rule, and not mere caprice, will guide the deliberations of the tribunal; without some recognised principle to act upon, we may find even a tribunal constituted as above setting up conflicting precedents, and making their decisions as uncertain as the dictates of the legal Courts. Although every case has to be determined on its own merits, there is a general law of alignment applicable to all old streets in which buildings are found of different projections. Can we say that anything like an equitable "give-and-take" line has been followed of late years? Our observations have shown that some buildings are favoured more than others, being allowed to advance beyond the "general line," that a line of new shops can be brought out several feet in advance of houses on both sides. These decisions have weakened considerably the authority who were invested with powers. One of the points upon which all will be agreed is the doubtful meaning to be attached to the provision of the existing Acts when buildings abut on more than one street. By the amended provisions, the superintending architect is empowered to decide on the lines of such abutting or corner buildings. After the passing of this Act no building or row of houses is to be erected beyond the line determined upon in such other streets in case the distance of any such general line from any highway does not exceed 50ft., or within 50ft. of any highway when the distance of such line therefrom amounts to or exceeds 50ft., notwithstanding there being gardens or vacant spaces between the buildings and highway, without consent of the Council.

With respect to height of buildings, the amended provisions specify 70ft. as the maximum height to which a building can be carried without the consent of the Council. We have before discussed the question of the height of new buildings, and



have expressed the opinion that the height would be best determined by circumstances and the width of the street. A hard and fast rule will be detrimental, as imposing, in many cases, a height that would be prejudicial to adjoining and opposite owners. More than this, the clause would create an offensive dead-level to our buildings. The necessity of considering gabled fronts is apparent. Gables ought to be tolerated, and if so the limiting line should be regulated by the height of the stories. In many streets the erection, say, of a block of flats 70ft. in height would seriously damage buildings of the ordinary height of 40ft. used as dwellings, though in wide thoroughfares such an altitude would not be felt to be an inconvenience. The width of street should be made the guiding consideration in every case. The Council, if it exercise its authority aright, ought to make its dispensing power accord with some rule of width, and not allow the maximum height to be exceeded in streets of a width under a certain limit.

The yearly growth of the Metropolis has brought into the exigencies of practical politics the desirability of affording facilities to traffic. The subway question, which is dealt with in the Subways Bill, is no new subject, but one that forces itself upon the attention of our legislators. The sooner the necessity of subways is admitted the better. Even as an economic question of street construction and maintenance, everyone must see the pressing need of doing something to save the yearly expense and inconvenience of breaking up our thoroughfares for repairs to gas and water pipes, telegraph and telephone communications. To construct a new thoroughfare without a subway for these purposes is simply short-sighted. The increasing use of overhead wires and the danger they threaten is a strong argument for some kind of legislation to place these requisite appliances under more effective control. The disfigurement they cause to buildings is another aspect it is needless to point to. In constructing a subway the question of size is one of importance. When powers are obtained, would it not be desirable to construct them of sufficient size to answer as subways for traffic as well? By-and-by the demands upon our chief thoroughfares will be so great that no police regulation will be able to cope with the requirements of vehicular and pedestrian traffic.

Our main streets at certain hours of the day are intolerably crowded and blocked by traffic of a kind that needs relief by some other channels. At all the principal corners, or where theatres and other places of amusement draw together crowds of people, we find the congested condition of traffic a great impediment, and people have to wait for an opportune moment even to cross from one side of the street to the other. There are only two kinds of relief—overhead and underground communications. Of the former, our American cousins have shown us enough rather to create our surprise than to draw our admiration. The subway is the only alternative open to us, and when, in addition to our underground railway system, we get our main thoroughfares—east and west and north and south—bored by tunnels for traffic, we shall be able to say we have utilised our roadways. In the construction of new streets the new subway communication can be as easily constructed as the foundations and basements of the houses, and, being built up and compacted together, there would be no danger of subsidence, and no compensation for damages to property. Future legislation will have to provide facilities for underground communications, and these in new thoroughfares can be extended laterally to form sub-basements for warehouses, and in this manner obviate the necessity of erecting our buildings to undesirable heights.

## THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MIDDLE-AGE CHRISTIAN ART.—IX.

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### THE NIMBI OF ALLEGORICAL PERSONAGES.

TO all the allegorical personages derived from the sacred writings and to the personifications of the theological and cardinal virtues Christian art has awarded the Nimbus, as a special sign of dignity and worthiness, or as a reflection of glory from the Godhead. It seems quite reasonable, when one realises the true significance of the attribute in art, that the personifications of such virtues as Faith, Hope, Charity, Justice, Temperance, Prudence, and Strength should be invested with the attribute in some simple treatment—that usually given to angels or the lesser saints being the most appropriate. We also find in some representations of our Lord's parables that certain of the personages there introduced are invested with the Nimbus. For instance, in the parable of the Wise and Foolish Virgins, the wise Virgins are distinguished by Nimbi. Didron states that in some instances the attribute has been given to the foolish Virgins also. An illustration of this may be found in the west porch of the cathedral of Laon, where both the wise and foolish Virgins are represented with the Nimbus. Another example exists in the north porch of the cathedral of Rheims. We should be disposed to explain this proceeding by either a want of thought or knowledge on the part of the artists. Even the Mediæval painters and sculptors were not invariably accurate in their symbolical renderings of ordinary subjects; and, accordingly, many blunders may be pointed out in their works, as some sort of excuse for the countless mistakes which have attended the modern revival of Christian art in this direction.

We may first direct attention to the interesting series of the Virtues or "Beatitudes" which adorns the arch of the left division of the north porch of the cathedral of Chartres. Five of the personifications have no names attached, or, at least, preserved, whilst all the others have inscriptions in characters of the 13th century. The names of those without inscriptions can only be guessed at by the character of the emblems sculptured on the shields they support, and by the aid given in the writings of the period. We here give the entire list, putting those in italics which are doubtful:—

PULCHRITUDO.	CONCORDIA.
LIBERTAS.	AMICICIA* (sic)
HONOR.	LONGEVITAS.
GAUDIUM.	POTESTAS or
	MAJESTAS.
VOLUPTUS.	SANITAS.
VELOCITAS.	SECURITAS.
FORTITUDO.	SAPIENTIA.

These are, with the exception of *Majestas*, which has been suggested by Didron, the fourteen "Beatitudes" given by Vincent de Beauvais in his *Speculum Universale*. All the figures appear as youthful queens, crowned, and invested with the plain circular Nimbus. The attribute is in every case sculptured in the form of a solid disc, and is placed behind the head and practically free and detached from it.

As we shall, in all probability, not have again to refer to these figures, it may be interesting to note the emblems which are sculptured upon the shields they support. The shield of the lowest figure on the left side of the arch (as the observer faces it), to which the name *Pulchritudo* has been given, bears four open roses. The shield of *Libertas* bears two royal crowns. On the shield of *Honor* are two mitres. *Gaudium* has on her shield the figure of an angel standing in

clouds and carrying a book. On the shield of *Voluptas* is an angel standing in clouds and holding a censer. *Velocitas* supports a shield charged with three arrows. The highest figure on the left, *Fortitudo*, has a lion on her shield. Descending on the right side of the arch, the next figure is *Concordia*, and on her shield are four doves. *Amicitia* has a shield charged also with four birds. On the shield of *Longevitas* is an eagle holding a sort of sceptre. *Potestas* or *Majestas* has three sceptres on her shield. Three fishes are sculptured on the shield of *Sanitas*. *Securitas* has a castle on her shield. The last figure, *Sapientia*, supports with her left hand a shield charged with a dragon, and in her right hand a small flag.

Whilst in France the circular Nimbus was universally adopted by artists in their representations of allegorical beings, the usage in Italy was by no means set and defined. Probably the most favourite form for the Nimbus of the personifications of the Virtues is the hexagonal. A good example of this form is furnished by the bas-relief of Hope, on the gate of the Baptistery of Florence, by Andrea Ugolino, 1330. An outline drawing of this bas-relief is given in Fig. 27. The Nimbus is here hexagonal with slightly hollowed sides. We have before us as we write a drawing of an ivory, of the School of Pisa, executed during the 14th century, representing Charity. She appears as a draped figure, with large wings, and invested with a hexagonal Nimbus, with straight sides. Turning now to the personification of this Virtue from the brush of the great Giotto, in the interesting church of Santa Maria dell' Arena, at Padua, we find a unique treatment of the Nimbus. The head of this figure is carefully rendered in the accompanying illustration, Fig. 28. This is the only one of the Virtues to which the great artist has given the Nimbus in any form. He evidently intended by restricting the attribute to Charity to mark her, in an unmistakable manner, as the greatest and most god-like of all the cardinal Virtues. On referring to the illustration, it will be observed that the Nimbus is a circular disc with a plain field; but that there are three frame-like emanations from the head which imparts a tri-radiated character to the Nimbus. There can be no doubt of Giotto's intention in thus treating the Nimbus of his personification of Charity. He clearly aimed at marking by an unmistakable sign the first rank of this virtue amongst all the Christian graces; and by the three flames he intended to indicate the close relationship of this great virtue to the Godhead itself. Here, again, we have a proof that the divine Nimbus is tri-radiated and not cruciform.

Several of the other allegorical beings or personifications, as rendered by the artists of the Middle Ages, are invested with the Nimbus, sometimes indicative of power and at others of holiness. The female figure, bearing the cross and chalice, personifying the Church of Christ, is correctly invested with the plain circular Nimbus; but the practice is by no means uniform. Several of the most noteworthy statues of this allegorical figure have no Nimbus. It is just worth while mentioning here that the Nimbus was never a favourite detail in connection with statues; the difficulty of rendering it in stone with any degree of propriety, or in any artistic manner, evidently discouraged its adoption. In the case of bas-reliefs, or when the figures stood in niches or shallow recesses, there was no difficulty in rendering the Nimbus, as in the case of the Virtues on the north porch of the cathedral of Chartres, as above described; accordingly we commonly find the attribute introduced by their sculptors. Sometimes the Nimbi of detached statues were formed of metal discs, Winds, Fire, Earth, Air, and Water, have and fixed behind or upon their heads.

The personifications of Day and Night, the

\* This was probably intended to be *Amicitia*.





FIG. 27.

occasionally been invested with the Nimbus, as an indication of power and not of holiness.

As we have pointedly spoken of the Nimbus as a sign of power, we cannot do better than close these notes with the following particulars from the pen of M. Didron:—

"In the West more especially, the Nimbus is commonly accepted as the attribute of holiness; a king, according to our ideas, should be adorned with a crown, whilst a Nimbus marks the saint. It is not the same, however, in the East; there the Nimbus is a sign of physical and moral strength, of civil or political power, as well as of religious authority and rank. A king is equally entitled to the Nimbus with a saint. In a Turkish manuscript, preserved in the Royal Library at Paris, there is a figure of Aurungzebe mounted on horseback and reading. The aged descendant of Timour is preceded and followed by an escort of persons on foot. The Grand Mogul is the only one represented invested with a Nimbus, circular and many-rayed. This example may serve to illustrate its application as indicative of civil power. In proof of its use in expressing religious domination, we may cite an Oriental picture, brought by General Allard from the kingdom of Lahore, representing Gourou-Sing and Baba-Nanck, founders of the Sikh religion. Baba-Nanck, its first revealer, has a radiating Nimbus; Gourou-Sing, a reformer only and a warrior, has a simple luminous circle of unradiating light as a Nimbus. Thus we discover that in the East the attribute is given to all who govern by civil power alone, by military and religious authority combined, or by purely religious authority. The Nimbus is awarded in the East to everything of a powerful nature; not to kings and saints only, but to good and evil genii, to devils and false gods; whilst, on the other hand, it is withheld from all beings destitute of power or deficient in virtue. The distinction is most easily established. All creatures supposed to be infirm, conquered, or in the act of succumbing, will be delineated without the Nimbus. It is an insignia reserved for the holy and mighty."

Speaking of the non-appearance of the Nimbus on statues, Didron remarks:—"We must guard against misconceptions; as, for instance, when statues or sculptured figures are without the Nimbus, as is the case in the grand porch of the cathedral of Amiens, it must not be too hastily concluded that the persons they represent were non-canonised. At Amiens the figures are those of very holy saints, apostles, and martyrs; and although without the Nimbus, the deficiency arises from the difficulty of sculpturing that attribute, in a satisfactory and permanent manner, around their heads, and from their being too far distant from the wall, upon

which alone the Nimbus could have been readily sculptured; and, in fact, on the arches and tympanum of the porch, where its execution was more practicable, the attribute will be found properly rendered." We have previously alluded to this matter, and are glad to be able to add the support of so great an authority as Didron.

A considerable amount of care and judgment must be exercised by the student of Christian Iconography in his examination of Mediæval works of art, for, without doubt,



FIG. 28.

the Middle Age artists were neither over careful nor invariably accurate in their representations of personages fully entitled to the Nimbus. We have seen that, through a practical difficulty, sculptors have not hesitated to represent very holy persons without art's distinguishing sign of canonisation or divinity; and that this practice was very common in connection with sculpture in stone all through the Middle Ages there can be no doubt. But the student must not on this account conclude that all the statues which adorn the porches and other salient portions of cathedrals and churches are saints, martyrs, and other holy persons. "In short," as Didron truthfully says, "neither the absence nor the presence of the Nimbus must be assumed to be an unquestionable proof of sanctity or the reverse, except, perhaps, during the period preceding and inclusive of the 14th century. After that time the important signification of the Nimbus disappears; it is given, or withheld, in a somewhat arbitrary manner. But during the 13th century, especially in certain edifices where the true signification of the

Nimbus is observed, we may affirm, as a general rule, that the Nimbus, when encircling the head of any figure, proves the person represented to be a saint. A figure of an ecclesiastic placed erect against the side of the left doorway in the south porch of the cathedral of Chartres has the Nimbus; this must, consequently, have been intended for a saint, and cannot, as some have supposed, represent the great Fulbert, bishop of Chartres, who was never canonised; whilst in all probability it may represent St. Clement, pope, for the figure wears a tiara, and not the bishop's mitre."

If the Mediæval sculptors and painters felt at liberty at any time to award the sign of holiness to uncanonised persons, it is reasonable to suppose they would do so in their statues and portraiture of the highest dignitaries of the Church; so in the case just mentioned by Didron, the tiara seems to us to be the strongest proof that the statue in question is that of a pope rather than of a bishop. In the case of figure subjects, the student is usually guided by more certain indications. For instance, if some of the figures have the Nimbus and others are without it, it is safe to consider the latter not to be saints, and all those invested with the attribute to be saints.

#### THE NIMBUS GIVEN TO FALLEN ANGELS AND POWERS OF EVIL.

Unless we accept the Nimbus to be the sign of great power, and not necessarily that of divinity or holiness, we must look upon its application to the representations of evil spirits as altogether wrong; yet in Byzantine art, in which the Nimbus has been much more freely used than in the art of the Latin Church, we find it in a few cases given to Satan. Didron gives an illustration, copied from a Bible of the 10th century, preserved in the Royal Library at Paris, in which Job is depicted seated on the ruins of his house, whilst before him stands a fallen angel, winged, and invested with a circular Nimbus. This is evidently intended for Satan. In another miniature Satan appears torturing the unfortunate Job with a red-hot goad; again this infernal being wears the Nimbus. Didron tells us that in a manuscript Apocalypse of the end of the 12th century, also in the Royal Library, are depicted "the dragon with seven heads, conquered by St. Michael; the serpent with seven heads, pursuing the woman into the desert; and the monster of the sea shaking seven heads above his frightful body. The heads all have Nimbi of yellow or green, as would be the case with the most renowned saints in Paradise. That the Apocalypse was designed and painted either by a Byzantine artist, or by one who had visited Byzantium, is sufficiently proved by the crescents emblazoned on the angelic bucklers, and the Arabic cupolas surmounting the buildings represented." In another Apocalypse, in the same library, the seven-headed beast is drawn with Nimbi on all its heads save one—the one which we are told in the text appeared "as it were wounded to death." The following pertinent remarks by Didron contain all that need now be added on this subject:—"Amongst the Orientals the Nimbus is the sign of power; a head in the agonies of death is depicted without the Nimbus. When an individual is in full vigour he is honoured with the attribute; but when enfeebled, when he is unable to resist an attack, when he is sick and death is triumphant, he is degraded and despoiled of the attribute. This seems very reasonable. In the Romanesque paintings in the church of St. Savin, near Poitiers, many instances of Byzantine influence can be traced—a notable one being the great dragon of the Apocalypse, represented at the moment of his attacking the woman who had brought forth a child destined to rule all nations: then the same monster, when he is in turn





A.D. 1855.  
Church of St. Mary and All Saints, Beaconsfield.

attacked by St. Michael and his angels. In the first picture this red dragon is full of life and power; he vomits forth from his jaws a flood of water to engulf the woman, and he is also invested with the Nimbus. He wears a yellow Nimbus, like gold, similar to that of the angel which saves the infant from the fury of the monster. In the second picture, where he is attacked by the angels, and is being thrown to the ground and vanquished, his head is despoiled of the Nimbus; and his brow no longer darts forth rays of light, because his power is ended. The rose window in the Sainte-Chapelle, at Paris, presents the same peculiarities. The beast with seven heads, bearing horns and crowns, is there repeatedly figured. Each head is invested with a Nimbus, because the beast is adored by infidels, and because his tail draws down a third part of stars of heaven. He is here all powerful and in the full display of his strength, and triumphant; but when the angel with the key of the bottomless pit chains and seals him for a thousand years—vanquished and degraded—his heads are despoiled of their Nimbi, retaining only their royal crowns.

"It is thus shown that in the East the Nimbus has been accepted as the attribute of power, either good or evil, whether it is vested in a fiend or an archangel, in guilt or virtue, in the Arch-Traitor himself, or in a god; if powerful and famous he is entitled to the Nimbus. This idea passed into the West during the intercourse with Constantinople, but it never became acknowledged in our art, and the tendency to dedicate the Nimbus to the expression of sanctity and moral virtue finally prevailed."

(To be continued.)

A Primitive Methodist chapel at Honley, near Leeds, was reopened last week, after enlargement carried out at a cost of £1,000 by local contractors, from plans by Mr. Thomas Howdill, of Leeds.

#### CHURCH OF ST. MARY AND ALL SAINTS, BEACONSFIELD, BUCKS.

By FREDERICK GEORGE LEE, D.D., F.S.A.

THE beautiful dedication of this church, set forth above, is unique in Buckinghamshire, and very uncommon elsewhere. The parish itself, containing about 1,450 acres, is bounded on the north by Chalfont St. Giles's, and Penn; on the east by the Hundred of Stoke; on the south by Burnham-common; and on the west by the Hundred of Desborough. Its population, at the end of the last century, was 1,413; now it is 1,635. The present rector is the Rev. C. H. Cholmeley, M.A., of a Lincolnshire race. He is also Prebendary of Sarum. The church is in the centre of the town, which has broad streets and picturesque houses.

The oldest portions of the material fabric of the church, as existing before its restoration, were First Pointed in character, while a few fragments of carved stone then discovered built into a part of its foundations, suffice to prove that it was probably erected about the reign of King John. It had been altered, mended, and added to from time to time—in the course of wear and tear and ordinary decay—notably in 1626, and after the Restoration of Charles II. in 1663, prior to its recent restoration a few years ago by Rector Bowles's energy. In this last work much of the old building was found to be quite beyond repair, and down to the very foundations had to be entirely renewed. The chancel was then lengthened 15ft., and the eastern portion of the nave fundamentally altered. Up to the year 1840 the church was disfigured by galleries, and had a large pulpit, with a bulky canopy, and a most capacious reading-pew, with a corresponding enclosure for the parish clerk. Private pews of varying heights and dimensions filled the building. Almost everything of interest had been cleared out by Puritan violence and destruction, though little enough is said to have remained after Elizabeth's reign. The old stained glass was broken circa 1640; the pulpit hour-glass removed in 1715.

The following notes relating to this church were made by a competent hand, Sir Stephen R. Glynne, nearly half a century ago:—

"Beaconsfield Church has a tower, with a

small spirelet upon it. The church is built of flint and stone, like the Abbey of Burnham, which gives its name to this Hundred. In the chancel are some Early English features, and in the north aisle some Decorated windows. In the south chapel is an altar tomb of freestone of good design, and there is some excellent woodwork."

There is an engraving of the church in the *Gentleman's Magazine*, Vol. LXXX., part ii. p. 105; and the brass of Thomas and Dorothy Waller, A.D. 1627, in Dr. Lipscombe's "History of Buckinghamshire," Vol. III., p. 198.

The church, as at present existing, consists of nave (with sanctus-bell turret) north and south aisles, chancel, organ-chamber, vestry on the north side of the choir, south chapel, tower at the west end, and north and south porches.

The nave, of five bays, is 22ft. 10in. wide between its Second Pointed pillars, and measures 63ft. 4in. long from east to west. Up above, on each side, there are ten lofty Second Pointed clerestory windows, quite modern, placed two and two. Including nave and aisles, the church is 52ft. 6in. wide.

In the north aisle there are three modern Third Pointed windows of two lights each of fair and effective design. Eastward of this aisle are the organ-chamber and a modern vestry, well arranged, fitted, and furnished.

In the south aisle—separated from the chancel by an old oak screen—there are four windows in the south wall, and one of a similar type at the west end, each being of two lights, and of the Second Pointed style. There is a chapel at the east end of this aisle, exactly 14ft. wide and 18ft. long. Its east window, filled with effective modern stained glass, given by the family of Sykes, is of three lights, and is in the Early Third Pointed style. Here to the north side remains an old altar-tomb (? of the Windsor family) of a very beautiful design, and in tolerable preservation. There is a simple piscina in the south wall of the sanctuary. The south window adjoining is of three lights, and in the same style. Traces of deep colour, chocolate and green, were found throughout the whole of this chapel at the general restoration of the church, together with some effective glazed tiles. A wide and lofty chancel arch contains a





Old Rectory House, Beaconsfield, 1889.

handsome modern oak screen. There are three openings on either side, with a wider entrance in the centre arch, which like all the others is cusped. Above stands a boldly-designed oak rood-cross. Below, the two central panels are pierced. The old rood-screen, of good design, has been removed to the east side of the tower arch. The chancel, 39ft. 8in. in length by 22ft. 3in. in width, is of good proportions, and has a simple and effective roof. The rises in the floor are judiciously placed, while the sanctuary has a rich pavement of singular beauty and effect. The altar stands on a well-raised platform of three steps. There is one step below the sanctuary, and two others at the chancel arch. There are three *sedilia* of stone to the south of the sanctuary, together with credence and *piscina*. All these are of new work. The south window of four lights, with heavy flowing tracery in its head, is more original than beautiful—being almost eccentric in design. To the north of the sanctuary stands, under a depressed arch, a fine old altar-tomb of Purbeck marble—probably commemorating the Scudamores—containing four quatrefoil panels on its southern side, and flat recesses in which no less than seven personal and heraldic brasses can be seen to have been originally placed. The tomb is of excellent design, of Late Perpendicular work. Over the altar, which is of good proportions, handsomely vested, and properly furnished, is a somewhat feeble reredos of stone, in the centre of which is a large crucifix, with a band of angels adoring, sculptured in one side panel, and the company of All Saints in the other. Along its crown this inscription is carved: “*For the Lamb which is in the midst of the throne shall feed them, and shall lead them unto living fountains of water. Alleluia!*” Above, well-up in the east wall, and of beautiful design and proportions, is the east window of five lights—in the Second Pointed style, filled with good stained glass at the cost of the Gould family—of which a former rector was a member. Our Lord in Glory is represented in the upper part, with the Crucifixion below. The latter was quite unnecessary, as there is a crucifix beneath the reredos, and a brass cross on the ledge behind the altar-table. Bearing in mind the notable dedication of the church, a representation of the B. V. M., seated and crowned, or with the Holy Child (as in old examples), would have been far more suitable than the repetition in question. On either side, filling the whole four lights, are representative examples of All Saints, very beautifully designed and skilfully executed. Among these are SS. Austin, Cecilia, Lawrence, Edmund (King), Helen, Katherine, Etheldreda, and Alban. The colour throughout is rich without being opaque, while the whole window is of much merit. The wall is diapered with the letters SS. and a pot of lilies in alternation. The artist here was afraid of colour, and consequently is a little feeble and weak. Below the lower sanctuary platform are rows of oaken stalls richly carved, with *subsellia* for chorister-boys. Outside the chancel arch, to the south, stands a handsome modern brass eagle

lectern, and there is a simple litany desk placed before the screen.

Around the nave, in the horizontal sills of every window, stand large vases of red rough ware of graceful design,\* made (as I learn) at a local adjacent pottery works. These are intended for flowers and evergreens at feasts, and thus adorned are more proper and effective than rough boughs of decaying leaves placed upon the window-sills.

Through the lofty tower arch, at the west end of the nave, can be seen the well-proportioned westernmost window of four cusped lights, in Late Perpendicular style. The upper and narrower lights of this window, however, are quite plain and uncusped—in this particular somewhat peculiar.

The entrance to the belfry-stage is from within the church, on the south side of the tower. Up above hangs a musical and excellent peal of eight bells, six of which are of some antiquity, but perfectly sound. Two modern bells, in memory respectively of the Right Hon. Edmund Burke and Lord Beaconsfield, recently hung, render the peal very complete. There is an old sanctus bell, under a turret at the east end of the nave. A pre-Reformation hand-bell, for use when bearing the Sacrament to sick folk, which was preserved in a chest in the church until 1851, is now said to be lost.

It is evident, from the sketch of the church before its latest restoration, that the tower and spire were never originally completed. Only a portion of the third stage was finished before the third stringcourse was reached. The corners of the tower were built in alternate squares of flints and dressed freestone. Round the top of the tower was a railing, upon the leads, and a small temporary spire with cross and vane. The proportions of the church were simple and good.

The general effect of the church—though much of it is new—is, on the whole, admirable. Of good proportions and excellent workmanship, it is at once stately, solemn, and impressive. Moreover, it is kept thoroughly clean and in good order, and so is a credit to all concerned in its restoration and preservation. In these particulars I know of no church in the diocese better worthy of a visit of inspection. It is within a walk of Uxbridge, which can be easily attained by the G.W. Railway. The main road from London to Oxford, moreover, is good.

The church was thus restored during the rectorship of the late S. J. Bowles, M.A. of Magdalen College, Oxford, the architect employed being Mr. Woodyer. Nothing appears to have been stinted nor scamped in the process, though there may have been a little more striving after originality and effect in design than I should have myself chosen.

Edmund Burke's monument—a simple marble

\* It was stated by an over-dogmatic archaeologist of the Dryadst school that these were old “acoustic pots,” similar to those discovered at Fountains Abbey; but such is a mistake, as I learn from him who gave the order for their manufacture, and placed them in the position they now occupy. See *Proceedings of the Society of Antiquaries*, second series, Vol. VI. p. 49.

tablet in the south aisle, with arms above, has the following inscription:—

Near this place  
lies interred  
all that was mortal of the  
Right Honourable EDMUND BURKE,  
who died on the 9th July, 1797,  
aged 68 years.  
In the same grave are deposited  
the remains of  
his only son, RICHARD BURKE, Esq.,  
Representative in Parliament  
for the Borough of Malton,  
who died on the 2nd August, 1794,  
aged 35.  
Of his brother, RICHARD BURKE, Esq.,  
Barrister at Law, and  
Recorder of the City of Bristol,  
who died on the 4th February, 1794.

The Manor of Beaconsfield was originally owned by the noble family of Windsor; subsequently it was bestowed on Burnham Abbey; then it came, by purchase, to the Waller race, sprung out of Kent, distinguished in war and prowess so early as the reign of Henry V. These held it for about three centuries, but disposed of it, in 1832, to Sir Gore Ouseley, Bart., from Ireland, but originally from Shropshire. Edmund Waller, the poet, lived at Hall Barn Park, to the south-west of the town—a mansion-house now belonging to Mr. Edward Levy Lawson, one of the proprietors of the *Daily Telegraph*. Waller, the poet, is buried in the churchyard, to the south of the church, where still stands a cumbersome and inelegant stone monument, with a long Latin inscription. I possess a good portrait of his son, Dr. Stephen Waller, D.C.L., of New Coll. Oxon, and of Doctors' Commons, London, painted by Sir Godfrey Kneller. He died at Bath, but was buried at Beaconsfield, where his coffin remains intact. The celebrated Edmund Burke resided at Gregories\*, adjoining Beaconsfield, now pulled down, the outbuildings only remaining.

In 1351 the advowson of the church, as the Lincoln Registers show, was in the gift of John de Huntercombe, and subsequently of his widow, Christina. Then it passed to the race of De Windsor (A.D. 1387). One of these was allowed to divide his barony, giving the Beaconsfield and Burnham portions to Walter de Windsor, his brother, whose co-heiress subsequently succeeded to the position and rank. After this, by marriage, the families of Scudamore (A.D. 1434—1548), Cheyne, Taverner, Lee, Dayrell, and Newell, respectively, presented to the rectory. In 1705 the President and Fellows of Magdalen College, Oxon, acquired the advowson, and this corporation is still the patron. John Carpenter, S.T.P., who was rector in 1430, was appointed†

\* This place, which also belonged to the Wallers, was named after a Madam Martha Gregory, wife of a well-to-do London citizen, who largely added to it. The then Earl Verney placed at Mr. Burke's disposal the sum of £20,000, with which “Gregories” was purchased. The mansion was furnished with elegance and taste.

† He was consecrated in Eton Old College Chapel, March 22, 1444, by William Ayscough (Bishop of Salisbury), Thomas Beckington (Bishop of Bath), and John Lowe (Bishop of St. Asaph).



Bishop of Worcester by decree of Pope Eugenius IV.

The old and roomy rectory house of brick and timber, standing to the south-west of the church, is no doubt as early as the reign of Edward V. It is a picturesque and convenient building, now sadly dilapidated and in utter desolation, only used for parochial meetings, &c. Some of its oaken timbers are carefully chamfered and moulded; its bricks are of a close and excellent texture and rich colour, while the plan of the building is at once convenient and good. I provide an outline sketch of it, just taken, from the south-west; some years ago it was held to be beyond repair.

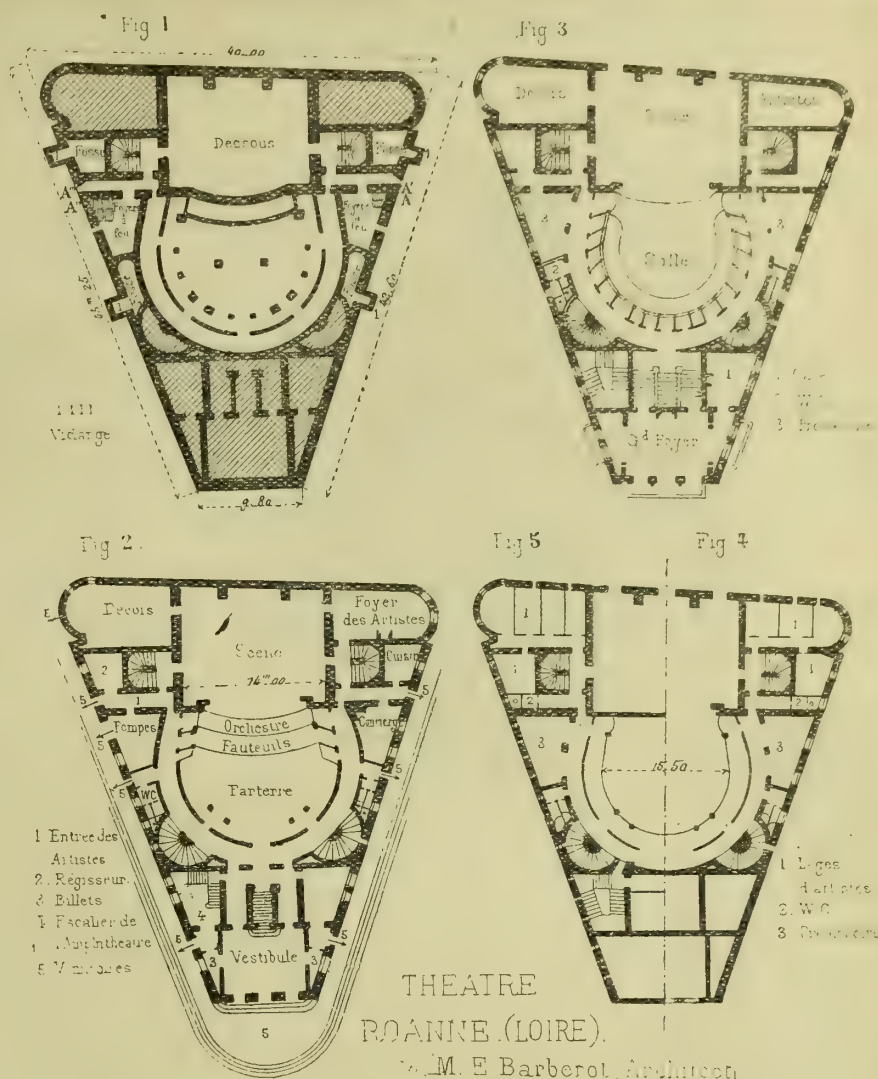
The parish registers, which begin in the reign of Henry VIII., are well kept and in excellent order, thoroughly deserving of being transcribed and published. In olden times Beaconsfield was the residence of a large number of the best and most opulent families of the county. Only of late years has it lost its old character in this particular. Its situation is healthy and beautiful. The town is said to stand on table-land 35ft. higher than the cross of St. Paul's Cathedral. It is reported that the beacon fire on the Penn Hills, lit when a French invasion was expected, could be seen at Brighton.

Amongst other monuments remaining within the church—though several have been removed from their original places—are those commemorating the following families:—Jenkinson, Du Pré\*, Fuller (of Kent), Waller, Lee, Bulstrode, Elstob, Warren, Gerard (of Harrow), Sir Richard Howe, Crook, Beckwith (of Yorkshire), Bates, Staples, Baker, Stebbing, Burke, Gooch, Harris, Thorpe, Brice, Clowberry, Hyde, Read, Hillesden, Reddell, Needham, Cooke, Gosnold, Westall, Elys, Gould, Saltingstall, Burlacey, Widmore, Yates, Butler, Robinson, Gregory, Dodd, Redding, and Bowles (this latter an inscription around and within the picturesque and effective south porch).

#### NEW THEATRE AT ROANNE, ON THE LOIRE.

THIS theatre is erected upon an irregular and entirely isolated site situated to the left of the Hotel de Ville, facing the Place, and the Rue des Capucins, at Roanne, near Lyons. The architect of the building is M. E. Barberot. Every portion of the land on which the theatre stands has been cleverly utilised, and the four plans herewith printed show how the scheme is worked out. Fig. 1 gives the basement, Fig. 2 the ground plan, Fig. 3 the first floor, and Figs. 4 and 5 the second and third floors. The horse-shoe form has been adopted for the auditorium in the centre of the triangle, at the apex of which the main entrance is situated, with the grand staircase and foyer over. Some of the details of the planning are unlikely to be imitated in this country, such, for example, as the cesspits with their cleaning-out areas, below the water-closets on the other floors, shown in the basement plan at 1.1.1.1. The heating chambers are placed below the street level, that on the right, A' and A, being designed to warm the artist's rooms and apartments adjoining the stage; that on the left-hand, A" and A", is connected with the heating apparatus in the grand foyer, entrance-halls, restaurant, and offices. This work is on the Perkins' system, and was carried out by M. Ch. Gaudillot. The reference tables given with the accompanying plans, designate the chief departments of the theatre. The stage-door is at 1, the manager's room at 2, the ticket offices are at 3.3, the staircase to the amphitheatre is at 4, and Nos. 5.5.5.5 are the doorways to the building. The grand entrance opens into a square vestibule, facing the centre of which is the staircase leading to the principal tier of boxes, and the grand foyer. To the right of this is the buffet or café. The semicircular staircases in the angles of the auditorium run up from the pit level to the top floor, and could be used in connection with all of them on an emergency. The stairs are fireproof throughout. Features are made on the principal floors of large promenades at 3.3.3.3, for entracte entertain-

Wilton Park, where this family lives, another place of interest, anciently belonged to the Baldwins of Aylesbury, then to the Lees of Beaconsfield (a younger branch of the Quarrendon race), then to the Wallers, and a family named Bazil, from whom it was purchased by Mr. James du Pré, A.D. 1770, a member of a Huguenot family successful in trade. Josiah du Pré was Governor of Madras in 1770.



ments. The exterior is built in stone, and the roofs are covered with Vieille Montagne zinc. We are told that special care has been taken to insure good ventilation, and a fireproof curtain rises in front of the proscenium. The style adopted is thoroughly French in character, with a curved pediment over the main entrance, containing full-length figures representing Music and the Drama. Surmounting this feature is an immense lyre. We are indebted to the "Nouvelles Annales de la Construction" for these particulars of the building.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E., A.M.Inst.C.E.  
INTRODUCTION.

INTERESTING though the ancient history of bricks and brickmaking may be, it is not our intention to dwell on it here; but rather devote ourselves as far as may be to the consideration of the modern machinery which has been invented to save labour, to economise time, and improve, if possible, the quality of the output.

This being an age of universal and keen competition in all classes of manufacture, hand-labour has of necessity been largely superseded by mechanical means, and brickmaking has been no exception to the rule. In some cases, however, the introduction of brickmaking machinery has not proved a commercial success owing to its principle of working or construction being ill suited to the nature of the clay or mixture of clay and other materials it has had to operate on.

Clay may be broadly stated to be a mixture of the two earths alumina and silica combined with water. As to the origin of fine clay, Fownes says: "Silicates of alumina enter into the composition of a number of crystallised minerals, among which felspar occupies, by reason of its abundant occurrence, a prominent place. Granite, porphyry, trachyte, and other ancient unstratified

rocks, consist, in great part, of this minerals which, under peculiar circumstances, by no means, well understood, suffers complete decomposition, being converted into a soft, friable mass of earthy matter or clay." Gmelin says that clay is usually mixed, to a greater or less extent, with carbonate of lime, magnesia, and protoxide of iron, which cause it to effervesce with acids; it also contains manganese, finely-divided quartz, felspar, mica, organic matter, &c. all of which modify its properties and applications to a considerable extent. The presence of potash, lime, sesquioxide of lime, &c., renders it more fusible. Fire-bricks are made from a compound of silica and alumina, and the clay owes its refractory qualities to the absence of lime, magnesia, potash, and metallic oxides, which act as fluxes. Common clay or brick earth may be roughly divided into five chief classes of red, yellow, brown, blue, and black; it is found, to a greater or less extent, in many parts of the world, but differs very considerably in its chemical constituents, and, therefore, in its colour and nature, being rocky, leathery, loamy, stiff, dry, stony, rich, poor, &c.

In Great Britain some hundreds of different clays are to be found more or less suitable for making bricks; but many of these vary largely in their composition and quality, and therefore require varied treatment in their manufacture, and it is folly, therefore, to expect one kind of treatment or class of machine will act equally well on all classes of clay. It need hardly be said that in introducing machinery to secure success, great care should be exercised in its selection; in point of fact, the clay should be tried, and bricks made on several machines, and not only should the bricks be moulded, but burnt, as a clay or machine may appear to work satisfactorily, and yet a large number of wasters may be turned out. In this case it may be safely concluded that something is wrong either with the clay or its manipulation, the machine or the burning. It is never safe to trust to the casual examination of the clay for the manufacture of



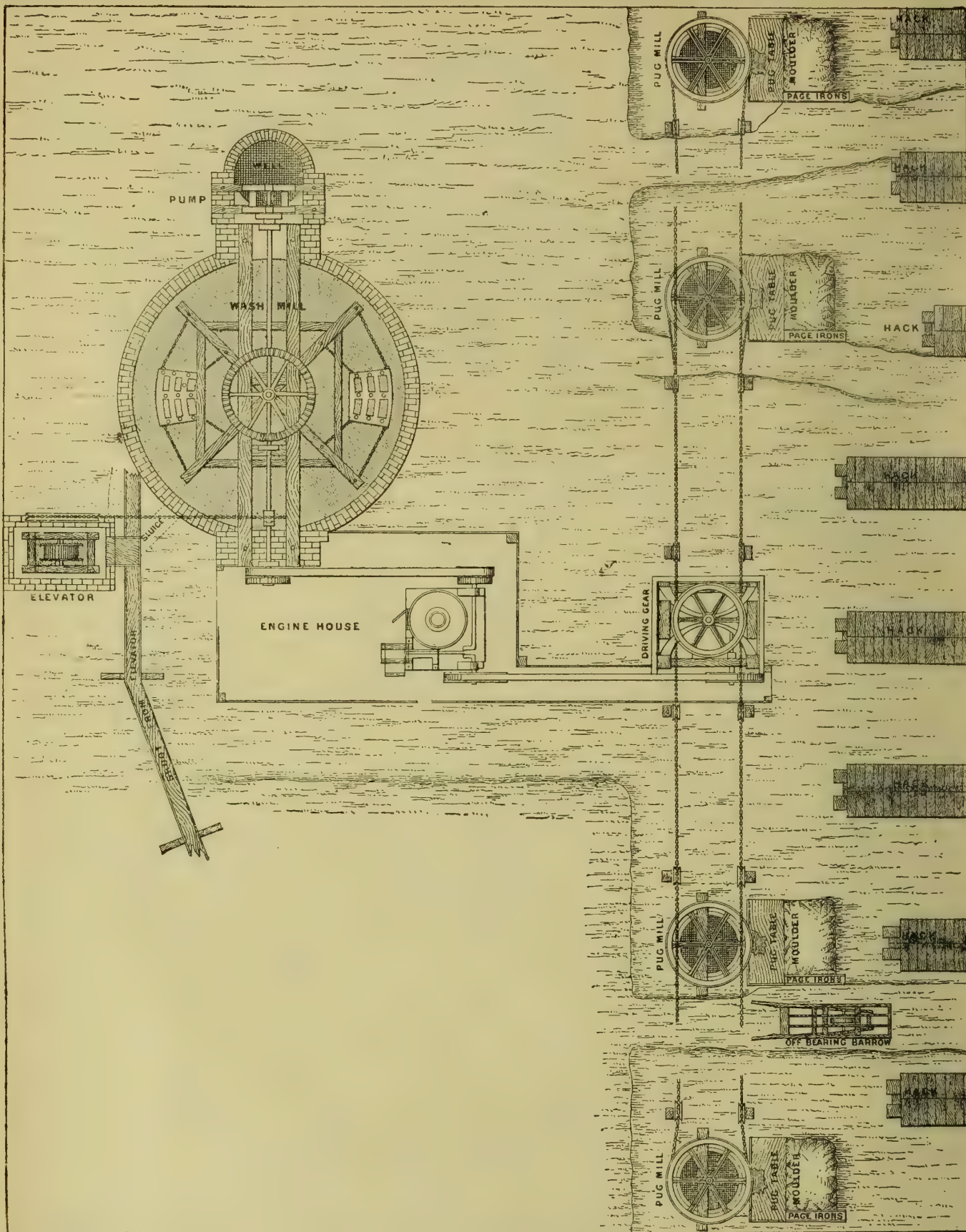


FIG. 1.

bricks, tiles, &c., as we have seen on several occasions what appeared to be almost pure plastic clay, and should theoretically have made excellent bricks, burst to pieces in the drying.

The clays found in different parts of the country often require entirely different treatment; for instance, light, sandy, or loamy clays require a flux to bind them together, whilst strong clays may require an admixture of sand or loam, and others very little preparation before being made into bricks. Again, the clay may be too rich, too wet, or too stony, or, as often is the case in the

South of England and Ireland, contain small limestones, &c., which, when the brick is burnt, becomes lime, and when wetted the lime is slaked and bursts the brick. Other clays contain pebbles, metallic oxides, magnesia, pyrites, &c., and often require considerable manipulation by means of crushing, washing, &c., to render them fit to be made into bricks. In some cases, where clays contain much lime, alkalies, salts, &c., good bricks cannot be made from them under the ordinary treatment, as they warp or burst in the burning; but we hear success has been recently

achieved even with this refractory material. Again, clays which require a flux of breeze, chalk, &c., cannot be successfully moulded except under pressure, the ordinary machines using wire for cutting the bricks being quite unsuitable, unless the bricks be afterwards pressed, owing to the rough surface left on the face of the clay through the wires coming in contact with the particles of breeze, &c.

The question of clays and their constituents is largely a matter for the chemist, and a complete analysis would in many cases be of much service;



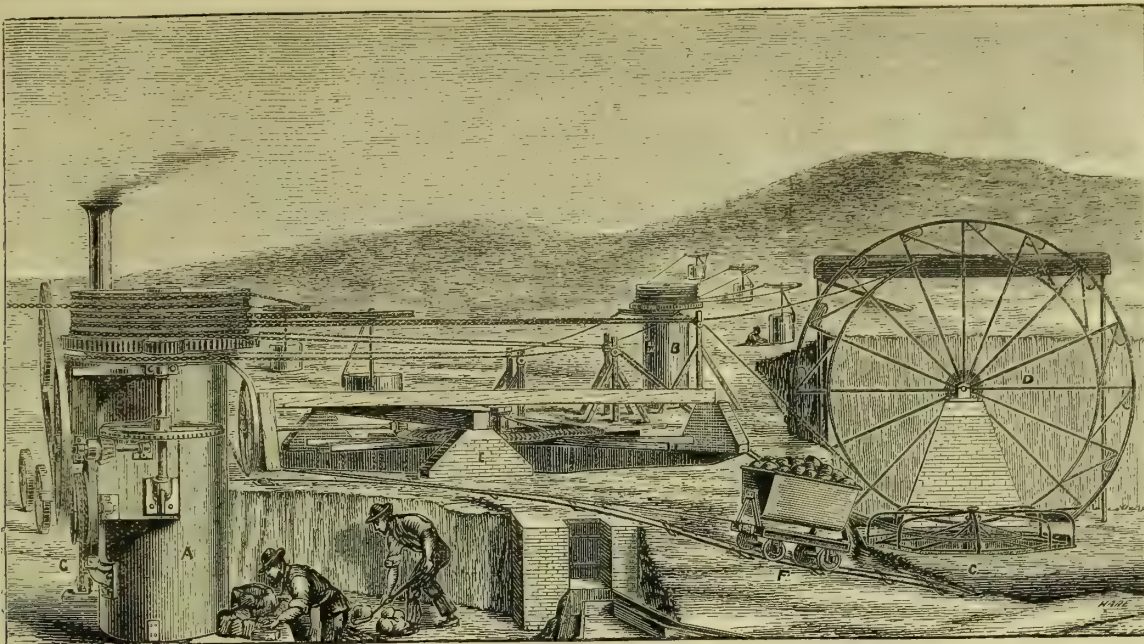


FIG. 2.

but looking at the question in a practical point of view, we cannot do better than reiterate our advice to those contemplating brickmaking—viz., to have the clay thoroughly tested and see that the process and machines adopted are exactly suited to the nature of it. By incurring a small first outlay in this connection, much loss and disappointment may often be saved. These remarks will, of course, apply equally well to the manufacture of hollow, coping, arch, feather-edged, capping, and other special bricks, tiles, pipes, &c., as it does to ordinary building bricks.

It may not be out of place here to observe that a thoroughly good brick should combine as far as possible soundness and hardness with uniformity in shape and size. It should have a good skin to render it impervious to the weather, and be capable of standing considerable compressive strain. Stock bricks, if sound and well burnt, should give out a clear, sharp ring when knocked together; some kinds of facing bricks, however, although perfectly sound, will not ring. Bricks are sometimes found streaky in section when broken, and mottled on the outside—this will often arise from insufficient pugging and preparation of the clay, a point that cannot be too much insisted on in the manufacture of first-class bricks, as layers of clay different in nature are often found in the same field, and unless these be thoroughly amalgamated, the result cannot be satisfactory.

#### BRICKMAKING PROCESSES.

Brickmaking, although subjected to many modifications rendered necessary by the nature of the clay or the kind of brick required, may be divided into two great processes (1) the plastic; (2) the semi-plastic or semi-dry. For some years much heated discussion as to the merits or demerits of these two systems has taken place; but it is not our intention on the present occasion to deal with the matter in a partisan spirit, but rather to point out briefly some of the advantages and disadvantages of each. We have seen good bricks made under both processes; but there is no doubt that many clays can be safely made into bricks under the plastic process that would be more or less failures if worked semi-dry. As a sign of the "survival of the fittest," what was formerly termed the dry process has now given place to the semi-dry or semi-plastic. The chief reason for the discontinuance of the dry process was the difficulty—although enormous pressure was used—of properly cementing together the more or less dry particles so as to form a sound and dense brick when burnt. There is no doubt, however, that very great improvements have taken place of late years, both in the method of manufacture and the machinery employed in the semi-dry or semi-plastic processes. Many clays have been dealt with semi-dry that were quite unsuited in their nature for treatment by this process; consequently when the bricks were burnt they were more or less porous,

and light cracks and flaws appeared. Consequently when the bricks were laid and subjected to atmospheric influence and wet, perhaps followed by frost, they commenced to disintegrate, and their surfaces scaled off.

Speaking broadly, I take it the clays most suitable for the semi-plastic processes are those of a bituminous or shaly, &c., nature, and which vitrify to a certain extent when fired. Even suitable clays often require careful handling, and, if very rich, to make a sound brick an admixture of fine-ground ballast, sand, or other material, in a proportion according to the nature of the clay, is necessary. These admixtures will often prevent excessive shrinking and warping of tough, stiff clays, and the ballast opens the pores of the clay to a certain extent, and permits the escape of the water contained in it. The object of the semi-plastic process is, of course, to lessen the cost of production by transferring the bricks directly from the moulding machine to the kiln without the intermediate process of drying in the air or in heated sheds, as is the case with the ordinary plastic process. Some clays will stand this treatment satisfactorily, and make first-rate bricks; but many will not. Some are of too dense a nature, and the steam formed by the water in them during the burning cannot readily evaporate; consequently, it flaws, cracks, and, in some cases, bursts the brick altogether. Again, weak and friable clays are unsuited for the semi-plastic process, but are sometimes used, and when turned out from the moulding machine possess a clean and dense appearance, but after burning they become open and weak, the particles of clay not being sufficiently bound together. Given, however, a suitable clay, and there is no doubt that good bricks may be made by the semi-plastic process, and in countries where the cost of labour is high, at a considerably less cost than with the plastic process. The clays in this country that are, however, quite suitable for semi-plastic working are comparatively limited, and the employment of this process on clays better suited to the plastic process (the result being unsatisfactory) has tended in some instances to bring the semi-plastic process into more or less disrepute. Speaking generally, the plastic process (when bricks are made and dried before passing into the kiln) may be fairly pronounced the safest in its results, and less skilful management is necessary. The matter under discussion, therefore, resolves itself into a question as to the nature and suitability of the clay to decide which process of manufacture is the best to be pursued. It may be added that, with the dry process, it is claimed that brickmaking may readily be carried on all the year round.

The duty of brickmaking machinery, especially pressure-moulding machines, is generally very severe; consequently it is necessary, to secure success, that it should be of massive construction to withstand the various strains put on it. It should be soundly made, and the various working parts

adjustable for wear as far as possible. Either from excess of competition, or other causes, this has not always been borne in mind, and the result has been in some cases machinery of far too flimsy a construction for the work it has to do. It may not be out of place here to caution users against being tempted to purchase very low-priced machinery, as a really well-designed and constructed machine cannot be sold except at a price that will give a fair return for the talent and outlay of the manufacturer. So-called "cheap" machinery is really dear at any price, as it usually means a lessened output of worse quality, combined with a largely increased bill for repairs.

#### NOTES ON PLANNING A BRICKWORKS.

The careful planning of a brickworks has much to do with its commercial success, although we are afraid that sufficient attention is not always given to this important point, the result being a considerable loss through increase of labour in handling and manipulating the materials. We are aware that all kinds and sizes of sites have to do duty as brickworks, and our remarks thereon may not in all cases apply; they must, therefore, be considered as general, and not arbitrary. In selecting a site, the chief point to be considered is the facility as to land or water carriage. Unless these are good, and the produce can be cheaply and readily conveyed to the market, the works can never be a great success, unless it be in the case of a large contract where clay can be found near at hand. Water conveyance is usually by far the most economical, and a site having this should generally be selected in preference to one having road or rail, unless the market should be within very easy carting distance. If a site is to be had with good clay on or near the surface, so much the better, as this will lessen considerably the cost of production. Having secured a site, then comes the question of laying it out to the best advantage; this must depend largely on the nature and size of the field; no arbitrary rules can, therefore, be laid down. All manufacturing works should be designed as far as may be on what may be termed the progressive system—that is, the rough material to pass in at one end of the works, through the various machines, and out at the other as manufactured articles. This principle can in many cases be applied to brickworks.

For the sake of illustration we will, in the first place, imagine a 20-acre field to make, say, 10 millions of London stocks, grizzles, and place bricks per annum. In most cases the machinery, &c., would be best placed somewhere near the centre of the field, and after the backs are made the clay brought by suitable tram lines from the far end of the field directly to the wash and chalk-mills; after being washed it would pass into the back for weathering; then, by means of elevators, to the pug-mills, which should be placed alongside, afterwards to the moulding shed, then to the stacks or drying sheds, and finally to the



kilns or clamps. After the bricks are moulded, it is important that they should be stacked so as to allow of as much air as possible to pass through them; but they should be protected from rain, sun, and strong winds. The stacks should be arranged with a slight fall, if possible, be levelled and drained, and covered with fine ashes. Many drying-sheds are now steam-heated; but about this we may have something to say elsewhere, and also of the kilns.

We illustrate herewith (Fig. 1) a neat arrangement of chain, &c., driving gear from the designs of Messrs. Bastin and Lawson, 49, Finsbury-pavement, London, E.C. It is especially designed for hand moulding pursued in the London district or where it is necessary to wash the clay. As will be seen from the plan, the windlass, driving-gear, and chalk-mill are each driven by belt direct from the engine, and the power is conveyed to the various pug-mills from the driving gear by means of chains, supported at intervals by grooved pulleys. A well is also shown from which water is raised for the wash-mill by means of a vertical barrel-pump mounted in a frame, and driven by toothed gearing from the wash-mill shaft, the clay elevator being driven by chain from the same shaft. The pug mills are shown placed in a line; but could be arranged in any other desired position, and the wash mill and elevator could be worked from the driving gear if preferred.

The selection of the engine and boiler and machinery has now to be considered, and is, without doubt, a matter of very great importance in securing successful working. With reference to the best kind of engine and boiler for the work, much will depend on (1) the quality of the feed-water, (2) the quality and cost of the fuel.

Should the feed-water be bad, a simple form of boiler readily cleaned—such as a Cornish or Lancashire—should be chosen, and these will be found especially convenient in the London fields, where ashes are used to mix with the clay, as much of the waste can thus be burnt. Where the feed-water and fuel are good a locomotive-boiler will be found economical. In brickworks the engine management is not always very skilled; and where fuel is cheap a plain high-pressure engine may often be used with advantage, the liability to break down being lessened. Where the management is good and fuel expensive, a compound condensing engine can be recommended.

The engine and boiler being secured, the question arises as to the way of transmitting the power. In the London fields, where the works are generally of a temporary character, and the plant somewhat scattered, chain-gear is usually employed, and it possesses the advantages of a comparatively low first cost and adaptability, it being capable of being readily lengthened or shortened as may be required. In the Midlands and elsewhere, where the works are more permanent and the machines not often moved, shafting is considerably used, and possesses some advantages over chain-gear; but if the machines are much scattered or at different levels, it becomes very costly, to say nothing of the large amount of power used in turning it—about 1 H.P. for every ton weight of shafting. We have recently inspected a new kind of wire-rope gearing, which has some interesting features, and possesses the advantages of lightness with strength. It consists briefly of an ordinary steel wire rope, through which are inserted at intervals a series of steel pins, fastened in a very ingenious manner, and rendering it almost impossible to pull them out. These pins gear into suitable wheels after the fashion of a pitch chain, and for long distances especially this chain should prove very serviceable. If chain-gearing be employed, the windlass should be fixed near the engine, and the chain guided and supported to the various machines, if at any distance, by a series of grooved rollers mounted on posts. For those desiring further information in this connection, the author can recommend the perusal of a very interesting paper on "Brickmaking," by H. Ward, *Proceedings Inst. Civil Engineers*, April, 1886.

If line shafting be used, steel is to be recommended in preference to iron, it being stiffer in work, and there is less strain on the bearings through the shaft springing. Steel can also be used of somewhat less diameter than wrought iron for the same duty, and, if sound, will run with less friction. The difference in first cost between steel and wrought iron is small. Line shafting

is subjected to considerable torsional and bending strains, at the same time its duty is intermittent, and has to submit to the severe, suddenly-applied loads of starting fresh machines. It should, therefore, have a fair margin of safety. A general rule for finding the diameter of a shaft suitable for transmitting a given nominal H.P. is as follows:—Multiply the horse-power by 85 for steel, or 170 for wrought iron, and divide the product by the number of revolutions per minute; the cube root of the quotient will be the diameter of the shaft in inches. If shafting is used in a very long line, it becomes at the extreme end, especially if much power be taken off, very much inclined to twist; provision must, therefore, in these cases, be made to overcome the torsion. In arranging shafting, the first length which receives the power from the prime mover should be of greater diameter than the remainder, and the bearings placed closer together. A bearing should be placed on each side of the pulley or toothed wheel receiving the power from the motor, or any pulleys transmitting large power. Brickmaking machinery, as a rule, runs at a slow speed; consequently the main line shafting must run slowly. A very convenient plan, in many cases, is to transmit the power directly from the engine to the main shaft through the medium of toothed gearing.

In the Midlands and some parts of the North of England, substantial buildings are often erected for brickworks, and their arrangement and plans differ essentially from those near London, owing to the different nature of the clay and the methods of working it. In many of these the process pursued is to hoist the clay up and pass it through several pairs of crushing rollers, and in cases where the clay is over-rich, sand or burnt ballast is added in suitable proportions. After going through the rolls the clay passes into a mixing-pan, and from thence into a pug-mill, and onwards through a wire-cutting or pressure-moulding machine, as the nature of the clay dictates. There are, of course, many modifications of these operations made in various parts of the country adapted to the nature of the clay, some of which will require a great deal of preparation, and others very little. For instance, should the clay contain large stones only, they may be generally got rid of by means of a screen fitted to the brickmaking machine; but clay containing a large number of small stones must either be washed or passed through either powerful crushing rolls or edge-runners.

Our illustration, Fig. 2, represents some of the various gears used in the London brickfields with a new form of elevator, designed by Mr. W. Eddington, London, to take the place of the ordinary vertical chain or belt elevator. Fig. 2 represents a chain-gear windlass mounted on a wrought-iron pug-mill, and arranged with spur-gearing on the slow motion. In practice, however, it will usually be found much more convenient to fix the windlass separately on a foundation of its own. B shows an intermediate motion fixed on a pug-mill. C represents a chain-driven wash-mill made with wrought-iron sides and frames for ready removal. D represents a wheel elevator, made of angle-iron or steel, and it is claimed that this arrangement is an improvement over the ordinary form of elevators, the wearing parts being quite out of the dirt and slurry, the wear and tear is very little, and that the driving-power required is much less than for pumps. E represents a clay-truck, worked by the winding-gear G. A saving of time will be effected if the truck is arranged to dump automatically. The best class of clay trucks are fitted with steel axles running in chilled-iron boxes.

#### YORK MUNICIPAL BUILDINGS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS work is in course of erection, from the designs of Mr. E. G. Mawbey, A.M.I.C.E., now borough surveyor of Leicester. The plans were prepared by him when he was city engineer at York. The site is at the north side of the Guildhall, which it adjoins, and the frontage faces the Ouse. The style of architecture is Perpendicular, its features harmonising with the old building. Tadcaster stone is being used in the construction of the frontage and the north elevation, and green Westmoreland slates for the roof. The principal entrance is from the Guildhall, in the north-west corner, near the temporary offices of the City Survey and staff. The lower

story, or basement, is situated 15ft. above the summer level of the river. A large stone balcony fronts the river, a corridor and thence a flight of steps leading to the landing-stage at the end of Common Hall-lane, being a far more desirable approach than the latter passage, which is at present used. The basement corridors are lined with a dado of glazed bricks of suitable tints, and the floors laid with Venetian marble mosaic. On the same floor are the lavatories and other accessories. The drainage is carried out on the most modern scientific principles. The plans further show rooms for samples, stores, and plans, strong rooms for the town clerk and city accountant, and a heating-chamber. The whole of the building is to be heated by hot-water apparatus, and in conjunction with this system thorough ventilation is arranged for. In most of the rooms there will also be fireplaces for occasional supplementary heating purposes and to meet emergencies. On the ground floor are the offices for the town clerk and the city surveyor, and a large committee room. On the first or principal floor above the ground floor is the council chamber, 50ft. in length, 33ft. in width, and 28ft. in height, with a frontage to the river. It is lighted by four stone-mullioned, tracery windows, about 13ft. high and 7ft. wide. A fine oak-timbered Gothic ceiling, with moulded arch, and longitudinal and transverse ribs, and richly-decorated panels, and bosses at the intersections, will be a noticeable feature, as also the walls, which will carry a handsome moulded and panelled oak dado about 6ft. 6in. in height, and a richly-panelled and carved cornice. A moulded and carved oak chimneypiece, having a suitable inscription bearing upon the inauguration of the building, will likewise add interest to the chamber. The floor will be of polished oak. The accommodation of the Lord Mayor, aldermen, and councillors is to be on an entirely different plan to the present. His lordship's seat will be at one end of the room, and to his right and left sit the aldermen, immediately in front being the town clerk's seat, and contiguous to the latter the seats for the other principal officials. The councillors will also occupy separate stalls, which are to be arranged in four segments of a circle, the form somewhat resembling that of a horse-shoe. Each member will have a desk in front of his seat and accommodation for writing. In the centre of the room will be a table for exhibiting plans, &c. Reporters are accommodated to the right of the Lord Mayor. At the opposite end of the room, slightly raised above the ordinary level, will be a space set apart for the public, who can be accommodated to the number of 70 or 80. Adjoining the council-chamber are an ante-room and retiring rooms for the Lord Mayor and members of the Corporation. Lavatory accommodation is also furnished. On the same floor are to be the city accountant's offices. The caretaker's quarters are on the floor immediately above. The floors throughout the building are of fireproof construction; iron joists and Portland cement concrete being used. The staircases will be of stone, the balusters having rouge royal marble copings. The main entrance from the Guildhall opens into a large vestibule, from which the grand staircase ascends. There is also a supplementary working staircase at the north end of the building. The cost of the new building, exclusive of the site, will be from £11,000 to £12,000. The contractors for the work are Messrs. Lowe and Sons, Burton-on-Trent, and Mr. English is the clerk of works.

There has been unveiled in the nave of Moor Criche Church, in Hampshire, a stained-glass window of three lights. In the centre is the figure of the Virgin and the Infant Saviour, round the heads of whom are shown seven doves, typifying the seven gifts of the Holy Spirit. On the right-hand side is seen St. Peter, and on the left St. Paul. All the details are designed in the style of the 15th century. The figures stand within niches, surmounted by canopies. It is erected as a memorial of the late Lady Alington by Lord Alington, and has been executed by English artists, under the direction of the honorary architect, the Rev. Ernest Geldart, of Little Braxted Rectory, Essex.

The Edinburgh town council have had under consideration the underground railway proposed to be carried through that city and in Leith and Newhaven by the Caledonian Railway Company, at a cost of £750,000, under a Bill to be submitted to Parliament next session. The corporation have appointed Sir John Fowler and Mr. Benjamin Baker as their consulting engineers.



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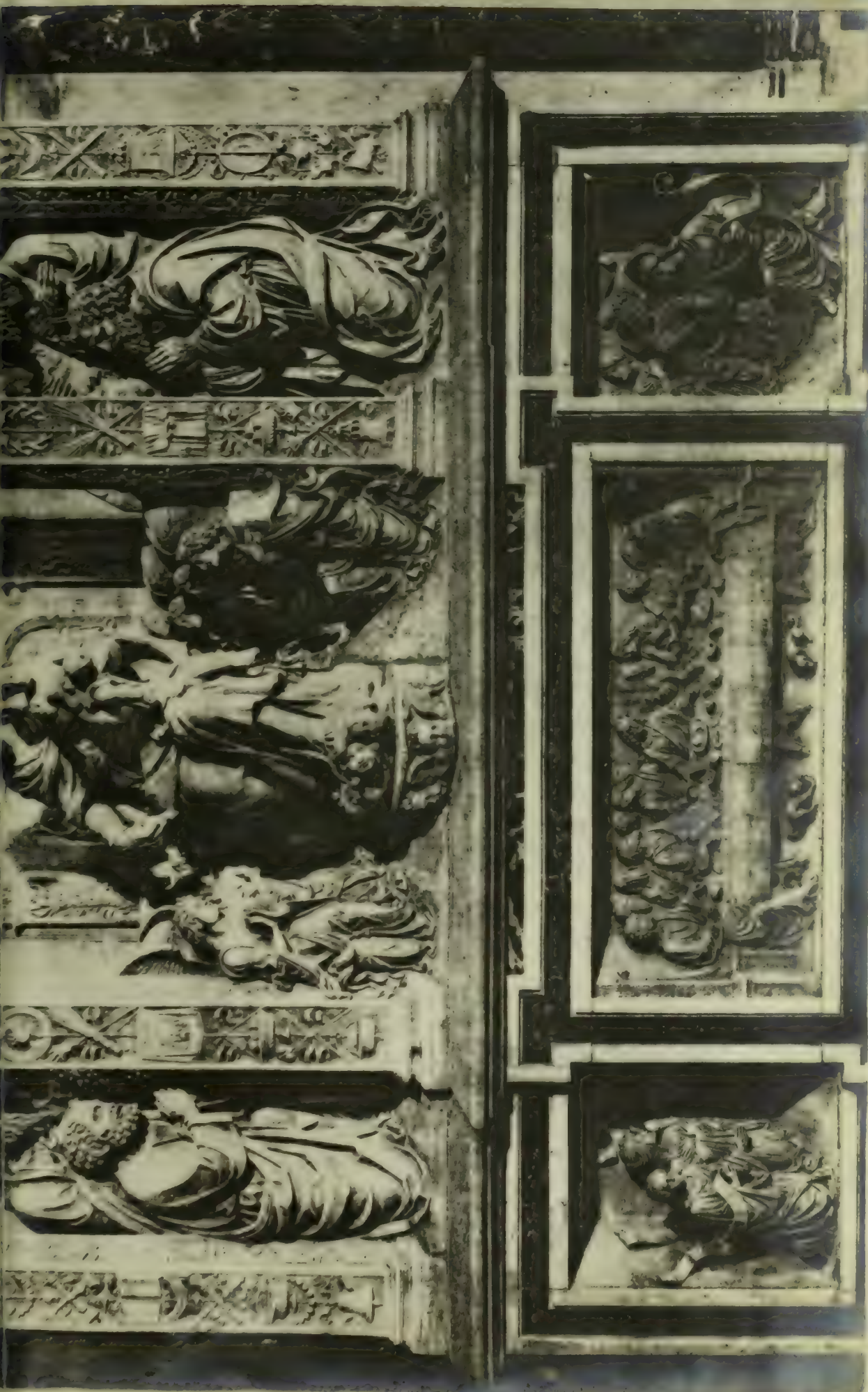
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#### WORK BY MESSRS. ODE AND CO.

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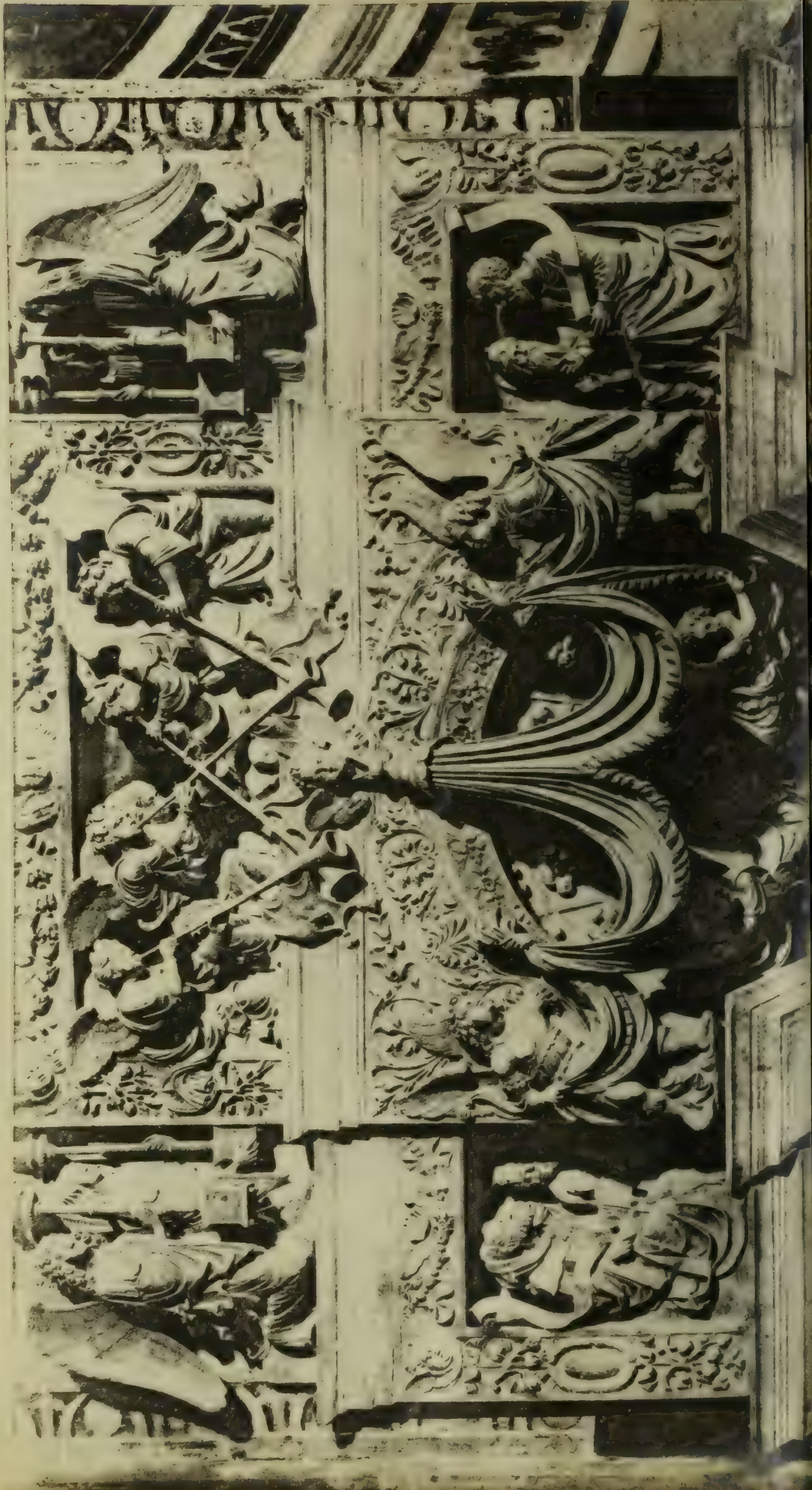
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n, built by Forster and Andrews, ary's Episcopal Church, Hamilton, on Friday. The instrument has an organ-chamber at the north side the front pipes projecting beyond tch pine case has been provided, and are richly decorated.



kilns or clamps it is important to allow of as much as possible; but the sun, and strong wind, and arranged with and drained, and drying-sheds; and this we may and also of the

We illustrate the arrangement of chain, of Messrs. B. & Co. pavement, London, designed for hand district or wheel. As will be seen, the driving-gear, belt direct from the mill, is conveyed to the driving gear intervals by the shown from the mill by means in a frame, and the wash-mill driven by chain mills are shown arranged in a wash mill and driving gear is

The selection of machinery has without doubt been made in accordance with reference to the for the work, of the feed-water.

Should the boiler readily cashire—should found especially where ashes much of the the feed-water boiler will be the engine skilled; and pressure engine, the liability. Where the machine is simple, a compound is recommended.

The engine is a simple one, and arises a power. In the are generally plant somewhat employed, and comparatively being capable shortened as and elsewhere permanent and shafting is of advantages are much so comes very amount of power for every ton recently installed, which possesses the strength. The wire rope, valves a series ingenious and impossible into suitable pitch chain cially this. If chain-g should be guided and at any distance mounted on information recommend paper on proceedings. In

If line is recommended in work, and through the used of son for the sun.

less friction. The difference in first cost between steel and wrought iron is small. Line shafting offices of the City Survey and staff. The lower consulting engineers.



## WAYSIDE NOTES.

HAVING duly rested on our oars, or, to use a more appropriate metaphor, on our T-squares, for the holiday season, we should all be in a fit condition to enter upon the pilgrimage along what course 1890 may take in the river of years. Let us hope that its earliest days may unfold to each of us a bright vista, with health and happiness, and a plethora of "jobs" ahead, of which a smaller percentage than of yore may prove to be the shadowy phantoms we all too well know! And, judging by the appearance of things, and the exercise of reason, the opening of the New Year is one of some, perhaps of very considerable, promise. For the past two years or so, I believe I am warranted in saying that trade in general has been prospering, and if 1889, by no means so bad as it might have been, has not satisfied all, we may expect to feel beneficent results, should things in general continue to improve. Although we know that, after a long period of depression, it takes some time for the rising wave of prosperity to greatly affect the building interests, a third year should certainly find them brisker and more lively than for some time past.

John Bull considers his architect last of all. He does not care to launch out into building schemes until he sees the ground perfectly safe, until, that is to say, he has put by a goodly pile. His jeweller and picture-dealer, even, participate in his good fortune before the gentleman that supplies his plans. J. B., conservative as he is to the backbone, whatsoever he may term his political views, hesitates long to exchange old lamps for new. The new house, the rebuilding of business premises, and manifold other long-contemplated schemes involving extensive building operations, that he may have been well able to afford a year or more ago, he delays to the last.

In the competitive branch of business the year opens briskly. There must be an unusually large number of men engaged in preparing competition plans, for at the present moment competitions are as plentiful as architects in and around Bedford-row, or as engineers in Great George-street. I do not remember so many coming at once for some time past, and do not hesitate to take them as straws upon the surface of water, showing an improvement in the volume of business. There may not be anything particularly attractive about the last arrivals—the advertisements from the Leeds Corporation and from the Lion Brewery, at West Hartlepool; but they help to keep young architects employed, and improve chances all round.

The engineers have already lost one of the jobs included in the year's list of Parliamentary Bills, the scheme for the construction of the City and North London Subway Railway (which was to have joined the South London Subway, now approaching completion), with a station in the City-road and passing en route King William-street and Moorgate-street, having completely fallen through. Perhaps it is as well, for any public money that might have been devoted to the work, for the usefulness of the proposed line is by no means so evident, as is that of the line under the Thames to South London. This latter undertaking should prove a success. It will not now, I believe, be a very great while before it is quite completed. The stations are being constructed, and, although the patching up and adapting of Deane's old premises in Fish-street-hill does nothing to improve the architectural outlook of the neighbourhood, there is arising opposite St. George's Church in the Borough, a structure of brick and stone with a domical iron roof that should contrast well with its surroundings.

Now that light subway railways seem rather in fashion, I would suggest that one would be eminently useful between the Northern suburbs of London and the Charing Cross district. There must be a considerable volume of traffic between these points, and a number of persons daily going backwards and forwards, amply sufficient to render a small railway a paying concern. There must also be a very large number of persons whose business is in the west-central district who would live in the north-western suburbs if better means of intercommunication were at hand. If there are many others having my own horror of daily 'bus riding, this number must be large indeed. It appears to me that a

light railway, starting from, and connected by subways with, the South-Eastern and District Stations at Charing Cross, and running along under Duncannon-street, Charing Cross-road, Tottenham Court-road, and Hampstead-road, and serving Kentish Town, Camden Town, and Hampstead and Highgate, would, if properly carried out, and—if this be possible!—escaping the blood-sucking of company-mongers, prove not only a financial success, but a boon to Londoners.

The Channel Tunnel again! Sir Edward Watkin is not to be pacified with the "Watkin" tower, and thinks charitably of his rival, the proposed Channel Bridge. His perseverance merits ultimate victory. At the extraordinary general meeting following the ordinary general meeting of the Channel Tunnel Company, held in the board room of the South-Eastern Railway Company last Tuesday, it was proposed to introduce into Parliament in the ensuing season, "A Bill to authorise the maintenance and continuance of the experimental work for a tunnel beneath the Straits of Dover"; and on the 16th inst. a meeting is to be held to confirm the proposal. Of a choice between the tunnel and bridge, I see that Lord Wolseley favours the latter. This, of, course, is on military grounds. From an engineering point view, there can be no two opinions, excepting that one cannot expect the designers of the bridge to do aught but believe in their own scheme. I am glad to see that many having right to speak on the question, condemn the bridge as little short of an absurdity. The tunnel one can imagine constructed with safety; but the engineer who could put up the bridge might well be considered an extraordinarily clever man.

It might be put up—the question is, how long would it stand? In theory, the construction of the bridge presents no difficulties, neither can one deny the accuracy of theory in M. Jules Verne's romances. When we come to practice, however, things wear a different aspect. How such a structure as M. Hersent and M. Schneider propose is to stand against the effects of winter gales remains to be shown. We know how, in the past, those doubting the possibility of this and that have had to eat their words; but at the present day there is a marked tendency to believe the capability of human ingenuity to accomplish everything and anything without questioning its possibility. There are numbers of persons who, should someone come forward with a scheme for a tunnel or bridge between England and the American Continent, would have difficulty in persuading themselves that the thing was impracticable.

The folly of open street ventilators to sewers I have often urged. If we are to have them closed we should all surely share in the beneficial results. It seems to me manifestly futile to stop up the ventilators in one place and so give the nearest gratings a double share of duty, to the detriment of the atmosphere immediately surrounding them. From a notice issued by the secretary of the Stock Exchange, regarding the sanitary condition of this building, I learn that certain openings into the sewers near it have, by pressure brought to bear upon the Commissioners of Sewers, been stopped up, and others are shortly to be closed. But what does this mean? Simply that the foul air issuing from neighbouring open ventilators is rendered infinitely more filthy. I am glad, for the sake of the members of the Stock Exchange, that this effort to improve the atmosphere surrounding their building has been successful, while sympathising with those who may be losers by the arrangement. I could not desire to see the gratings uncovered again, but a general loud complaint on the part of the public against the barbarous system of ventilating sewers under their very noses. Nobody, either private or public, has a moral right to inflict the stenches of an open, or, what is worse, a closed, sewer upon a single citizen.

The system of city sewerage that I have before now advocated is one of air-tight pipes and sewers, wherefrom the foul gases are drawn by means of suction, created either by fan-wheels or by draughts to furnaces, the latter plan seeming at first sight the simplest, because all the filth is passed through a purgatory fire. This

burning of the foul air I consider indispensable to the completeness of the scheme, so that whether exhausted from the sewers by fan-wheels, or by draughts to chimney-stacks, it would have to pass through a refining fire. Sooner or later, some reformation in the method of ventilating the London sewerage system, must be seriously taken in hand. We cannot long continue suffering under the present absurd system, a practice which I have said is barbarous, and one that exhibits not one iota of true advance upon the open sewerage of the Middle Ages. Indeed, it is easy to argue that it is a retrogression, since in an open drain there is not the generation of foul gases that occurs in the pent-up sewer.

The commencement of the New Year is a good time to reflect upon the course that architecture is pursuing. We are still plodding along on a highway, the foundation of which is Classic. Gothic architecture is at a discount—as low-priced as it has been since the palmy days of the great Revival. It is almost wholly relegated to the care of ecclesiastical architects, and of a few men on whom the trammels and traditions of the School of Neo-Gothicists have still a firm hold. In the judgment of those competent to give an opinion, the most pleasing exponents of architecture as a progressive art at the waning of the 19th century, are those who combine originality of composition with a studied regard for refinement in detail, subordinating what is called "style" to the attainment of these qualities. So, those who affect style and neglect composition, and adapt hackneyed detail, are the least deserving of respect. The former are the true architects, and the latter the machine-like imitators, and, compiling automata, of a type altogether behind the age.

Mere originality, without intrinsic beauty, however, is now happily held to be of no merit. Let us be thankful for the light that has been shed in this direction, and hope that 1890 may witness a steady continuance along the same road as we have been travelling upon of late years. Having taken to heart the lessons of the Revivals with their slavish copyism, and remembering the no less important teachings of the originality-at-any-price gentlemen, let us avoid the two extreme principles that have only led their advocates to ultimate artistic ruin and destruction; and, working in the light of their failures, we may then combine to assist that true progress in modern British architecture which, despite the carpings of critics, has assuredly been made since the days when ape-like imitation was thought to be at the root of manly art, and since the no less evil times when a fetish-worship of so-called originality was spread over the length and breadth of the land. GOTH.

## WROUGHT IRONWORK BY MESSRS. STRODE AND CO.

THE examples we show in our illustration are of recent issue from the well-known forges of Messrs. Strode and Co., of 48, Osnaburgh-street, Regent's-park, and as characteristic types of this interesting handicraft are well worth attention. The sign shown on the left hand of sheet was a commission from Mr. Heath for his new premises in Oxford-street, where it has now been fixed for some time. The small hall lantern, the bracket support of which is suggestive of a cornucopia, is a tasteful rendering of the best period of the Cinque-Cento, and is an exquisite piece of workmanship; this has been exhibited at the late Arts and Crafts, but had previously taken a prize at the Blacksmiths' Exhibition.

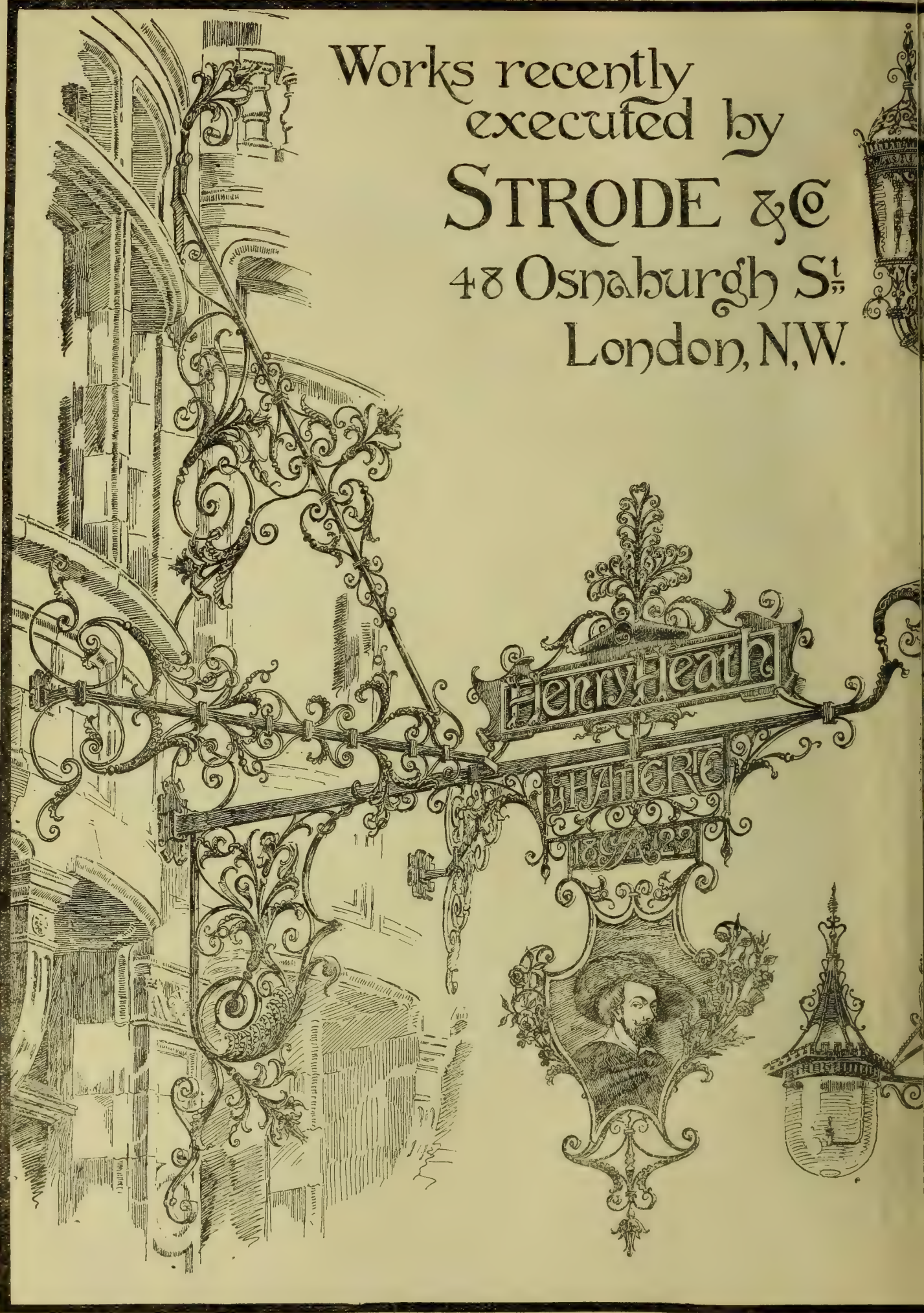
The staircase balustrading was once executed for a town mansion; the treatment of the grotesque newel post is somewhat novel, being a combination of forged and *repoussé* work, thus producing the necessary bulk without excessive weight.

The remaining works have all been fixed in different parts of London, the lamp standard and railing (both good examples of the Georgian type we are familiar with) figuring at branches of the London and South-Western Bank.

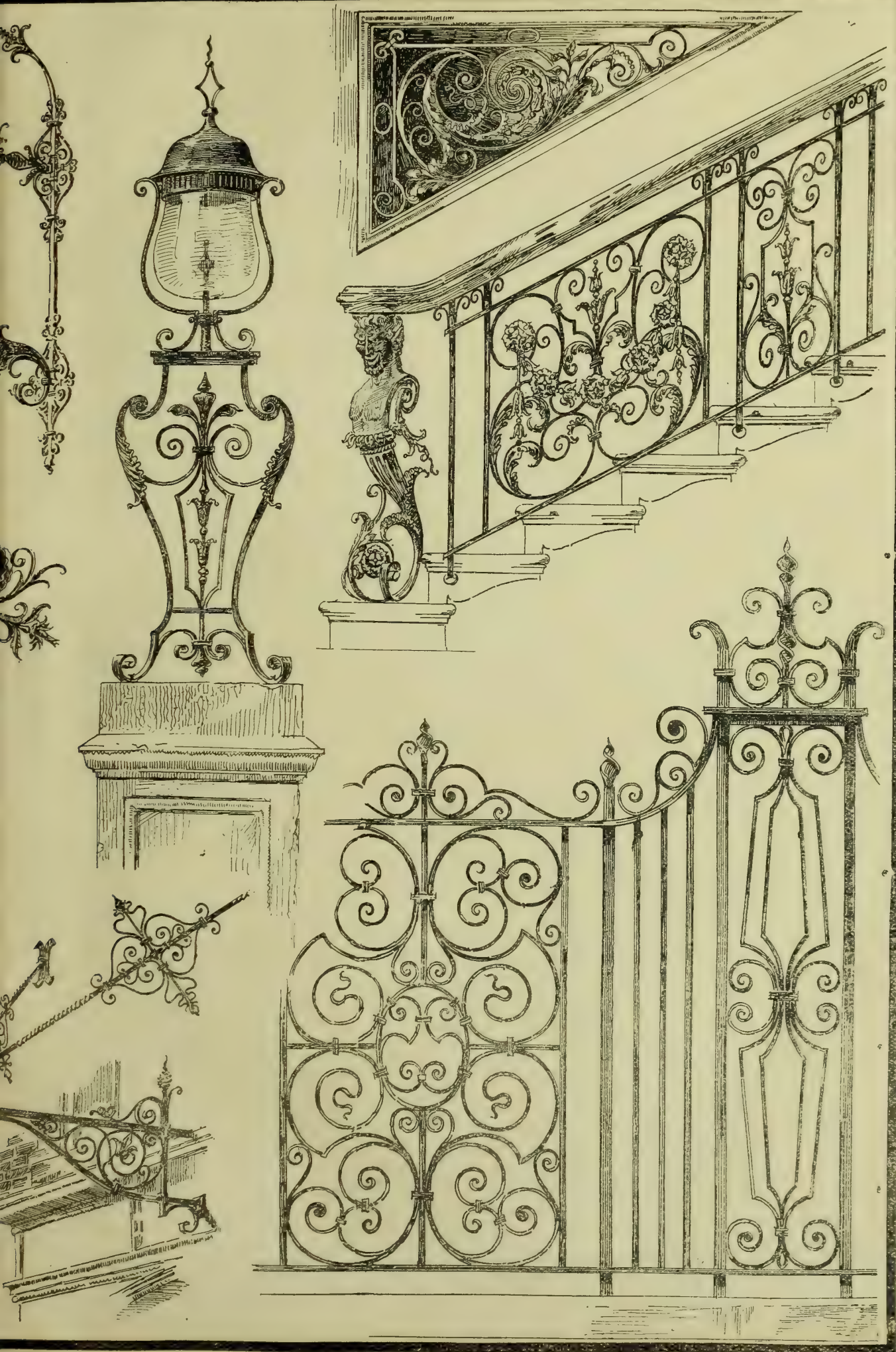
A new organ, built by Forster and Andrews, Hull, for St. Mary's Episcopal Church, Hamilton, was dedicated on Friday. The instrument has been erected in an organ-chamber at the north side of the chancel, the front pipes projecting beyond the arch. A pitch pine case has been provided, and the front pipes are richly decorated.



Works recently  
executed by  
**STRODE & CO**  
48 Osnaburgh St.  
London, N.W.









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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—REID'S NEW HOTEL, MADEIRA.—"THE ADORATION OF THE KINGS,"—A GRAND BED-CHAMBER AND THE KITCHEN IN THE CASTLE OF VINCIGLIATA, FLORENCE.—THE "TE DEUM," BY CHRISTOPHER W. WHALL.—CASTLE OF FREDERICKSBORG, DENMARK.—"LADY MACBETH WALKING IN HER SLEEP,"—CITY OF YORK MUNICIPAL BUILDINGS—WROUGHT IRONWORK, BY STRODE AND CO.—LUSTRE AND ANGLO-PERSIAN TILES—LA GROSSE HORLOGE, ROUEN.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

## CONTEMPORARY BRITISH ARCHITECTS.

We commence this week a series of photographic portraits of living British architects, which cannot fail to be of interest to our readers. We invite other architects to further our scheme by sending us their cabinet photographs, so that gradually, and from time to time, a complete collection of portraits of contemporary architects may be secured. We take this opportunity of thanking those who have already responded to our wishes in this matter, or have assured us of their early help. The selection will include the presidents of the London and Provincial Architectural Societies, the architectural members of the Royal Academy, the Royal Scottish Academy, the Royal Hibernian Academy, &c., and also others distinguished for their works either artistic, constructional, or literary in connection with the art of architecture.

Our first group to-day begins with Mr. Alfred Waterhouse, R.A., the President of the Royal Institute of British Architects. His first great work was the Manchester Assize Courts, followed by the Gaol at Salford; the Cambridge Union Society's new house; the new University Club, St. James-street, S.W.; Church of St. John, Brooklands, near Manchester; Hutton Hall, Stanstead Abbots; Bank, Lombard-street, E.C.; Lime-street New Hotel, Liverpool; Balliol College, Oxford; Caius College, Cambridge; Manchester Town Hall; the Natural History Museum, and the City and Guilds of London Institute also at Kensington; Eaton Hall, Chester; the Prudential Assurance Company's Offices, Holborn, W.C., and in Dale-street, Liverpool; St. Paul's School, Kensington; St. Elizabeth's Church, Parish Hall, and Schools, Reddish, near Manchester; the Law Insurance Office in Lincoln's Inn-fields; Heythrop Hall, Oxon; Turner Memorial Home of Rest, Liverpool; Owens College, Manchester; Yorkshire College at Leeds; National Liberal Club, Whitehall; Girton College, Cambridge; Liverpool University College; Infirmary at Liverpool; the Weigh-house Chapel, Mayfair; and the Hotel Métropole, now building at Brighton. Mr. Waterhouse is a distinguished water-colour artist, and has frequently exhibited in the water-colour gallery at the Royal Academy, as, for instance, in 1888, when he was represented by a study of the grand ruins of Girgenti, and a view of the Aventine from the Ponte Rotto. He served on the jury for art at the Paris Exhibition last year. As professional referee in many of the leading competitions of the day, he has taken a foremost place, and at the present time is engaged in this way with the Sheffield Municipal Buildings Competition, the

designs for which were received last month. He was the professional representative for England on the Milan Cathedral competition a year or two since. Besides the works we have enumerated, Mr. Waterhouse has designed a large number of minor importance, such as Reading Town Hall, as originally built, and the premises at the corner of Old Bond-street. His own house at Tatten-don, near Newbury, where he is lord of the manor, is an important mansion. He is a Royal Gold Medallist of the R.I.B.A. The portrait given herewith is from a photograph by Messrs. Brown, Barnes, and Bell, of Baker-street, W.

Mr. Richard Norman Shaw, R.A., whose name is so familiar in connection with the development of domestic architecture, is now busy building his greatest work in London on the site of the National Opera House (which was abandoned years ago) for the head offices of the Metropolitan Police. The building has a return front facing the Embankment close to the Houses of Parliament and St. Stephen's Club. The principal elevation is placed towards the new street which runs between Parliament-street and the Embankment. Mr. Shaw's first building in London which attracted particular attention was New Zealand Chambers in Leadenhall-street. He also built Lowther Lodge, South Kensington, the great pile of mansions overlooking the Albert Hall; Bedford Park, Chiswick (church, stores, club, and some houses); the houses of Mr. Luke Fildes, R.A., and Mr. Marcus Stone, R.A., at Holland Park, Kensington. The late Mr. E. W. Cooke's house at Tunbridge Wells was one of his earliest residences, and about the time of its erection Mr. Norman Shaw was associated in practice with the late Mr. W. Eden Nesfield. Before this partnership Mr. Shaw worked in the office of the late Mr. George Edmund Street, R.A. Craig Side, Northumberland, and Adcote, Shropshire, are among this architect's largest houses. He also designed another called "Pierpoint," Surrey; the "Wispers," Midhurst; a house at Sunninghill; Mr. F. Goodall's house at Harrow Weald; Swan House, Chelsea; some others in Cadogan-square; the Clock House, with more of the same type, on Chelsea Embankment; the new galleries and refreshment-rooms at Burlington House, for the Royal Academy of Arts; Dawpool, Cheshire, is one of his great mansions; a house and studio for Mr. G. H. Boughton, A.R.A., at Campden Hill; Mr. H. P. Heseltine's house in Queen's Gate, Kensington; another one, also in red brick, in the same road, and Mr. Bazeley White's cement-dressed dwelling adjoining the Imperial Institute, likewise in Queen's Gate. At Hampstead Mr. Shaw built houses for the late Mr. Frank Holl, R.A., and Mr. Edwin Long, R.A., as well as his own house in Ellerdale-road, and Miss Kate Greenaway's house in the same neighbourhood. St. Margaret's, Ikley, Yorks, and St. Michael's, Bournemouth, are two of his churches, and he has built another lately for the Mission at Latimer-road, as well as the charming English Church at Lyons, one of Mr. Shaw's most effective earlier buildings. Other foreign churches have been erected from his designs in India and elsewhere. "Greenham Lodge," Newbury, is one of his latest mansions; "Walhampton," for Mr. Heseltine, in Hampshire, and "Merrist Wood," Surrey, were built some few years ago. The large block of assurance offices at the bottom of St. James-street, S.W., was designed by him for the Alliance British and Foreign Office, a Bank in Bishopsgate-street, E.C., and also the Children's Hospital at Coatham. Mr. Norman Shaw published his book of "Sketches from the Continent" in 1858, and in 1878 he published, in conjunction with Mr. Maurice B. Adams, a folio of designs for Cottages and other Domestic Buildings. We cannot attempt to mention more of Mr. Shaw's many works. His portrait is from a photograph by Mr. Bassano, of Bond-street, W.

Following the arrangement of the portraits on our sheet we come to Mr. Ernest George, F.R.I.B.A., whose first important work when in partnership with the late Mr. Vaughan, was Sir Henry Peek's splendid house at Rousdon, Devon, where a church, and whole series of lodges and cottages were carried out. In London Mr. George has of late years designed many important street buildings in conjunction with Mr. Peto, in South Audley-street, Wigmore-street, Cheapside, Mount-street, and at the corner of Berkeley-square; the Albemarle Hotel, Piccadilly; at Collingham-gardens, and Harrington-gardens, Kensington, are several of his houses; and there are two more in Cadogan-square, S.W.

At 6, Grosvenor-place, is some more of his work, and at Streatham is a coffee tavern, a memorial church, and smaller residences. "Woolpits," Surrey, was built for Sir Henry Doulton; at Ascot is another mansion. The Knoll, Barton; Little Croft, New Forest; Earl of Onslow's lodge and cottages, Clandon; cottages, coffee house, "Barrow Point," and "Eastcote Lodge," all at Pinner; Beechwood, Kent; Helier's Almshouses at Guildford; house at Harpenden, and another at Streatham-common; "Bagshot," "Rosehill," Henley; "Champion Hill"; the Redesdale Hall, at Moreton-in-the-Marsh; "Dunley Hill," Dorking; "Buchan Hill," Sussex; Batsford; Stoodleigh Court, Devon; church at Tarasp, Switzerland; coffee tavern and hostelry, Newark-on-Trent; South Hill, St. Laurence-on-Sea; and Convalescent Home at Leigh, Kent. Mr. Ernest George has published several books, among these being "German and Swiss Sketches," "Sketches on the Mosel," "Etchings in Belgium," "Sketches on the Loire," and "Etchings of Old London." He is a prolific water-colour artist, and constantly exhibits at the various galleries, and he is a member of the Royal Society of Water Colour Painters. Mr. Ernest George's portrait is from a photo. by Mr. Bassano, of Bond-street.

Mr. John Loughborough Pearson, R.A., the architect of Truro Cathedral, has chiefly devoted himself to church building, and has built too numerous a list of works to mention all here. He was a pupil of Ignatius Bonomi, of Durham. Among his earlier designs were Treberfydd House, S. Wales; Quar Wood House, Gloucestershire; Holy Trinity Church, Westminster; and others at Dalton Holme, near Beverley; North Ferry, Scarborough, Hilston, and Appleton-le-Moors; St. Mary Stow, Lincolnshire; Weybridge, Surrey; Sutton Veny, Wilts; Dalesford, Worcestershire; Titsey, Surrey; Landscorn, Devon; Ayott St. Peter's, Herts; Rhydymwyn, Flint; Freeland, Oxfordshire; St. Peter's, Vauxhall; Chiswick parish church; St. Augustine's, Kilburn; church at Horsforth, near Leeds; St. Michael's, Croydon; St. John the Evangelist, Red Lion-square; St. Agnes' Church, Toxteth Park, Liverpool; St. Stephen's, Bournemouth; Wentworth Church, Yorkshire; and many others of less note, as well as schools and other buildings, such as St. Peter's Convalescent Home at Woking. The additions to Westminster Hall, the restoration of Westminster Abbey, and the rebuilding of the central tower of Peterborough Cathedral are among Mr. Pearson's most important undertakings. Rochester Cathedral is also being repaired by him. Westwood House, Sydenham, illustrates the way in which a Gothic architect can work in the Renaissance style. The new buildings and library for the University at Cambridge are among his latest erections. Mr. Pearson is a Fellow of the R.I.B.A. and a Royal Gold Medallist. He is also a Fellow of the Society of Antiquaries. His portrait is from a photograph by Mr. Lewis, Isle of Man.

Mr. F. C. Penrose, M.A., the surveyor to St. Paul's Cathedral, is a distinguished archaeologist and Greek scholar, well known for his great work on the "Investigation of the Principles of Athenian Architecture," first published by the Dilettanti Society, in 1851. He was the first Director of the English School of Archaeology at Athens, founded a few years ago. He prepared a scheme for the decoration of St. Paul's Cathedral. He opened up the foundations of old St. Paul's, to be seen on the south side of the present church, and he arranged the open space in front of the cathedral, as well as the churchyard. He built the choir schools for the Dean and Chapter, and has added to St. John's College buildings at Cambridge. Many churches have been restored by Mr. Penrose, and he has added to others, as St. Stephen's, Walbrook, as well as to several country houses, amongst which we may name the Marquis of Bristol's great mansion on the hill in Ickworth Park, Suffolk, where he decorated the living-rooms. Mr. Penrose is a rapid draughtsman in water-colours. He is a Past Vice-President of the R.I.B.A., and Gold Medallist. The portrait given is by the Stereoscopic Company.

Prof. George Aitchison, A.R.A., B.A., Professor of Architecture at the Royal Academy, is better known for his decorative designs. He is architect to the London and St. Katharine Dock Co., to the Founders' Company, and to the parish of All Hallows, Barking, and is a district surveyor. He was a pupil of his father. He built Sir Frederic Leighton's house at Holland Park,



and carried out some residences commenced in South Audley-street by the late Mr. Frederick Cockerell. He erected some schools at Trent, near Dorset, and Farley, near Salisbury, and some warehouses in the city of London. He has contributed several papers to the R.I.B.A., and he is a vice-president of that body at the present time. He designed a house for Lord Richard Grosvenor at Stalbridge Park, Dorset, and has decorated houses at Brighton; 52, Prince's-gate, Kensington; some rooms in Kensington Palace; 1, Grosvenor-crescent, and 29, Chesham-place. He designed the hall (13, St. Swithin's-lane, E.C.) for the Founders' Company, and built some large offices in Pall Mall for the Royal Exchange Assurance Company. This building has a front also in St. James's-square. In Chesterfield-gardens Mr. Aitchison has done some costly decorative work for Lord Ilchester, who also employed him at Melbury, Dorset. Our portrait is from a photograph by Messrs. Fradelle and Young, of Regent-street.

Sir Arthur William Blomfield, M.A., A.R.A., F.S.A., past vice-president of the Institute and a former President of the Architectural Association, has been busily engaged in erecting buildings all over the country for very many years. Among his more notable works lately are the additions to Eton College, and the Sion College new building on the Thames Embankment, Blackfriars. He has just been elected architect to the Church House to be built in Dean's Yard, Westminster, and his great church of cathedral proportions at Portsea has recently been opened. The Law Courts, in the Strand, were completed under his direction conjointly with Mr. Arthur Edmund Street, after the death of Mr. Street. Sir Arthur has erected more than we can possibly even mention here, and among these works we may name St. Saviour's Church for the Deaf and Dumb in Oxford-street, as well as a vicarage adjoining; Church in Bell-street, Edgware-road; St. James' Church, Paddington, remodelled; St. John the Baptist Church, Great Marlborough-street; St. John's, Wilton-road, S.W., and the rearrangement of St. Peter's, Eaton-square; also the Chapel Royal at Brighton, and Quebec Chapel, Mayfair; a church in the Marylebone-road; New Church, Glanadda, Bangor; St. John's, Wenbridge, Yorkshire; Private Chapel, Tynsfeld, near Bristol; SS. Peter and Paul, Upton-on-Severn, Worcester; Church of the Holy Trinity, Privett, Hants; St. James's Church, Southampton; St. Barnabas' Church, Oxford; St. George's Church and the Albany Chapel at Cannes; Clock Tower, Liverpool; New Schools, Repton, Burton-on-Trent; Denton Manor, Grantham; the Whitgift Schools at Croydon; Choir Schools, Chester, and restoration work in the Cathedral there, and the new Branch Bank of England in Fleet-street, which is this architect's greatest work in London. The photograph reproduced to-day is by Messrs. Maull and Fox, of Piccadilly.

Mr. William Emerson, F.R.I.B.A., the author of the chosen design for Liverpool Cathedral, was originally with Messrs. Habershon and Pite, but he became a pupil of the late William Burges, A.R.A., and afterwards practised in India, where he erected several important buildings, such as Messrs. Treacher's premises in Bombay. He also built the Takhtsingji Hospital, Bhavnagar; the Muir College and Allahabad University, All Saints' Cathedral, Cannington, near Allahabad, and Girgaum Church, near Bombay. Mr. Emerson was one of the competitors for the Berlin Houses of Parliament and the Victor Emmanuel Monument at Rome. He built himself a house at Little Sutton, Chiswick, where several houses have been erected from his designs. St. Mary's Church, facing Rock-gardens, Brighton, is a notable building, and among other works from his hand in this country are some offices and warehouses in the City. The portrait given to-day is reproduced from a photograph by Messrs. W. and A. H. Fry, of Brighton.

Taking our second sheet of portraits, we come to Mr. William Young, who has just completed the Glasgow Municipal Buildings, which great work he won in competition. He built Lord Cadogan's mansion, Chelsea House, Knightsbridge; Viscount Bury's mansion in Cadogan-square; Lowther-gardens, Exhibition-road; a row of mansions in Cadogan-square, Chelsea; Holmewood House, Hants; Easton Lodge; Gosforth House, cottile, and staircase; Broadwater Down, Tunbridge Wells; Oxhey Grange, Hants; Earl Stanhope's house, Chevening Hall,

Kent; his own house at Putney, and several similar houses in different places. He is the author of "Picturesque Architectural Studies," and "Town and Country Mansions," published ten years ago. He is the editor of Spon's "Architect's Pocket Book," issued yearly. The photograph given herewith is by Mr. Deneulain, Strand, W.C.

Mr. Aston Webb, F.R.I.B.A., the recently-elected hon. secretary of the Institute, is now building, in conjunction with Mr. Ingress Bell, as joint architects, the New Law Courts at Birmingham, a work of the first importance. These gentlemen competed together for the new Admiralty Offices and for the Imperial Institute, and we illustrated their designs at the time. Mr. Aston Webb's most important work in London is the restoration of the church of St. Bartholomew the Great, W. Smithfield, and he has since erected some new schools for the parish. Other works of his in the City are some warehouses, Great Eastern-street, and offices in Austin Friars. In the county of Worcestershire he has practised largely. In Worcester he restored one of the city churches, built some large Sunday-schools, and a series of memorial almshouses. Claines Church and Alfrick Church, Worcester, he renovated, and built Wick Vicarage, Pershore; Penycal Church, N. Wales; Burford Church, Tenbury; Rhos Parsonage, S. Wales; "The Briary," Cowes; "New Holme," Bromley, Kent; "Brackenwood," Higher Babington, Cheshire; house, Ewhurst, Surrey, and 20, Queen-street, Mayfair, are other instances of his design. Mr. Webb was Pugin student in 1873, and he is a Past President of the Architectural Association. His portrait, given to-day, was taken by Mr. H. S. Mendelssohn, S. Kensington.

Mr. T. E. Collcutt, F.R.I.B.A., is the architect of the Imperial Institute now building at South Kensington, which he won in competition, and he also erected Wakefield Municipal Buildings some few years ago. After serving the late Mr. George Edmund Street, and working in the town surveyor's office at Brighton for a short time, Mr. Collcutt commenced practice in the City with Mr. Woodzell, and erected some marble works at Pimlico and furniture warehouses in the Tottenham Court-road. After this Mr. Collcutt erected Messrs. Collinson and Lock's premises in Fleet-street and Bride-street, E.C.; a series of houses at Mill Hill, where he also built a library for the late Sergeant Cox. Other works of his are a row of residences for the late Mr. Jennings in Nightingale-lane, S.W.; houses, Hayes-common; hunting lodge, Winchfield, Hants; house, Sheen-common; new premises, Oxford-street, for Messrs. Phillips, and a furniture shop adjoining; bungalow at Winchfield; house, East Sheen; lodges, Easton Park; a house at Paris, built originally for the Paris Exhibition in 1878. He obtained the second premium for the town hall at Barrow-in-Furness, which we illustrated at the time; he erected himself a large house in Bloomsbury-square, and previously one at Ravenscourt Park, W.; he has designed the fittings for several line steamers, and is well known for his furniture designs. The great theatre now building in Cambridge-circus is from his hand, and the Savoy Hotel was fitted up inside to some extent under Mr. Collcutt's supervision. A new hotel at St. Helier's, Jersey, is about to be erected from his designs. He was the winner of the Grand Prize for Architecture at the Paris Exhibition this year, the only other Englishman so distinguished being Mr. Norman Shaw, R.A. His portrait is by Mr. Barraud, of Oxford-street.

Colonel R. W. Edis, F.S.A., commands the Artists London Volunteers, and he built their headquarters. He is a member of the London County Council. His works are too numerous to name; but he erected the Constitutional Club in Northumberland-avenue, and is about to build the Junior Constitutional Club in Piccadilly, where he carried out the Badminton Club a few years ago. He designed the new ball-room at Sandringham for the Prince of Wales; the Inner Temple Library; Victoria Mansions, Victoria-street, S.W.; Westwoodhay House; Rudolf Memorial Church; an art gallery in Bond-street, and some premises higher up in the same thoroughfare, and a shop at the corner of Brook-street; the offices of the Legal and General Life Assurance Society, Fleet-street; Byrkley Lodge, Staffordshire; house at Brighton; one at Petersfield; another at Eastbourne; schools for the London School Board, Battersea; hotel,

Boscombe Spa, Bournemouth; Memorial Fountain, Huntingdon; the Arts Club interior, Hanover-square; St. Paul's Wharf warehouses, E.C.; warehouse, Budge-row, E.C.; houses at Bexley Heath; "Bents Brook," Holmwood, for Sir J. E. Boehm, R.A.; Ringwood, Hants; stables, &c., Great Marlow; Bishop's Palace, Buckden, Hants; row of houses, Constitution Hill, and several residences in various parts of the country. He went to America some years ago to lay out a city there, and he is a past president of the Architectural Association. His book on "The Decoration and Furniture of Town Houses," with illustrations by Mr. Maurice B. Adams, was issued a few years since, and a series of sketches from France appeared in the BUILDING NEWS from his hand about 20 years ago. His portrait to-day is by the Stereoscopic Company.

The photographs of Messrs. Leeming and Leeming conclude our selection of portraits to-day. These architects distinguished themselves by winning the competition for the new Admiralty and War Offices, Whitehall, Mr. Ewan Christian being the referee. They also won the Edinburgh Municipal Buildings competition a year or two ago. The contract for the foundations of the Admiralty Offices, as finally determined upon, has just been made, and the work will be now proceeded with. Messrs. Leeming were first in practice at Halifax, where they built some large mills, chapels, and schools. They are among the competitors for the Lisbon Post-Office buildings, not yet decided. Their portraits are by Mr. Deneulain, of the Strand.

#### REID'S NEW HOTEL, MADEIRA.

ALTHOUGH Madeira, like many other places, has its bad days, and occasionally even its bad seasons, it may be fairly said of the place that it enjoys perpetual summer. Placed as it is on the highway to the Cape, it has become not only a place of refuge for those who are compelled to avoid the severities of an English winter, but it has also become to some extent a place of holiday resort. The hotel, of which we give a view, is in course of building to meet the wants of the increased number of visitors, none of the existing hotels having been built with a view to modern requirements. In laying out the plans of the new building, the peculiarities of the site and advantages of view and aspect have, as far as possible, been considered. The building stands on a promontory of volcanic rocks rising some 150ft. above the Atlantic. The plan shows that the approach is from the back; but so quick is the slope of the rock towards the east, that beneath what must be termed the ground-floor level there are three stories. The rooms on the principal floors are all provided with large balconies, so that the enjoyment of the open air may be obtained by those who may be too unwell to leave the hotel. The building is laid out in two blocks, the south and east. These are joined on the ground-floor level by the large drawing-room and entrance hall, common to the two blocks, which are, however, in other respects isolated. This arrangement is made so that when guests are few they may not have large empty passages to traverse, and should illness break out in one block, it can be isolated from the other. It has been essential, for the sake of economy, to study the methods of construction, and to use the materials common in the island. The walls are built of rough volcanic stone, plastered. The window dressings, and a few features of cut stone as doorways, are of the local "Cantaria." Such architectural effect as the building may have is entirely gained by blocking together of masses, detail being quite out of the question. From the covered balcony of the drawing-room, a balcony which in such a climate is really a part of the room, is obtained a most superb view, extending across the bay of Funchal to the rocky group of the Desertas hanging on the horizon. The building was designed by Messrs. Somers Clarke and J. T. Micklethwaite, 15, Dean's-yard, Westminster. The sanitary arrangements are under the care of the Banner Sanitation Company, which has already entirely remodelled (and with the most satisfactory results) the four existing hotels in Madeira belonging to Mr. Reid. Commodious billiard and recreation rooms are placed in the garden at a level somewhat below that of the hotel and near the lawn-tennis ground, whilst in other parts of the garden are small detached residences for those who prefer greater privacy than is afforded by the hotel itself.



"THE ADORATION OF THE KINGS," CERTOSA, PAVIA.

THIS group of sculpture, representing the Virgin and Child worshipped by the Heavenly Host and Wise Men, forms the principal subject of the large mural decoration on the east wall of the chancel on the Gospel side of the apse in the choir of this great church at Pavia. The commencement of the apse itself is just seen to the right of our illustration. The "Last Supper" is represented in the long panel below, the whole being richly inclosed in marble framings and panellings. On the other side of the sacrum there is a similar piece of work, with the piscina for the high altar below, in the place of the "Last Supper," with a representation of God the Father above the receding cornice, which forms the quasi-niche for the central group, as in the sculpture herewith represented. A pediment surmounts the whole, and above, on the wall, is a full length figure of the Saviour enclosed by angels. Corresponding to this in the south side is a statue of the Virgin.

BEDROOM AND KITCHEN, CASTELLO DI VINCIGLIATA, NEAR FLORENCE.

THIS most interesting castle presents an imposing aspect with its crowning towers, encircling walls, and battlements, standing as it does on the summit of a hill some two and a half miles from Florence. A splendid view can be had from its ramparts, and a journey out to see the place should not fail to be made by the excursionist. Tickets to view may be obtained at No. 14, Piazza Pitti, from the proprietor, Mr. Temple Leader. This gentleman, who is an Englishman, bought the property in 1855, and has since restored it, the architect being Sig. Giuseppe Fancelli. Considerable skill and ability have been shown in the work of reconstruction, and the rooms contain a vast collection of works of art and antique furniture, some of which may be seen by the two drawings accompanying these notes. The history of the Castle of Vincigliata commences soon after A.D. 1000. Its successive owners were the Visdomini, the Usimbardi, the Accordi da Figline, the Buonaccorsi, the Albizzi, and the Alessandri. These last, who had the property in their possession for several centuries, sold the castle in a greatly ruined condition in 1827. As a Mediaeval revival, the building certainly possesses an interest peculiarly its own, and the remains of the ancient structure were carefully retained in the rebuilding, which Fancelli carried out. The interior accords with the outside; but to the English architect probably the most interesting portions of the castle will be found inside, where the furniture, lamps, weapons, armour, clocks, and ornaments are arranged *in situ*. The walls of the "Sala del Consiglio" are enriched with frescoes above a panelled dado, and the ceiling is vaulted like the Armoury and Salotto da Colazione, where heraldic bearings enrich the spandrels. Our view of the brick-groined kitchen is taken looking out of "La Dispensa," which is level with it, and contains some fine chairs and a cabinet of rich detail. The sink and the kitchen fireplace, with the old spit apparatus, are seen in our drawing. We may give others at an early date.

THE TE DEUM.

THIS cartoon, designed by Mr. Christopher W. Whall, the well-known decorative artist, of Stonebridge, Dorking, is executed in water-colour and pastel, and forms one of a series of six panels illustrative of the Te Deum for a piece of mural decoration. The subject for this picture is the text—

"Thou art the King of Glory, O Christ.  
Thou art the Everlasting Son of the Father."

The original was exhibited last month in the New Gallery at the Arts and Crafts Exhibition.

CASTLE OF FREDERICKSBORG, DENMARK.

FERGUSON says, in his only too brief notice of this grand and really fine building, that it may be regarded "as another warning not to look for true art among people of such purely Teutonic blood as our cousins the Danes." This opinion must, however, be taken, of course, as the judgment of a purist, written with the idea of furthering a taste for Classical integrity of design; but nowadays eclecticism governs popular taste in architecture as in everything else, and fashion has turned its favour upon *baroque* forms, while some, more restless still after novelty, are directing their attention to uncompromising Rococo detail in their compositions.

Dutch crudities have found their imitators, and so-termed "Queen Anne" has been done to death, like the Gothic mania which went before, or the Japanese craze which a few years ago affected in a way the fancy of some cultivated decorators. The truth, of course, remains that in all these types, as well as those of the Renaissance of Germany, Belgium, and Denmark, there exists much that well befits modern uses and the scope of everyday building, and even in their more elaborate and grandiose specimens, as in the simpler examples, the architect, with judgment, necessarily finds style, method, and design, both worthy of study and imitation. The Renaissance of Denmark is comparatively little known in this country, and good illustrations of the principal buildings erected by "our cousins the Danes," are not to be found in any English architectural books that we are acquainted with. Rough sketches now and again have been given, or small unintelligible wood blocks figure in popular hand-books. For study, of course, detail is necessary, and this is what Herr Fred. Skjold Neckelmann has made a feature of in his valuable folio of photographic plates just issued by that indefatigable publisher, Herr von Ernst Wasmuth, of Berlin, under the title of "Denkmaeler der Renaissance in Daenemark."\* We cannot do better, therefore, than to accompany our drawing which we print to-day, from the Castle of Fredericksborg, with a brief notice of this most useful book to which we direct the attention of our readers. Comparisons have been made between the Jacobean art represented by Heriot's Hospital, or the Castles of Stirling and Edinburgh, and the Danish Castles of Elsinore and Fredericksborg. Fergusson indicates that he could almost believe they were the work of the same architect. Probably this was, to some extent, the case, and other buildings could be easily enumerated to endorse this idea. Christian IV. erected both castles, as well as the Exchange at Copenhagen, and he was the brother of Anne of Denmark, the Queen of our James I., who owed so much to the Scotch goldsmith, "jingling Georgie," the founder of the great Edinburgh Hospital. (For drawings of Heriot's Hospital see BUILDING NEWS, March 1, 1889.) Fredericksborg Castle stands on three islands, and its towers rise with an air of grandeur and graceful grouping, while its weather-stained walls declare its antiquity. Inside, the building has been done up, and many of the decorations and tapestries are modern. The view which we give is taken from the great quadrangle on the second island, and standing on what is called the Terrace, looking over the bridge which leads through the portal, in the middle of the screen, into the inner quad, where the big tower called the Kirchenturm rises in the centre of the left-hand wing, as seen in our drawing. The smaller octagonal tower known as the Koenigsturm, shown to the right of this picture, is one of the two turrets flanking the arcade in two stories which fronts the main building, in which are situated the principal apartments. The walls of the castle are of red brick laid in courses of headers and stretchers, with stone dressings everywhere. The roofs are covered with lead. The chapel, which occupies two stories in the left-hand wing adjoining the great tower, is a richly-groined apartment running north and south, with arcades on either side, and a gallery, triforium fashion, all round. In the aisles are pews, one in each bay of the arcade, with tall, carved fronts brought forward flush with the arches. There are two organs, one being placed in the gallery over the altar; but the principal instrument is at the north end, and it is particularly handsome. The altar has a triptych, beautifully sculptured, and the pulpit, boldly projecting from the second bay of the arcade, is an equally florid piece of work; in fact, every part of the chapel is ornamented. The font stands close to the altar. The Gothic-like windows are filled with very poor glass. This chapel is celebrated as the crowning-place of the kings of Denmark. The Knights' Hall, or what we should probably call a ball-room, is a somewhat overdone apartment, having every inch elaborated with ornament, from the marble floor to the coffered ceiling; but the plain general massing of the wall piers between the windows insures dignity and gives a solidity

which sobers down the over-elaboration greatly. The new tapestry is very good and interesting. The groined hall or "Rose," as it is called, has some wonderful plaster-work, the stags and other beasts reminding one of the ornamental work at Hardwick Hall, Derbyshire. The armour and rich dado woodwork give great character to this part of the castle. The Chamber of Waldemar II., is quite modernised, and has a hooded chimney-piece of marble and stone, calling to memory the hideous similar one which disfigures the great library at Blickling Hall, Norfolk, and put up at great cost some years ago by a decorative designer, who ought to have known better. The surrounding buildings and gateways to the castle are most interesting, and so are the gardens skirting the lake beyond. These at one time were most famous, and the park is a beautiful place. Most of the rooms in the building contain some feature worth seeing. Among the other specimens of the Renaissance of Denmark, brought together by Herr Fred. Skjold Neckelmann, in his book, to which we have referred, are the Exchange at Copenhagen, the Castle at Kronborg, the Rosenborg Castle, which is rich in old Jacobean furniture, and its marble rooms; the "Dyvekes Haus," at Copenhagen, and besides some other samples of Domestic work from the same place, he gives a whole series of the Holmenskirke, which furnishes several examples of curious detail. The church itself is plain; but the high altar, the great pulpit, and the monuments on the walls give it richness of effect, and enhance its importance. The seating too is worth noting. The Heiligengeistkirche is another specimen of similar character. The letterpress descriptions to the work are from the pen of Professor F. Meldahl, director of the Kunst Academy of Copenhagen. The printing and paper are all that could be desired.

"LADY MACBETH WALKING IN HER SLEEP" (ROYAL ACADEMY SILVER MEDAL CARTOON).

THIS prize design for a draped figure received the Royal Academy Silver Medal a week or two since, and is the work of Mr. Paul Raphael Montford, of Battersea. It represents Macbeth's guilty consort as depicted in scene 1, Act 5 of the Tragedy. Our remarks upon this and the other competitor's works at Burlington House for 1889, will be found in the BUILDING NEWS for Dec. 13th last.

YORK MUNICIPAL BUILDINGS.

For description, see page 10.

LUSTRE AND ANGLO-PERSIAN TILES.

THESE excellent Tiles have been designed by Mr. L. A. Shuffrey, and are made by Mr. J. C. Edwards, of Ruabon. The lustre tiles rival the finest examples of Mediaeval, Spanish, and Italian ware, and are unsurpassed as regards the gorgeous effect of their opalescent colour. The "Anglo-Persian" tiles are simply reproductions of the exquisitely beautiful ancient Persian tiles, which they rival in their design and softness of colouring. Our illustration opposite very inadequately reproduces the work itself, but enough is shown to show to what a height of perfection Mr. J. C. Edwards has attained in the manufacture of these really admirable decorative tiles.

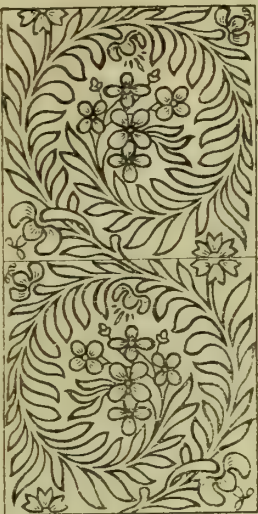
The question of erecting a new and larger Fine Art School for Wakefield than the present building in Bell-street has for several years past engaged the attention of the council of the institution. Plans for a new structure, prepared by Mr. William Watson, architect, of Wakefield, have been approved by the council, and also by the Science and Art Department. The tenders have just been let for the various works, and the building, which is to be commenced at once, will entail an expenditure of £5,000. Sir E. Green, M.P., will lay the corner-stone at an early date. All the work will be executed by Wakefield tradesmen.

A meeting of the vestry ratepayers and parishioners of St. Mary-le-Strand was held at the Vestry-house on Dec. 27th, at which the "betterment" clause of the Strand Improvement Bill was universally condemned, and a resolution was passed asking the Strand District Board of Works to use its best efforts to oppose and prevent the passing of the Bill.

Dante Gabriel Rossetti's "Beata Beatrix" has been presented to the National Gallery by Lady Mount-Temple.

\* "Denkmaeler der Renaissance in Daenemark." Ausgewählt von FRED. SKJOLD NECKELMANN. Berlin: Ernst Wasmuth, 35, Markgrafenstrasse.

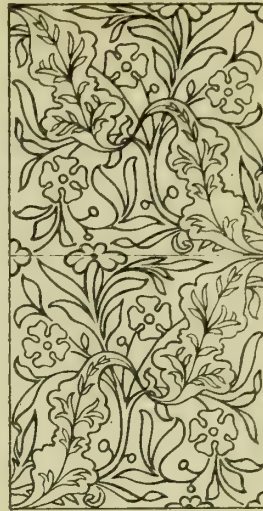




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## ARCHITECTS' REGISTRATION IN AUSTRALIA.

LAST month a large party of members of the Royal Victorian Institute of Architects visited Sydney on the invitation of the sister institute of New South Wales. At the dinner, which terminated the very successful proceedings, and which was held at Roberts's Hotel on the 8th Nov., Mr. Lloyd Tayler, F.R.I.B.A., President of the Victorian Institute, in proposing the toast of the New South Wales Institute, remarked that on the Victorian side they were engaged in a very great work affecting the architects' interest and the position they would occupy in public estimation. They had nearly concluded the incorporation of their institute. A Bill for the Registration of Architects would shortly be introduced into their Parliament. (Applause.) A few years ago the medical community in Victoria were in the same position as the architects were now. Any man who chose could simply put up a brass plate and call himself an architect, and those who were qualified felt that they were unworthily associated with them. They were therefore going in for a Bill which would be so comprehensive that no one with the slightest claims to be called an architect would be excluded from it. They were obliged to consent to this, in view of the great good they anticipated in the future. They were most anxious to follow the British Society of Architects as far as possible. Their Registration Bill was now drafted and waiting settlement. The rules applicable to an old country were not always applicable to a new one, and, as regarded by-laws, there was some little difficulty. They should insist that if a competent man did the work he must charge his 5 per cent. That was a necessity in a new country.

## COLD AND DAMP HOUSES.

A LARGE proportion of the colds and ailments of the respiratory organs suffered during this season of the year are attributable to the want of proper measures being taken by builders in laying foundations, and in executing the basements of our houses. Hundreds of the houses let in the suburban districts of London are built upon clay and marshy ground, often of "made earth" and rubbish. The present by-laws as to foundations and building sites have been in operation only a few years; but previous to that time houses were built upon decaying matter deposited by dust contractors, the foundations of walls were laid on the damp soil without concrete or proper courses to prevent the rising of damp in them, and damp earth was allowed to extend above the basement floor level. By the legislation of recent years, these matters have been more looked after by the district surveyor. We may point now to a few of the causes which contribute to cold and uncomfortable houses. First and foremost is the imperfect arrest of dampness from the soil. The only way of securing a healthful house is to cut it off as much as possible from the soil on which it stands. Ideally, one may imagine a house standing on stilts or piers, having a free current of air below, and a stair up to the floor; but this would be unattainable under existing arrangements. The next best thing is to obtain a well-ventilated cellar, or, what is almost as good, a sufficient air space between the ground and the floor, this space being well ventilated by bricks, and the ground covered with asphalt or concrete. Neither of these essentials is found. There is an air space below the floor; but it is generally a rough and unlevelled surface of rubbish, with the air bricks so scantily introduced, and they often clogged up by earth or dirt, that the air is in a state of stagnation, and the emanations from the soil are sucked up into the house by the warmth and fires. Another danger is added if a disused cesspool or a drain is beneath the house, and who knows how many of our houses are built over these receptacles of a past civilisation? The many houses and tenements built almost level with the ground are particularly open to suspicion. A fast-decaying floor or a mildewed appearance of dampness, or musty smell, under oilcloth or linoleum in the hall or passage will reveal the evil. On examination it is found, on taking the rotten boards up, that the joists are close to or rest on the ground, that the bond timber is rotten, or no damp-proof course inserted. Hundreds of small houses are found yearly in this condition of incipient decay, which

often begins under the passage floor, near the staircase or back door. The only remedy is to excavate the soil, underpin the walls, and lay a damp course over soil, replacing the timber on sleeper walls of proper construction. The want of ventilation is usually found to be the cause.

Houses having half-basements or parlours below the ground floor are very common in the Metropolis; but these as living rooms are highly objectionable, with the exception of those which have not been excavated, and are built up from a lower natural level in the rear, in which case the lower story becomes the ground-floor story of the house behind. Then it becomes necessary to form a good area or retaining wall in front to give light to the front room, or, if there is no front room, to well line the wall forming the back of the room in the rear with some bituminous compound. It is better, perhaps, to make it thick and hollow, ventilating the space. And speaking of half-basements leads us to dwell on one or two points connected with dry areas. Walls built against earth ought to have an area formed along it of its whole height. On the return side of semi-detached houses the side wall must be built often without any area, and in this case the space next the wall for a foot or more should be filled in with broken stone, and a drain be placed at bottom just below the level of footing. An asphalt coat on the outer face of wall returning in the joint at the floor level should invariably be put. A more efficient protection would be an area covered over next the outer wall, called a "French intercepting drain," or a concealed area. Sometimes an impervious tile-facing has been placed against the outer face of a wall so built; but of all these plans the open ventilated area is the best. We have here referred chiefly to foundation and basement measures; but the dry wall and the well-protected roof are other necessities of warm and healthful dwelling-houses.

## BOOKS RECEIVED.

*The Ancient Laws of Wales*, by the late HUBERT LEWIS, B.A., of the Middle Temple, &c. Edited by J. E. LLOYD, M.A., Lecturer in History and Welsh at the University College of Wales (London: Elliot Stock, Paternoster-row). is an interesting work attempting to "trace in the local institutions, of Mediæval and Modern England vestiges of a state of society similar to that described in the Welsh Laws." The author discusses first the Welsh evidence, and next Old English institutions, both show clearly a common British and Aryan origin. Mr. Lewis describes in detail the social system of Wales, how it was based on the freeholding heads of households who belonged to a joint family or *Tref*, belonging in its turn to a kindred or *cenedl*, having a chief (*pencaeredl*) and elders. The kindreds were organised into a larger *Tref* called *cantref*, and this was divided into *cwmneds* or neighbourhoods for convenience. The lord of the *cantref* held a legal court, over which he presided. In these courts the freeholders acted as judges, decided disputes under sanction of their administrative head. The *cantref* with its court was a perfect organisation, and remained for a long period under certain modifications, sometimes combining under one prince. These free brotherhoods contained various orders. Those who were strangers (*alltuds*), and settled within the *cantref*, became in time subordinate members of the community, with lands, rights, and privileges, but were still under burdens, and had no share in the privileges of the brotherhood. The Free Brethren, how they held their lands, the rules of inheritance, rights of succession, and the lord's rights over his *alltuds* and *aillts* (the latter being a term to denote those who forfeited their privileges) are discussed. The author points to the parallel between these elements of the Welsh social system and those of England. Thus the settlement and emancipation of *alltuds* explain how a manor in time included freeholders. The English rules as to strangers show a similar procedure. The private lord having assumed his right to the territory over the lower tenants, he gave out wastes to free men, and the dues and services were rendered to him. The manor became by usurpation a "small hundred" of which the tenant held. The author shows the similarity between the Welsh and Anglo-Saxon laws. Anyone receiving a stranger must not keep him more than three nights without presenting him to the court, when, unless he departed, he was assigned to

villanage. The Saxon "folkmete" took the place of the royal court. The enforced bondage of strangers is common. Again the evidence points to a remarkable similarity between the "hundred" of England and the *cantref* of Wales, and the number 100 is a territorial unit found in many other countries. So with the Welsh and English manors. Some interesting facts and much learning are given bearing on these and other questions, into which we cannot possibly enter. The chapters on the English manorial courts, showing that the court corresponded to the Welsh *Taeogtref*; the feudal succession, showing how Alodial rules became a part of the feudal system; commons and local nomenclature are questions possessing much interest both to those engaged in the study of the law and to antiquaries. Mr. Lewis and his learned editor, Mr. Lloyd, have shown at least that a very remarkable analogy exists between Welsh and English institutions, which undoubtedly supports a common British origin. Considerable research was called for, the examination of numerous documents, amongst them the Laws of Hywel, and the differences in the three codes of that law, was a labour calling for prolonged study and learning.

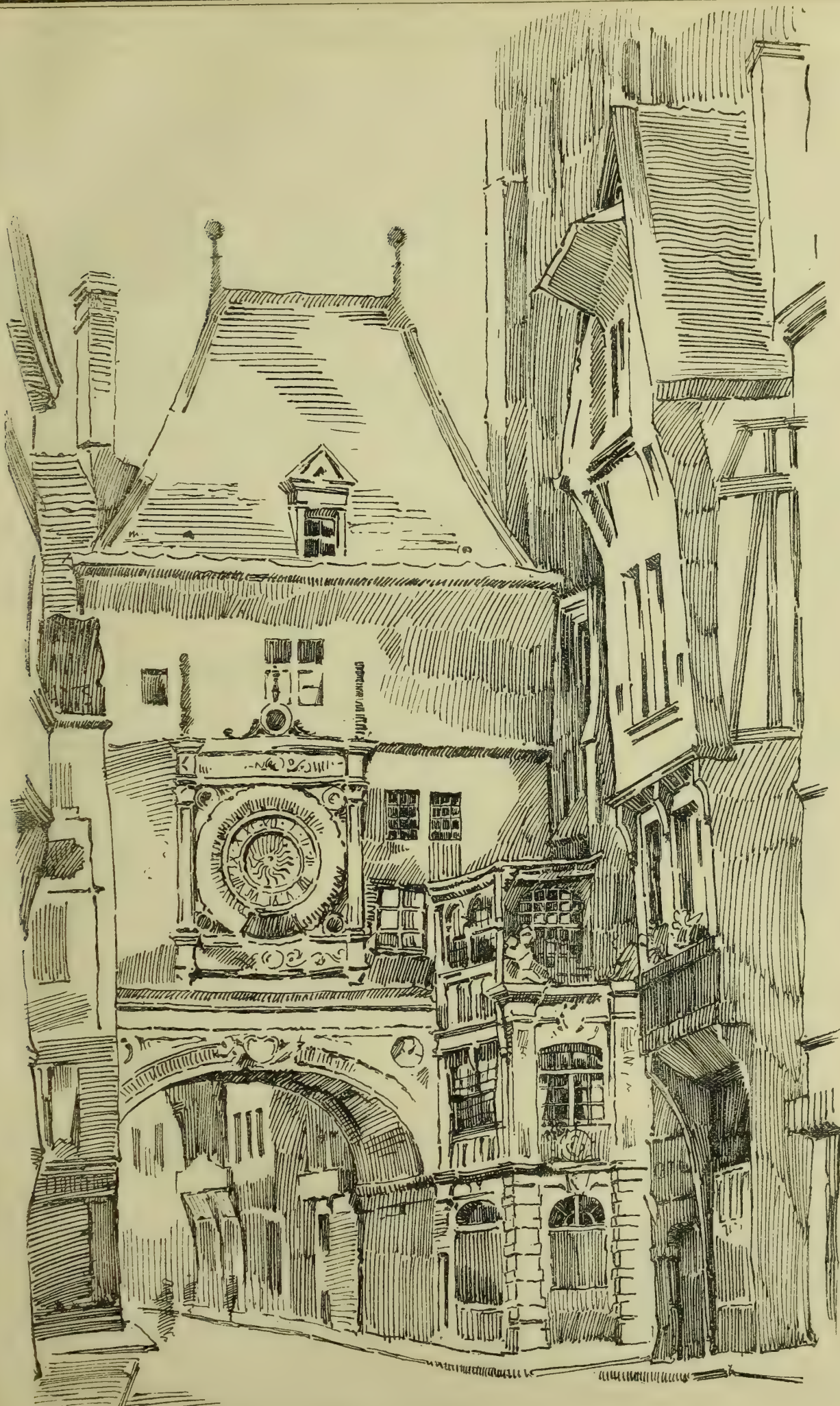
—*Building Construction*, by CHARLES F. MITCHELL, lecturer on Construction, Science and Art Department, &c., second edition (London: B. T. Batsford, 52, High Holborn). This new and revised edition of a work we reviewed on its first appearance shows how great has been the demand for a book of this description. The author, Mr. C. F. Mitchell, lecturer at the Polytechnic Institute, Regent-street, has in this elementary course given students a useful summary of the different branches of construction, each trade being revised by specialists. The engravings are accurate and exceedingly well executed. For students preparing for the May examinations of the Science and Art Department no better text-book can be given.—*The Anatomy of Pattern*, by LEWIS F. DAY (London: B. T. Batsford), is a second edition of a very useful manual, to which we have previously drawn attention. The title best explains the intention of the author, whose mode of pattern dissection, applied to all kinds of patterns, cannot fail to be of value and suggestion to all students of art, and especially the decorative artist and designer.—*Revived Guild Action* (second edition), by GEORGE SHAW (London: Simpkin and Marshall; Kent and Co., Limited), is an account of the steps taken by the Court of the Plumbers' Company to revive the action of the company in the training of the plumbing craft. To Mr. Shaw was committed the task of preparing a pamphlet on the subject, and no one could have performed the work with more efficiency and ability than the Master of the Company. The preface contains an interesting history of the movement and the resolutions which led to the establishment of examinations for plumbers and their registration. The suggestions to the Warden and Court of Plumbers' Company are important. Mr. Shaw herein shows the benefits conferred on crafts and the public alike by the old organisations or Trade Guilds, which provided for excellence of craftsmanship, and the mischievous results of the modern organisations, which have tended to separate the workman from the employer and to disorganise the classes; but he also points to a revival, in part, of the old corporate system in several trade establishments who have a corporate body, with special rules and privileges for the employes, such as sharing in the increased profits of the business. The trades unions make no provision for efficiency of their numbers, and herein lies the weakness of the modern system. Mr. Shaw next shows the necessity of the revived action in the case of plumbers, and describes the extent and importance of the plumber's work as a sanitary requirement. The appendix is full of information, and Mr. Shaw's little pamphlet will be read with interest.

## LA GROSSE HORLOGE, ROUEN.

THIS picturesque archway, erected 1527, connects the adjoining tower with the old Hotel de Ville. The sketch is by Mr. Arthur H. Hind, A.R.I.B.A.

The St. James's Theatre is being redecorated and re-upholstered by Campbell, Smith, and Co., 75, Newman-street, Oxford-street, London, W.





LA GROSSE HORLOGE, ROUEN.—*Sketched by A. H. HIND, Leicester.*



# ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**NORTHERN ARCHITECTURAL ASSOCIATION.**—The second ordinary meeting of this association was held on Monday night in the Old Castle, Newcastle, Mr. Joseph Oswald presiding. Mr. J. H. Morton, F.R.I.B.A., read a paper bearing on the paper of Mr. W. H. Dunn, read at last meeting, on "Architects as Scientists." In Mr. Dunn's paper the merits of engineering had been contrasted with the skill of architecture to the disparagement of the latter. He (Mr. Morton) thought that the time had gone by for them as architects to pretend to know all things. Architects had to try to know too much as it was. When, therefore, any man had work to design of any real importance, which was out of the ordinary run of his practice, he need not be ashamed to say that he had called in the assistance of an engineer. He would even venture to suggest that the architect who in these advancing days did not get an engineer to assist him in his design made a mistake and endangered the interests of his client. One the other hand, why should the engineering constructor not occasionally call in the aid of the architectural designer? Why should all our building operations of the so-called engineering order—viaducts, bridges, great roofs of railway stations, &c.—be left barren and unfruitful of grace, because the designers of them professing nothing of the artistic spirit themselves, assumed that it had no connection with their work? Certainly the most enthusiastic could not call the Forth Bridge a "thing of beauty and a joy for ever." However great a triumph of engineering skill it might be, he ventured to assert that it was one of the ugliest structures in Great Britain. Let them contrast that structure with the Tower Bridge across the Thames, designed by the late Sir Horace Jones, who was associated with Mr. Wolfe Barry in carrying out the work. Certainly the structure was on a much smaller scale, and under vastly different conditions; but it was acknowledged by architects and engineers alike to be a most picturesque one. With regard to the decay of stone in buildings, a firm in Leeds had produced a material for glazing stone so that a building might be enabled to be kept clean by means of the rain. The stone was glazed before being fixed, at so low a temperature as not to injure the stone. He thought that the education of students was worthy of the consideration of that association, as, if the profession was to hold a high place in the estimation of the public, the standard of excellence should be a high one. He very much feared that as a profession there was an absence of culture among many of its members, and that it was open to the most illiterate persons to adopt the name of architect and to practise the art. Let them bar the entrance to their profession, as had been done in others, by the test of skill and attainments, and he believed good would result, as by raising the tone of the individual admittance to their profession would be an honour and a distinction, better men, both socially and intellectually, would be tempted to join them, and inferior ones would be deferred. A discussion followed, in which Mr. Plummer, Mr. Moscrop, Mr. R. F. W. Rich (secretary), Mr. Dunn, and the President joined.

## COMPETITIONS.

**FREE LIBRARY, NOTTING-HILL.**—In a recent limited competition for the proposed new free library at Ladbroke-grove, Notting-hill, W., plans were invited from eight architects nominated by the commissioners. At the final meeting held to consider the plans, the design bearing motto "Tree of Knowledge" was selected, the authors of which were found to be Mr. T. Phillips Figgis, A.R.I.B.A., and Mr. H. Wilson.

St. Allen parish church, Cornwall, has just had a three-light painted glass memorial window erected in it by Messrs. A. L. Moore and Co., Southampton-row, London. In the left-hand light the subject illustrated is "Christ Restoring Sight to the Blind"; in the centre it is "Christ Blessing Little Children"; and in the right hand "Christ's Charge to His Disciples." Above and below there are canopies and bases in the Decorated style, corresponding with the shape of the window.

Mr. Littler, C.B., Q.C., Chairman of the Middlesex County Council, will present the Government prizes and certificates to the successful students of the Hornsey School of Art, Crouch-hill, on Wednesday evening next.

# Building Intelligence.

**FLIXTON, SUFFOLK.**—There has just been completed a memorial chapel to the Adair family at the west end of the north aisle of the parish church at Flixton. The chapel has been built at a cost of £900, borne by Sir Hugh Edward Adair, Bart., on an octagonal plan in the style of transition from the Early English to the Decorated period. Externally the walls are of rubble flint, with Ancaster stone dressings and angle buttresses, with hipped roof of Staffordshire tiles, surmounted by a gilded cross. The roof bosses are carved with the quarterings of the Adair family. The windows are plain glass, with slightly-tinted borders. The chapel measures 12ft. 9in. by 10ft. 7in., and is 14ft. in height. The floor is of mosaic in red, white, and dark grey Devonshire marble. In the centre, on an alabaster pedestal, is a life-size statue in white marble of the Lady Theodosia Adair (the wife of the late Sir Shafte Adair, afterwards Lord Waveney) in a kneeling posture, the work of the late J. Bell, sculptor. Lady Adair died 1871, aged 61 years, and was buried in the family vault in the chancel. The architect was Mr. Mr. F. B. Wade, F.R.I.B.A., Victoria-street, London. The work has been carried out by the contractor, Mr. John Thompson, of Peterborough, under the superintendence of Mr. R. M. Searle, clerk of the works.

# Engineering Notes.

**THE INVERNESS AND AVIEMORE RAILWAY.**—At a meeting of the directors of the Highland Railway at Inverness on Friday, tenders for the construction of the works of the Carr Bridge section of the new direct line from Aviemore to Inverness were considered, and it was unanimously resolved to accept the offer of Messrs. John Ross and Son, contractors, Fearn, Ross-shire. The length of the section is 6 miles 917 yards, and there are in course of the distance 19 bridges and culverts for roads and streams. The total contract price is £27,733, but the Railway Company provide the permanent way and fencing. Messrs. Ross and Son have only recently made the line from Keith to Buckie for the same company. The contract stipulates for the line being open to the public by the 1st of May, 1891. Arrangements are now being made for letting the contract for the second section of the line, extending from Carr Bridge to the River Findhorn.

The Jubilee town-hall at Linlithgow, built at a cost of £3,500, was formally opened by Lord Rosebery recently.

The tower and spire of Holy Trinity Church, Scarborough, have now been completed, and the Archbishop of York preached a special sermon in connection with the undertaking on Sunday.

Mr. Chester, one of the contractors for the Thirlmere Aqueduct, has brought an action against the Manchester Corporation to restrain them from acting on the notice given on Christmas Eve to seize and take possession of the works for which he has contracted, and the plant and materials thereon; and on Saturday afternoon last his counsel, Mr. Ashton Cross, obtained from Mr. Justice Denman, sitting as vacation judge, an order for an injunction restraining the corporation from taking possession of the works and plant over the first motion day of next sittings, the 11th inst.

A meeting of the Worcestershire Jubilee Memorial sub-committee was held at the Shire Hall, Worcester, on Tuesday, for the purpose of having an interview with Mr. Brock, A.R.A., and inspecting a model of the Worcestershire jubilee memorial. The model was unanimously approved, and Mr. Brock will now proceed with the completion of the statue of her Majesty in accordance therewith, and it will be placed in front of the Shire Hall in May next. The cost of this statue will be £1,700. It will be of white Carrara marble. The figure of the Queen will be wrought out of one block, weighing 17 tons, but which when it leaves the sculptor's hands will weigh nine tons. The statue will be something more than life-size, and will stand upon a plinth, which will rest upon a massive pedestal also of white marble. Beneath this is a sub-base and a granite foundation rising in three steps. The highest point of the statue will be 23ft. above the ground level. The Queen stands crowned, and wearing a robe of State; in her right hand she holds the sceptre, and in her left she supports the orb.

## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. FASSMORE EDWARDS.

## TERMS OF SUBSCRIPTION.

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## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LL, LIII, and LVI, may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—Major R.—P. and F.—R. G. T.—E. G. T.—C. C.—W. O. and Son—E. H. B.—J. R. C.—W. M. M.—J. D. and Son—R. L.—W. T. and Son.

## "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Mac," "A in a circle," "Wal-laby," "The Red Rover," "First Attempt," "A. G. in a circle," "West Anglian," "I Try," "Dr. Jekyll," "Sarchedon," "Niger," "Bunya," "North Star," "Dot" (if you do not put your correct name and address on the back of every drawing you must not expect to have them returned), "Streona," "Syak," "Renaissance," "K. W. T.," "Argus," "Glaucus," "Menehaus," "Nox," "Paul Jones," "Multum in Parvo," "Lord G.," "Coverae," "Q. E. D.," "Y in a circle," "Tyne," "Reference."

H. J. PALMER. (No; the coach-house and the stable and the lodge are all to form one block of buildings.)—"Rock." (We cannot undertake to return drawings to corrected addresses. Each drawing must have proper address on the back and name of the author.)—L. J. NEWTON. (See conditions and rules published in BUILDING NEWS for October 25, 1889.)—A. P. FODEN. (See last answer.)

# Correspondence.

## ARCHITECTS' REGISTRATION BILL.

To the Editor of the BUILDING NEWS.

SIR,—Permit me, through the columns of your valuable paper, to state that I sincerely hope the above Bill will ultimately become law, although I believe it will be the means of excluding many who, like myself, now practise as architects without having served under an efficient master, simply because we expressed a taste for drawing, or that circumstances threw such a profession in our way as a means of earning a living. Believing this, in conjunction with one of your recent correspondents on this subject, I cannot agree to the clause which enacts that all now practising as architects, or all those practising from a given date, are to be made "professionals" by "a stroke of the pen and an annual subscription." I cannot, however, concur with the idea that the Bill should become compulsory immediately on its being passed into law, and for this reason: whereas, on the one hand, the retention of the clause referred to



would make "professionals of all men," so to speak, on the other, should the Bill be put into action immediately on its becoming law, the effect would be that all those who have not passed, say, the R.I.B.A. examinations would be made "quacks," and as such would be severely handicapped until they had passed the necessary examinations. This would be, I think, an injustice to those who have been practising for a great many years, and whose abilities are undoubted. What I would suggest is this: That a Bill be introduced embodying the spirit of qualification by examination, such a Bill not to be enforced for, say, two years from the time of its being made an Act. This would give all those who have not as yet passed any such examinations as the R.I.B.A. an opportunity for so doing. I launch this idea with the hope of seeing others' opinions on the matter. I would also add that I hope the examinations will not be of such a nature as to exclude those who do not come up to the standard of first-class architects; but that they shall be of such a nature that principles of design and building construction shall be indispensable, leaving experience to bring the best men to the front.—I am, &c., FRED. W. MCCOSKRIE.  
Grampound-road, Dec. 30, 1889.

# APPLIED MECHANICS FOR ARCHITECTURAL STUDENTS.

SIR,—Having been fully engaged of late, I have paid little heed to the articles under the above title which have been appearing in your paper, until my attention was called to them by a letter from Col. Seddon in your issue of Dec. 27. The errors which he pointed out seemed so extraordinary that I could scarcely believe a well-known man like Mr. Tarn could have fallen into them; but on investigation I find that the case has by no means been understated. The author appears to have forgotten that the stress diagram depends upon the polygon of forces; he has omitted to show how members in compression and tension can be distinguished from one another; and, lastly, he fails to point out with reference to Fig. 10 that, though a wall may be theoretically stable when the resultant pressure falls within the base, yet if it fall too close to one edge the material will probably crush.

Col. Seddon is to be thanked for his watchfulness. Last year he corrected me, though it was long before he convinced me, when writing upon a similar subject, and now he points out where another writer is wrong upon a matter which I worked out correctly then.—I am, &c., G. A. T. MIDDLETON.

SIR,—I would not trouble you again, but being the only one who has been singled out by name, and my correction of Mr. Tarn's wrong theories misrepresented and evaded by him without being heard in my own behalf, in fairness I ought to be allowed to state this fact, as Col. Seddon's letter in your last issue confirms my corrections as being proper, and therefore I need not now repeat them.

I feel sure that a world of students will be grateful for the vigilance of Col. Seddon on their behalf. I say a world of students because your columns are not only appealed to by English youth at home here, but as well as the youth of other nationalities, also by those in America, the Colonies, &c., as I know.

You will, I am sure, understand how important it is that only correct theories, in such a vital subject, should be promulgated through your columns, and impossible and confusing conundrums be avoided.

Mr. Tarn made a reference to his article on "Wind Force, Shoring, &c.," in your volume for 1877. Of course, your young readers in London and the principal English cities may have access to a volume nearly a quarter of a century old, but to expect that those in Colonial and foreign countries, who no doubt form a large and important majority, can have such facilities is absurd, as I know from experience. I learn that Mr. Tarn's theories on that occasion were likewise adversely criticised by many correspondents, amongst whom was Professor Unwin.—I am, &c., ALEX. BLACK.

## CARRIAGEWAY PAVING.

SIR,—It would appear as if the question, "What is the best all-round material for paving town carriageways?" is likely to be seriously considered without delay, and no wonder when

the disappointment as to result of the use of asphalt in the City proper, and wood in the "greater city," for fifteen years has been so patiently borne for the sake of peace and quietness.

At last public attention is fully raised, daily journals are full of abuse of asphalt, and house-owners are calling out for "wood." The City streets are bound to remain as they are till they gradually wear out, although, it may be, both engineer and street committees would not object to try something else. At any rate, no more need be laid down here. Meanwhile, wood is pressing its claim under the auspices of the Horse Accident Prevention Society; but though it is a trifle less noisy, it can hardly be considered less slippery than asphalt, taking all weathers, and our predominating humidity into account.

Beyond the trial of indiarubber abroad and Australian Jarrah wood blocks at home, I do not know of any trials made, or practical suggestion put forth, except "lavish sanding" of a bad surface.

Will the London County Council take up the question?—will the Strand District Board of Works try to find a material the use of which may save their main artery of traffic being in a state of perpetual block for repair, by the time the 20th century dawns, or must we look to that ancient body of experts, "the Worshipful Company of Paviers," which is supposed to be considering essays on the subject sent in pursuant to public advertisement? The verdict of the company, if ever "found" and delivered, ought to settle the material of the future for the next half-century.

I suppose that engineers and road-surveyors will agree that for a sound, economical, permanent road no better material than 6in. by 3in. granite "setts" has been devised, the sole drawback being the noise of iron-tired wheels and hoofs. The first cost is not more, and its maintenance  $\frac{1}{10}$ th to  $\frac{3}{10}$ th of the other kinds. True, it is a trifle slippery in dry weather—with which we are not much troubled in this country.

What I venture to suggest through your columns is, that a level carriage way in cities be paved with 4in. by 7in. "setts" formed of the hardest sandstone to be procured, roughly spauled on top and bed, truly worked at joints, and top arris chamfered to give firmer foothold to the shoes. To bed it upon thin sand (upon sound concrete), joints partly run with asphalt, and partly with coarse lime grout.

When the top is worn down, reverse and relay. The same stones once turned would last three replacements of wood, and have none of the disadvantages of slipperiness; such grit as was caused by attrition would prevent sliding of the polished shoe, which would be roughened thereby. On rising gradients similar "setts," but of Kentish rag, as formerly much used in a crushed form for hilly "macadam" roads.

The root of the evil lies not so much in the road surface as in the mistaken treatment of a horse's hoof by unscientific—if not ignorant—farriers; but the time is not yet arrived when science (?) and nature will be in accord as to this. Without shoes of iron, and with a solid wheel or silent tires, there will be no noise to object to, and then a granite road will be no longer a *bête noir*; but as the strongest surface, will be the best for traffic and for economy.—I am, &c.,  
Hampstead, Dec. 30, 1889. E. W. H.

## A CURIOSITY.

SIR,—How is this for "high"? Who says the New Year doesn't open well for architects?—  
TO BUILDERS AND CONTRACTORS.

THE Guardians of the Wantage Union are prepared to receive PLANS, SPECIFICATIONS, and TENDERS, for the erection of the Workhouse of a Tramp Ward, full particulars of which can be obtained from the Master.

Sealed Tenders, with Plans, &c., to be sent to my Office at Wantage, on or before MONDAY, the 20th of January next, and will be opened by the Guardians on the following day.

EDWARD ORMOND,

Clerk to the Guardians.

Wantage, 18th December, 1889.

Surely the successful competitor deserves a lodging and rations in the Tramp Ward when built!—I am, &c.,  
NOR IN IR.

In the fire which totally destroyed the Royal Palace of Laeken on New Year's Day there is too much reason to fear that all the pictures, many of first-rate importance, the magnificent pieces of sculpture in the Rotunda, and the great library, perished. It is satisfactory to learn that the famous Gobelin tapestry was saved.

## Intercommunication.

### QUESTIONS.

[10191.]—Haddon Hall.—Will some reader kindly inform me of what stone Haddon Hall is built, and who was the architect or architects of the various periods?—MINERVA.

[10192.]—Steaming Windows.—Can any of your readers inform me how to construct a shop window inclosed with a show-case so as to avoid steaming? The lights are now kept out of the windows, and the glass is all right until case is opened, then the warm air immediately condenses on the cold glass. Can anyone say whether they have overcome the difficulty by ventilation or otherwise?—H. T.

[10193.]—Measured Drawings.—Which is the best book to get with hints on measured drawings, especially as to getting the centres for tracery and arches; also the method of measuring mouldings? I have looked in several of your back volumes, and have got a few hints; but many of the questions are unanswered. Could some winner of medal for measured drawings give a short article in your columns, giving particulars and method used?—C. F. B. SHILLITO.

[10194.]—Valuation of Mines.—Can any of your readers tell me of any book that gives information as to the valuation of mining property, more particularly coal mines?—CARBON.

[10195.]—Carpenter's Notice.—A carpenter employed by the day, but receiving his wages at the end of every 24 days: How many days' notice can he legally demand for a dismissal?—UNCERTAIN.

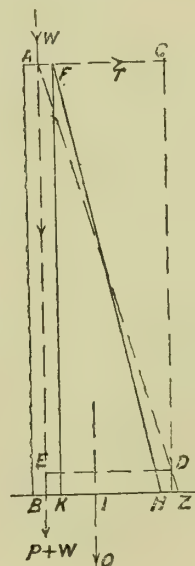
[10196.]—Galvanised Iron.—Are galvanised iron cisterns and pipes injurious to drinking water?—WATER.

[10197.]—Bacon Smoke-House.—I have a smoke-house to build; but never having seen anything of the kind, am quite at a loss how to proceed. The place is to be sufficiently large to smoke twelve sides of bacon at one time. Will some reader experienced in this kind of work kindly give me full particulars, and, if possible, small plan and section?—PERPLEXED.

[10198.]—Diatomite or Kesalghur Bricks.—Can anyone inform me if these are now made and used, and the place, and how made, or where information could be got about them? Dobson, in "Brick and Tile Making," Weale's series, page 21, sec. 16, mentions them.—DIATOMITE.

### REPLIES.

[10175.]—Buttress.—The problem set by "J. W." appears to be intended as an exercise on the articles upon "Applied Mechanics," which are appearing in the BUILDING NEWS. We may presume that the case is a





the direction of T is 18ft., and, putting  $x$  for the horizontal distance B Z, we find  $x$  from the equation—

$$17 \times x = 5\frac{1}{2} \times 18;$$

from which we get  $x = 5.6$ ft. We now have to find the strength of buttress which will prevent the wall being overturned; and we will suppose that the buttress is triangular in section, as FKH, that its breadth is 2ft., and its weight Q, in cwt., is  $18 \times y$ , where KH is  $y$ . The weight Q will act vertically through the point I, where KI is  $\frac{1}{3}$  KH, or  $\frac{y}{3}$ ; and IH =  $\frac{2}{3}y$ . Then the weight of

the buttress in tons is  $Q = \frac{9}{10}y$ ; and the equation from which to determine  $y$  is—

$$(W + P) \left( y + \frac{7}{12} \right) + Q \times \frac{2}{3}y = T \times 18;$$

$$\text{or—} \quad 17y + \frac{7}{12} \times 17 + \frac{9}{10} \times \frac{2}{3}y^2 = 5\frac{1}{2} \times 18,$$

which reduces to—

$$y^2 + 2\frac{2}{3}y - 141 = 0;$$

from which we find  $y = 4\frac{1}{2}$ ft., so that the base KH of the buttress must be at least  $4\frac{1}{2}$ ft. wide to prevent the wall from being pushed over. The collar-beam roofs are very treacherous things to employ, except where the span is small and the pitch is high. I have known walls 2ft. thick and about 12ft. high pushed out of perpendicular by a collar roof of only 20ft. span, and sloping nearly  $60^\circ$  with the horizontal. Tredgold remarks that "failures are often observed from adopting this form of roof."—E. W. T.

[10182].—**Painting Ironwork**.—Good red-lead paint will give satisfaction, and all the rust should be carefully rubbed and brushed off with a hard steel brush.—**CLERK OF WORKS.**

[10184].—**Ventilation for Room Lighted by Gas**.—Insert a good large, well-made, mica-dap ventilator under the ceiling, and connected to the flue from room fireplace, or the connection may be made to the nearest smoke flue in use. The ventilator should have a clear air-space of, at least, 1sq.in. to every 100c.ft. of space in the room.—**W. B.**

[10186].—**Echo**.—Fix a few fine wires across the room. The connections to the walls should be about 14ft. above the floor. The wires can be fixed in the form of a truss—two across the room, with three from end to end.—**W. B.**

[10188].—**Furniture**.—The date of "A. C. W.'s" grandfather's japanned-case clock would be largely dependent upon the design of the case. They were in fashion from about 1770 to 1815. The earlier cases were square or domed at the top. Those of the latter were ornamented with straight or scrolled pediments. The brass dial obtained throughout this period, as did the oak cases. A change of fashion brought in the white or enamelled dials and the mahogany cases. There is no transition between the japanned cases and the mahogany cases; but the reverse is the case with those of oak and mahogany, for the late work cases were banded, moulded, or inlaid with mahogany, which, although a fashionable wood, was very costly. In the latter half of the last century japanned furniture, mostly in the form of cabinets, was very fashionable. This class of furniture was imported from China in the tea-ships. Its introduction into the drawing-rooms of the period created a desire for other furnishings to match, and hence the clock case became a special feature. This japanning of wood as an art was unknown in England; but it was practised to some small extent in Holland. The earliest japanned cases were made in London, and sent with the tea-ships to be japanned in China. This was a costly process, and these ornate clocks could only be indulged in by the opulent of the day. Specimens of these clocks may be found in the mansions of the nobility. They were known by a peculiar Chinese name attached to the lacquer—a name I have not been able to recover. These original clock cases are known to experts, and when in the market realise high prices. The trade done in London in these early cases had its counterpart in Holland; but it was seriously clogged by the time absorbed in the passage out to China via the Cape in the old sailing vessels, in the process of japanning in China, and in the return passage. It was a question of years from the making of the cases to getting the clocks into stock. As may be presumed, the demand exceeded the supply. At this stage the Dutch people put themselves into a position to deal with these large articles of furniture, and they speedily gathered the whole trade into their hands. This may be called the second, or middle, period. This Dutch work was imported in the ready-made case, or English cases were sent over to Holland to be japanned. This stage marked a decadence in art, for, at best, it was only a poor imitation of the earlier or genuine work. The disturbances following upon the Revolution in France was a great blow to this trade in Holland. The import was at one time interfered with, and at another it was altogether stopped. To meet the still-existing demand in this country, japanning was executed in London, no doubt largely by imported or Dutch workmen. This may be called the third or closing period. It was only of short duration, for the business of war absorbed all others. This reminds one of Gilbert's lines—

"Art stopped short  
In the cultivated court  
Of the Empress Josephine."

This art of japanning, as applied to clock cases, has long been dead in England; but it survives in Holland. Those curious on this point may be pleased to learn that this class of work is still performed in Amsterdam. The subject of our grandfathers' clocks is one of great interest. So far as my knowledge extends it is one of our few unwrought or unworked fields. For the above notes I am indebted to Mr. G. W. Dalton, antique furniture dealer, Scarborough, who, in collecting information, on his part was indebted to Dutch traders in London of old standing.—**WM. STEVENSON, The Park, Scarborough.**

Mr. Harry Hems, of Exeter, gave his customary feast to old people on Christmas Day, when about three-score elderly citizens of both sexes were liberally feasted.

## Our Office Table.

The Liverpool Corporation have for some time past been engaged with their town clerk and engineer in drafting a new code of by-laws as to building in the city. The proposals have now been submitted to the Local Government Board, who refused to pass them until certain modifications have been made, one of the more important of these being the deletion of a clause by which it was intended to give the Building Act committee of the City Council power to make concessions at their discretion from time to time on the representation of deputations of ratepayers and others—a clause suggested by the engineer. Copies of the proposed by-laws have been sent to the Liverpool Architectural Society and the local branch of the Master Builders' Association, and the matter has been postponed by the committee of the City Council for a week, in order that these societies may meet and bring before the committee any suggestions that occur to them.

The January issue of the *Architectural Association Notes* contains the following announcement, signed by Mr. Herbert D. Appleton, editor, Mr. R. L. Cox, sub-editor, and Mr. H. W. Pratt, Treasurer: "In consequence of the decision of the committee with regard to the publication of A. A. Notes, we have tendered our resignation, and therefore take this opportunity of thanking our readers for the kind indulgence with which they have received our efforts to make the Notes a success."

EXAMINATIONS of candidates for Plumbers' Registration have been held in Dublin. Mr. R. J. Lyne, United Operative Plumbers' Association of Great Britain and Ireland, and another master plumber were present to represent the London Board of Examiners. The local examiners were Messrs. W. Baird, H. Kerrill, J. Smith, D. P. Curtis, T. W. Little, master plumbers; Messrs. H. Murphy and J. Shiels, operative plumbers; Messrs. Spencer Hart, C.E., City Engineer, P. F. Leonard, C.E., and W. Kaye Parry, C.E., architect. The examinations included tests of practical work and sets of questions relating to materials, construction, and sanitary arrangements. Forty per cent. of the candidates succeeded in passing the examinations. Similar examinations were held in Liverpool, Mr. John Smeaton, master plumber, and Mr. R. A. Nurse, United Operative Plumbers' Association of Great Britain and Ireland, attending to represent the London Board of Examiners, and the local examiners present being Messrs. Lloyd, master plumber, and Heighley, operative plumber; Mr. Edmund Kirby, F.R.I.B.A., Dr. W. Carter, and Dr. W. G. Steeves. Dr. J. Stopford visited the examinations as chairman of the Registration Committee.

The meetings of the Applied Art Section of the Society of Arts will commence on January 28, when Edward C. Robins, F.S.A., will read a paper on "The Relation of the Fine Arts to the Applied Arts." At subsequent meetings papers will be read on February 11 by W. R. Lethaby on "Cast Iron and its Treatment for Artistic Purposes"; on March 4, by James Orrock, R.I., on "The Claims of the British School of Painting to a Thorough Representation in the National Gallery," when pictures by illustrious English masters whose works are not included in the National Gallery will be exhibited by the reader of the paper; on March 25, by H. Arthur Kennedy, on "Glass Painting"; on April 15, by C. Purdon Clarke, C.I.E., on "Modern Indian Art"; and on May 13, by Professor W. C. Roberts-Austen, F.R.S., on "The Use of Alloys in Art Metal-Work."

COMPARATIVELY few newspaper proprietors probably, or indeed, employers in other fields of industry, so agreeably manifested their appreciation of the prosperous condition of their concerns as Mr. J. Passmore Edwards, the proprietor of this journal, the *Weekly Times* and *Echo*, the *English Mechanic*, the *Echo*, &c., who, on New Year's Day, sent a cheque for £1,000 to be distributed *pro rata* among those engaged on the different journals. It need hardly be said that the hearty and thankful acknowledgments of those benefited by this judicious application of the wholesome principle of "profit sharing," unshackled by conditions (which in many cases give with one hand and take away with the other), is accompanied by a hope that such a substantial

token of public approval may be added in shape of increased support of all the journals owned by Mr. Passmore Edwards as may justify his generosity and double the reward of enterprise in all the channels in which vigorously manifests itself.

## MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Academy. "Painting," No. 1, by P. J. E. Hodgson, R.A. 8 p.m.  
Surveyors' Institution. Discussion. "The Tithe Question," 8 p.m.  
Clerks of Works' Association. "Construction of Theatres," by Browne, Carpenters' Hall, 8 p.m.  
Liverpool Architectural Society. "Monumental Brasses," by J. Thornely, 7 p.m.

TUESDAY.—Manchester Architectural Association. "Commission," by Lawrence Booth.  
Glasgow Architectural Association. "Domestic Furniture," by F. M. Mill, 8 p.m.

THURSDAY.—Royal Academy. "Painting," No. 2, Prof. J. E. Hodgson, R.A. 8 p.m.

FRIDAY.—Institution of Civil Engineers. "Irrigation Works on the Cauvery Delta," by Chatterton, B.Sc., Stud.I.C.E. 7.30 p.m.

## Trade News.

### WAGES MOVEMENTS.

DUNDEE JOINERS' DISPUTE.—The master joiners in Dundee have offered to refer the dispute regarding the standard rate of wages to arbitration. The men are said to regard the proposition with favour.

GLASGOW PLASTERERS' LOCK-OUT.—A meeting of operative plasterers was held in the Albion Tavern, Glasgow, on Saturday. A report was submitted, the deputation appointed to meet the employers with the view of again taking steps for a settlement by arbitration, and it was decided to accept of arbitration with the employers and the arbiters selected by them, but only on condition that the operatives be allowed to resume work on the conditions until a settlement is effected. Two three employers have opened their shops on operative's terms, and 160 men are in employment, only 115 remaining on the lock-out roll of the Union.

### CHIPS.

The partnership hitherto existing under the name of Wm. Hudson, Son, and Booth, architects, surveyors, 19, Bennet's Hill, Doctors' Commons, having expired by effluxion of time, Mr. Hudson retires, and Mr. Arthur B. Hudson, C.C., and Mr. A. C. Bulmer Booth, A.R., will continue to practise at the same address the style of Hudson and Booth.

Mr. Edward Monson, jun., A.R.I.E., Grosvenor House, The Vale, Acton, W., has been instructed by the Acton School Board to draw up the erection of the proposed Beulah Park schools, Acton-green, which are intended to provide accommodation for 300 boys, 300 girls, and 400 infants. The site has already been purchased and the work is to be commenced as soon as possible.

A chimney stack for which the claim is being the tallest in North America, although far short of the height of many in Great Britain, has just been completed at Fall River, Mass. 340ft. high above the granite base, and square at the bottom. It is built on the ground the Fall River Ironworks.

The French Minister of Public Works has submitted to the Cabinet Council, the application for the concession to construct a bridge across the Channel, made by the Channel Bridge Company. The French Government has just appointed a committee to examine, in conjunction with Schneider and Hersent, the engineers' plans submitted to the application.

The East Barnet Valley Local Board, invited designs to be sent in competition for proposed board offices, the outlay being limited to £3,000. A large number have been received, and at the last meeting of the board it was decided to submit a limited number to the Works Committee to report upon to a special meeting to be held on the 12th inst.

A recumbent effigy of the late Duke of Albany, executed by Pignatelli at the Queen's command, in the Memorial Chapel at Cannes, has been completed, and will be unveiled by the Prince of Wales during his forthcoming visit to the Riviera.

A meeting of the Association of Public Sanitary Inspectors will be held to-morrow (Saturday) evening at 6 p.m. at Carpenters' Hall, when an address will be delivered by the Rev. Arthur Roberts, rector of Holy Trinity, Windsor, entitled "Homes for the Poor—the Question of the Hour."









*W. Young*

WILLIAM YOUNG  
ARCHITECT OF THE GLASGOW MUNICIPAL BUILDINGS



HON. SECRETARY TO THE ADMIRALTY



*Leeming Leeming*

JOSEPH LEEMING  
(LEEMING & LEEMING) ARCHITECT OF THE NEW ADMIRALTY OFFICES



COLONEL  
ARCHITECT OF THE



3. JAN. 3, 1890



*Arthur Webb*

WEBB  
INSTITUTE OF BRIT ARCHITECTS



*James Edis*

EDIS FSA  
CONSTITUTIONAL CLUB



*T.E. Collcutt*

T.E. COLLUTT F.R.I.B.A.  
ARCHITECT OF THE IMPERIAL INSTITUTE



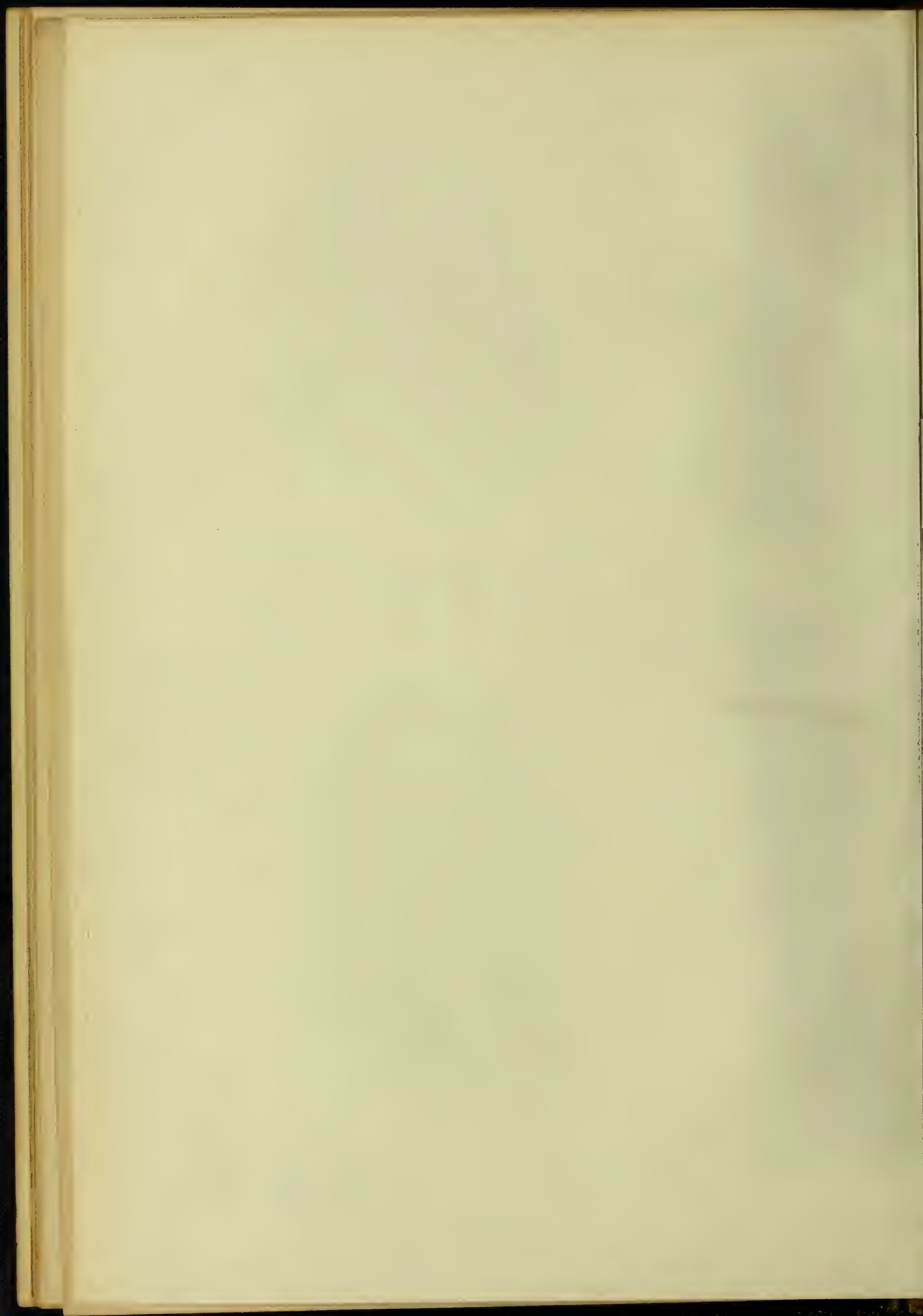
*John Leeming*

JOHN LEEMING  
(LEEMING & LEEMING) ARCHITECTS OF THE NEW ADMIRALTY OFFICES

"PHOTO-TINT" by James Akerman 6, Queen Square London N

BRITISH ARCHITECTS

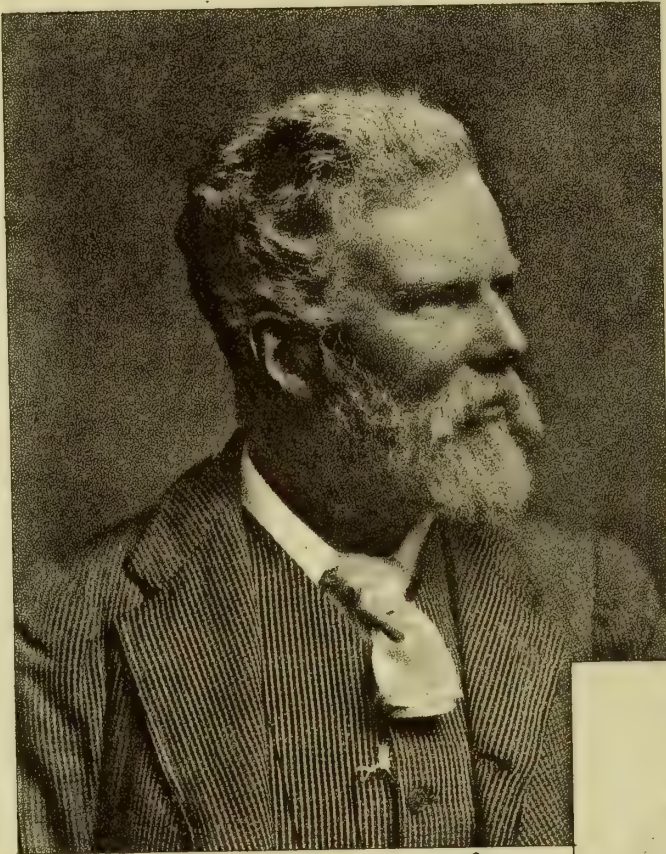












*Alfred Waterhouse*

ALFRED WATERHOUSE R.A.  
PRESIDENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS



*F.C. Penrose*

F.C. PENROSE M.A. F.R.I.B.A.  
SURVEYOR TO ST. PAUL'S CATHEDRAL



*George Aitchison*

GEORGE AITCHISON A.R.A.  
PROFESSOR OF ARCHITECTURE AT THE ROYAL ACADEMY



NORMAN SHAW  
ARCHITECT OF THE METROPOLITAN MUSEUM



SIR ARTHUR W. BLOMFIELD  
ARCHITECT TO THE EMPEROR OF THE NETHERLANDS

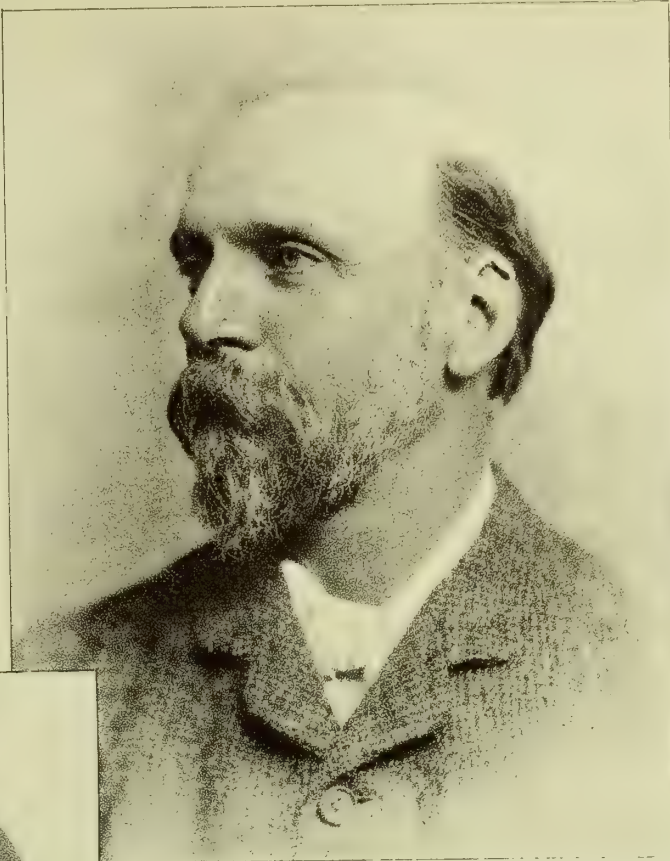


JAN. 3, 1890



*Norman Shaw*

SHAW · R.A.  
POLICE · CENTRAL · OFFICES



*Ernest George*

ERNEST · GEORGE · FRIBA ·  
ARCHITECT · OF · ROUSDON · DEVON ·



*J. L. Pearson*

J · L · PEARSON · R.A.  
ARCHITECT · OF · TRURO · CATHEDRAL ·



*W. W. Blomfield*

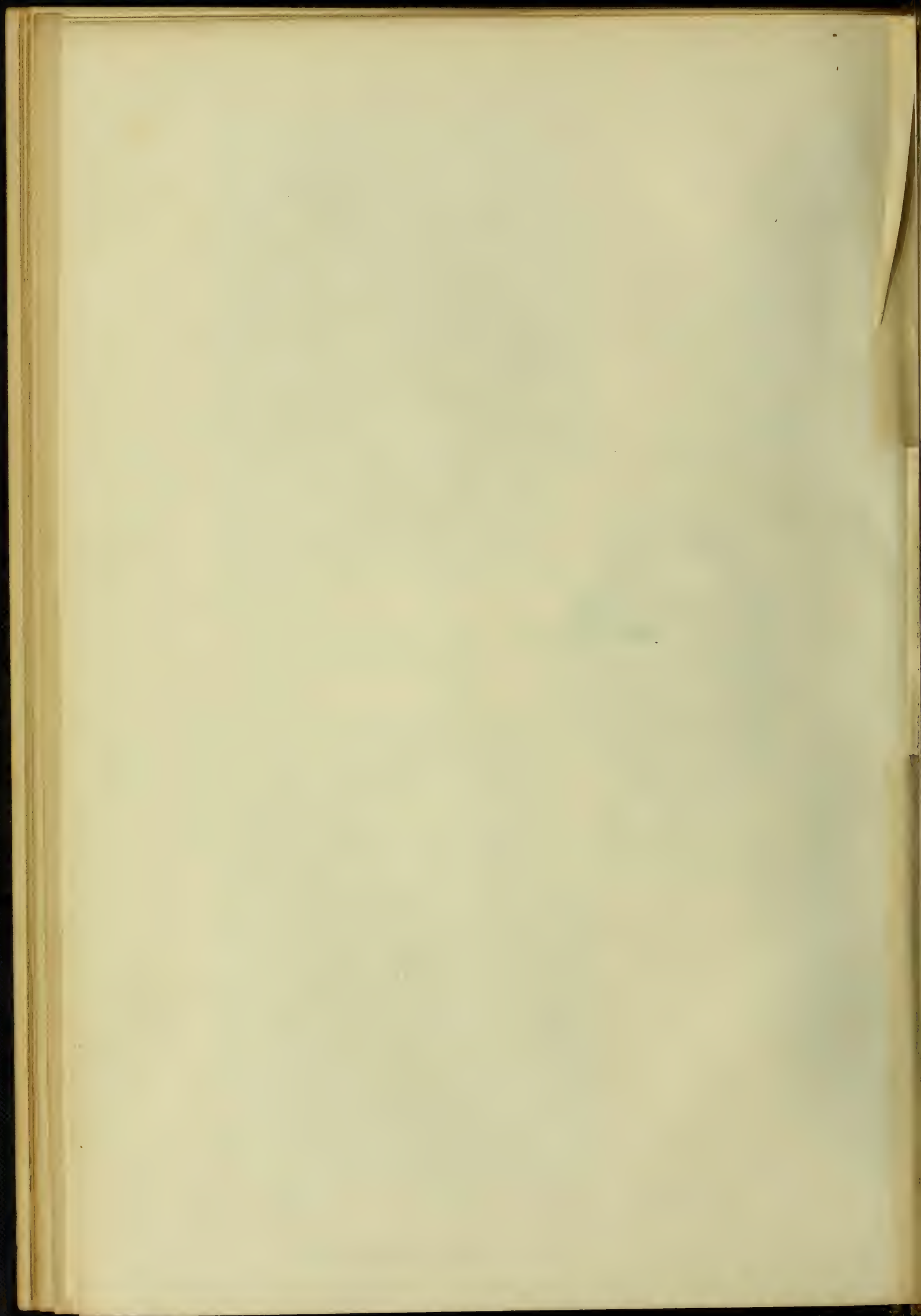
BLOMFIELD · R.A.  
ZION · COLLEGES



*Wm Emerson*

WILLIAM · EMERSON · FRIBA ·  
ARCHITECT · OF · SELECTED · DESIGN · FOR · LIVERPOOL · CATHEDRAL ·



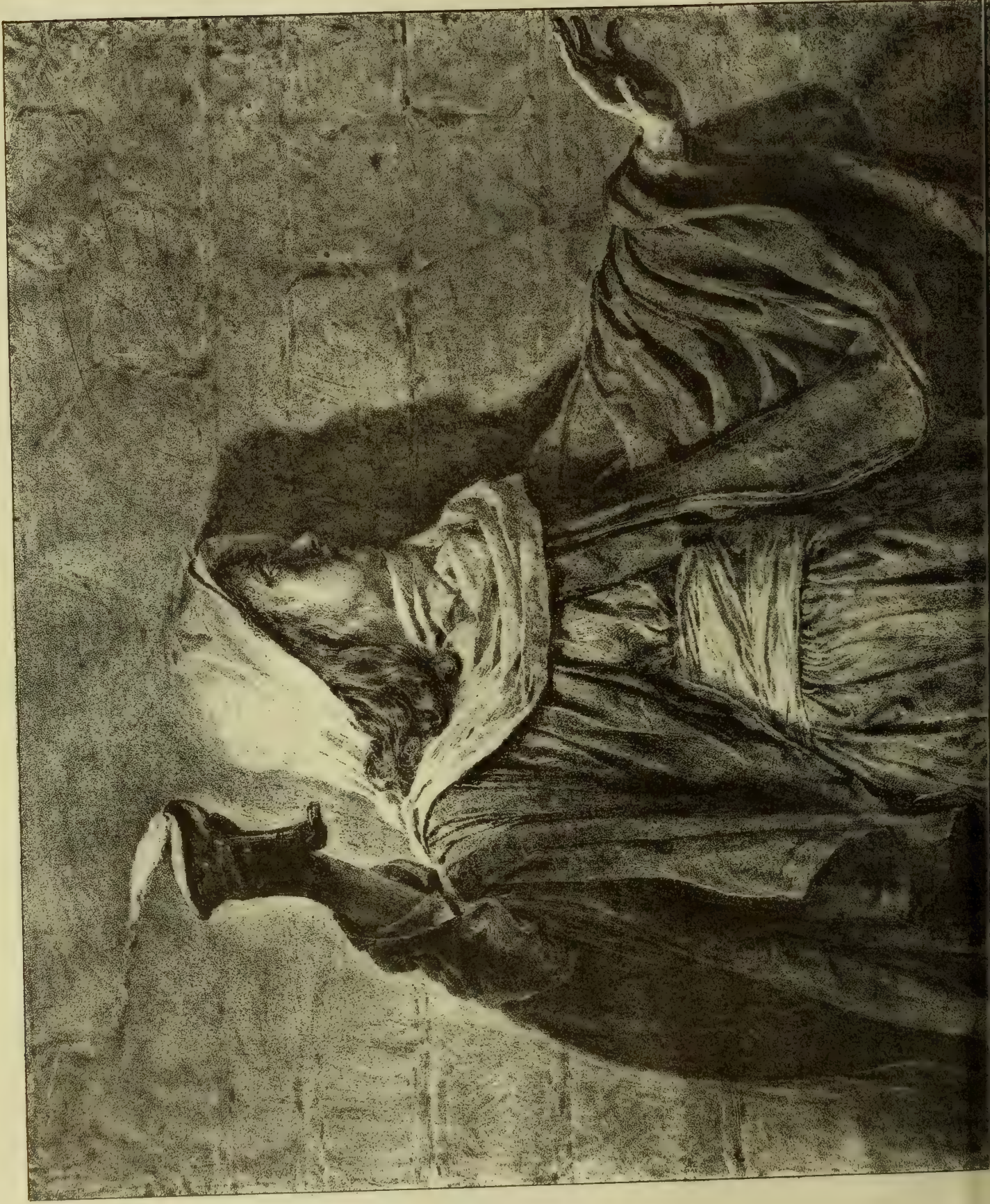




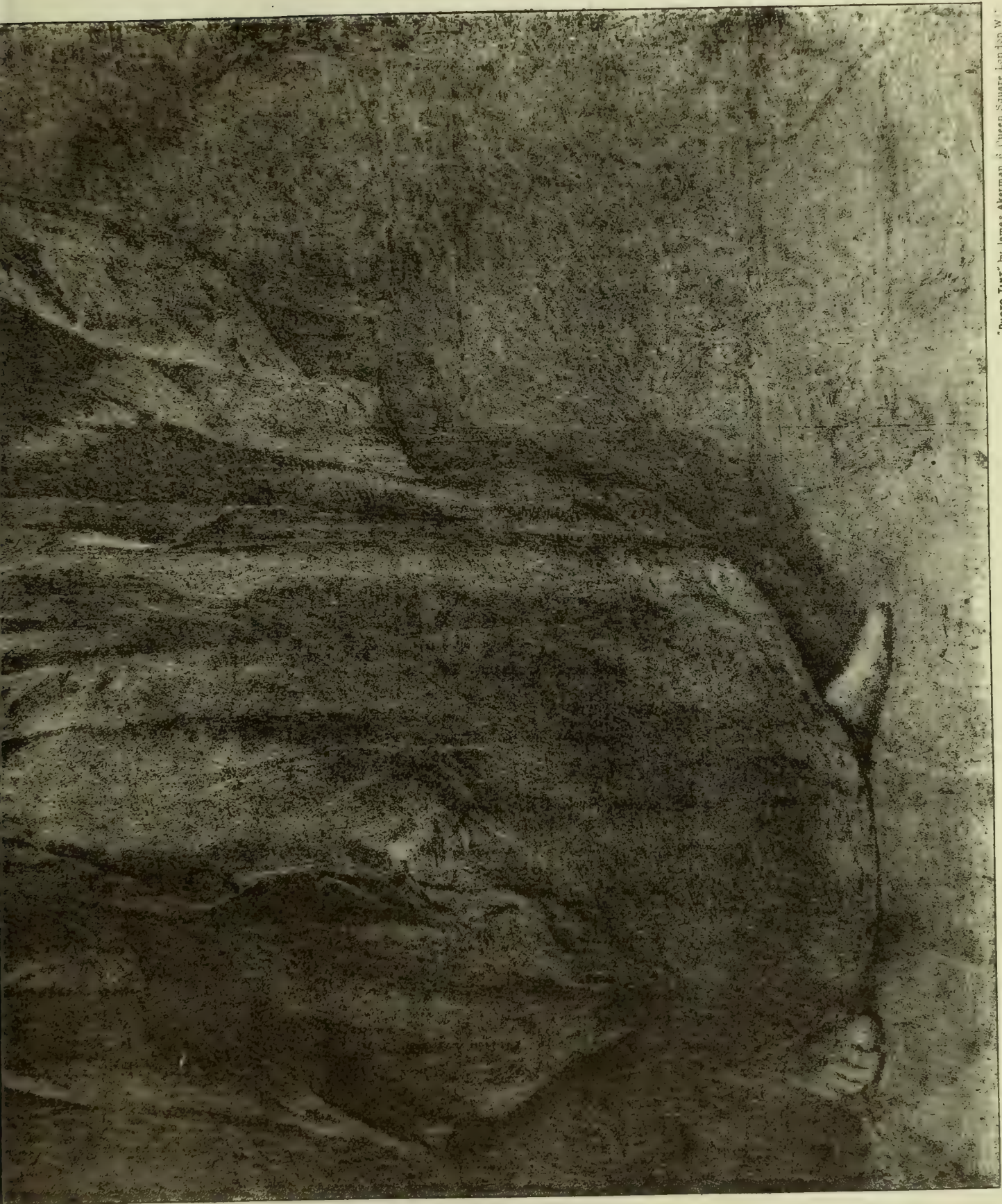




THE BUILDING DEWS. JAN. 3, 1890



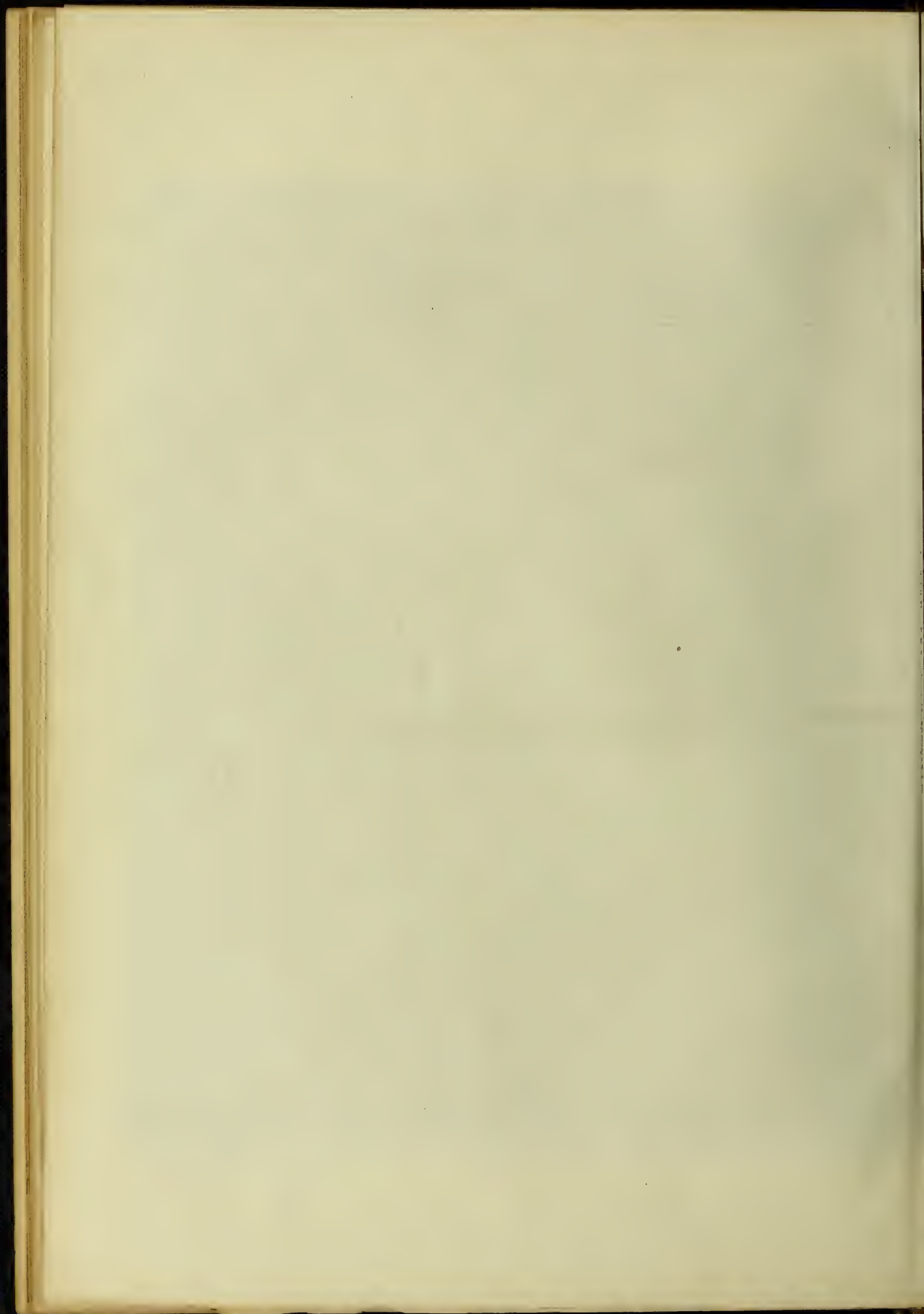




"PHOTO-TIME" by James Akerman 8 Queen Square London W 1

LADY MACBETH WALKING IN HER SLEEP. BY PAUL RAPHAEL MONTFORD.  
ROYAL ACADEMY SILVER MEDAL CARTOON.







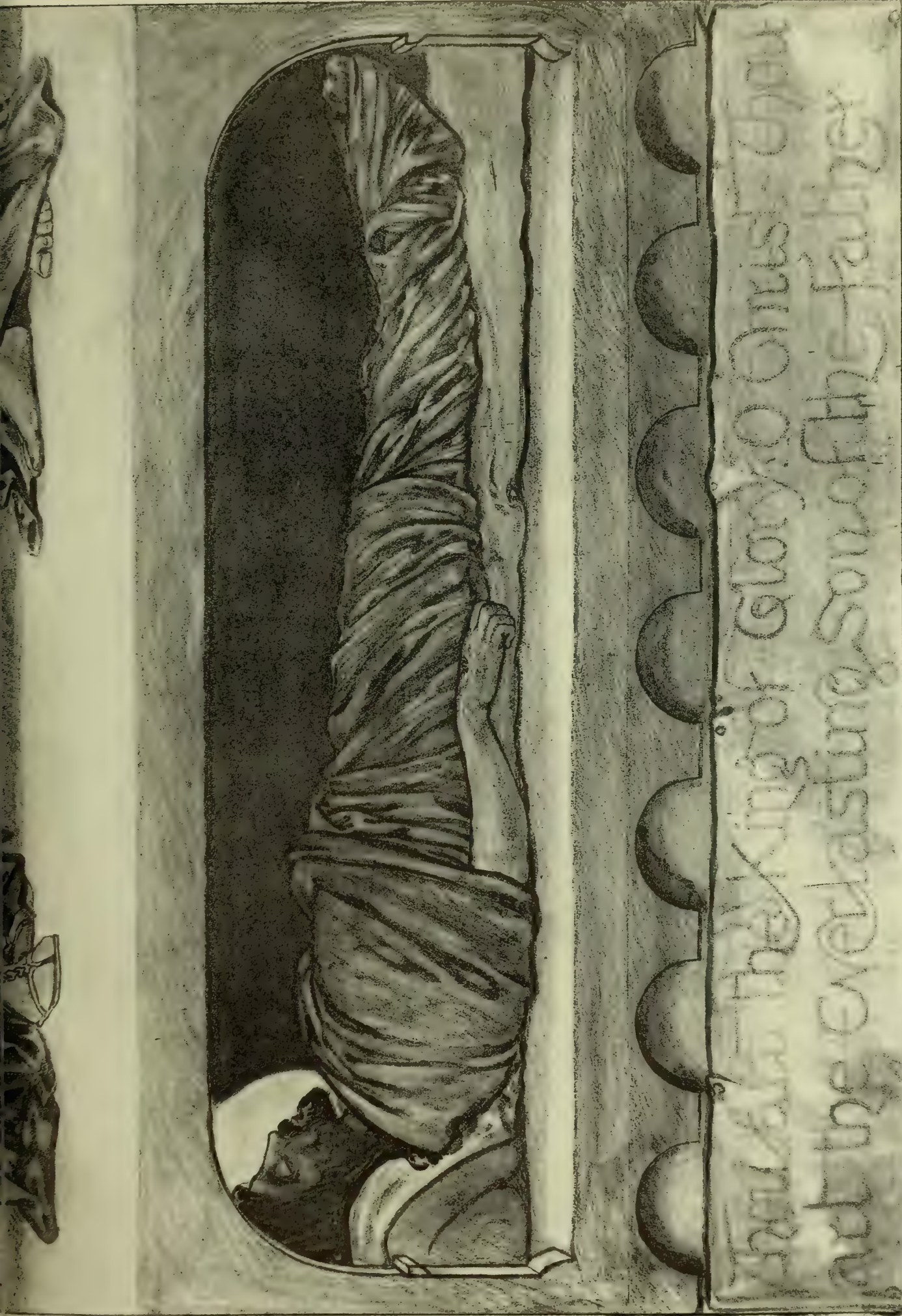




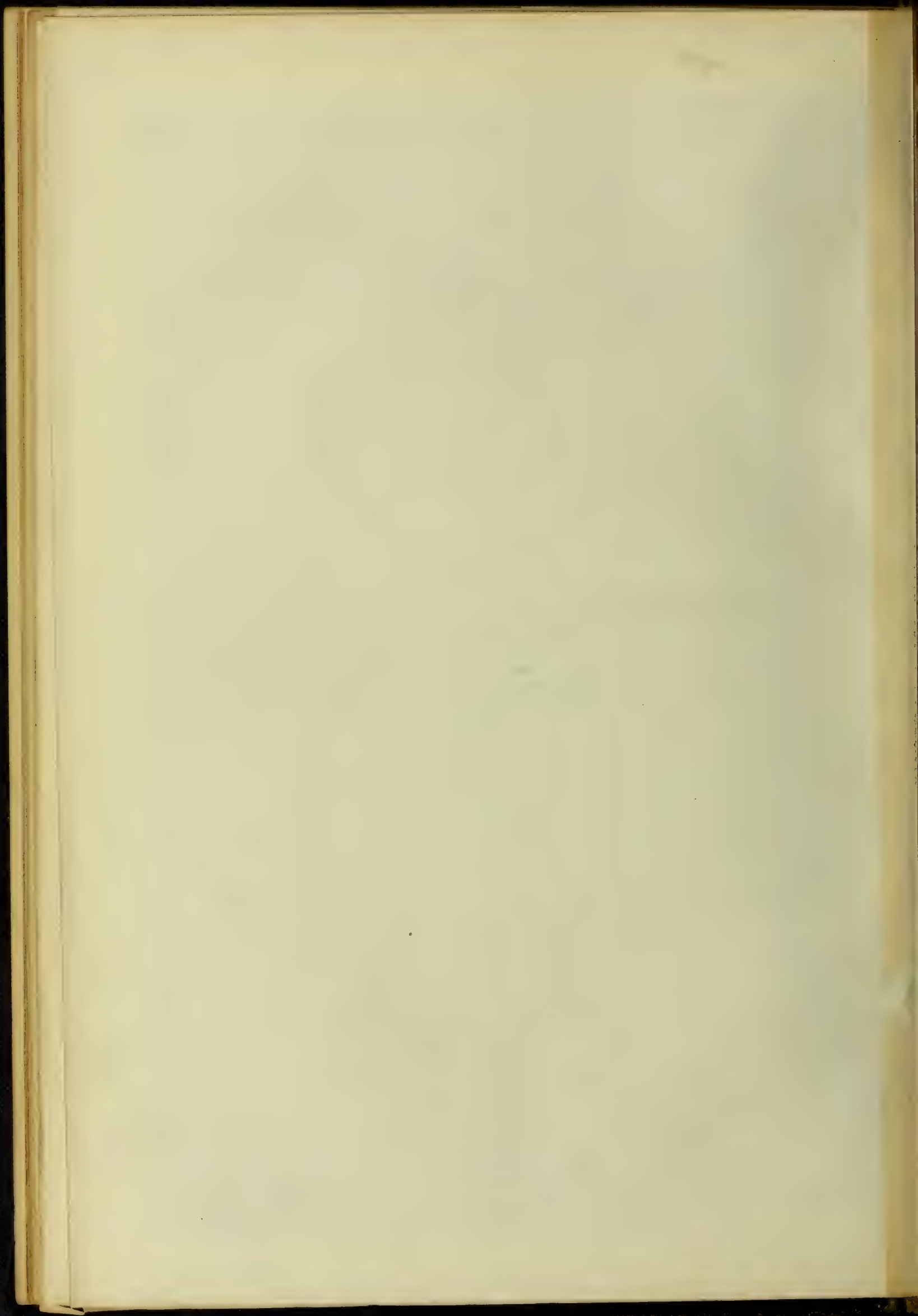
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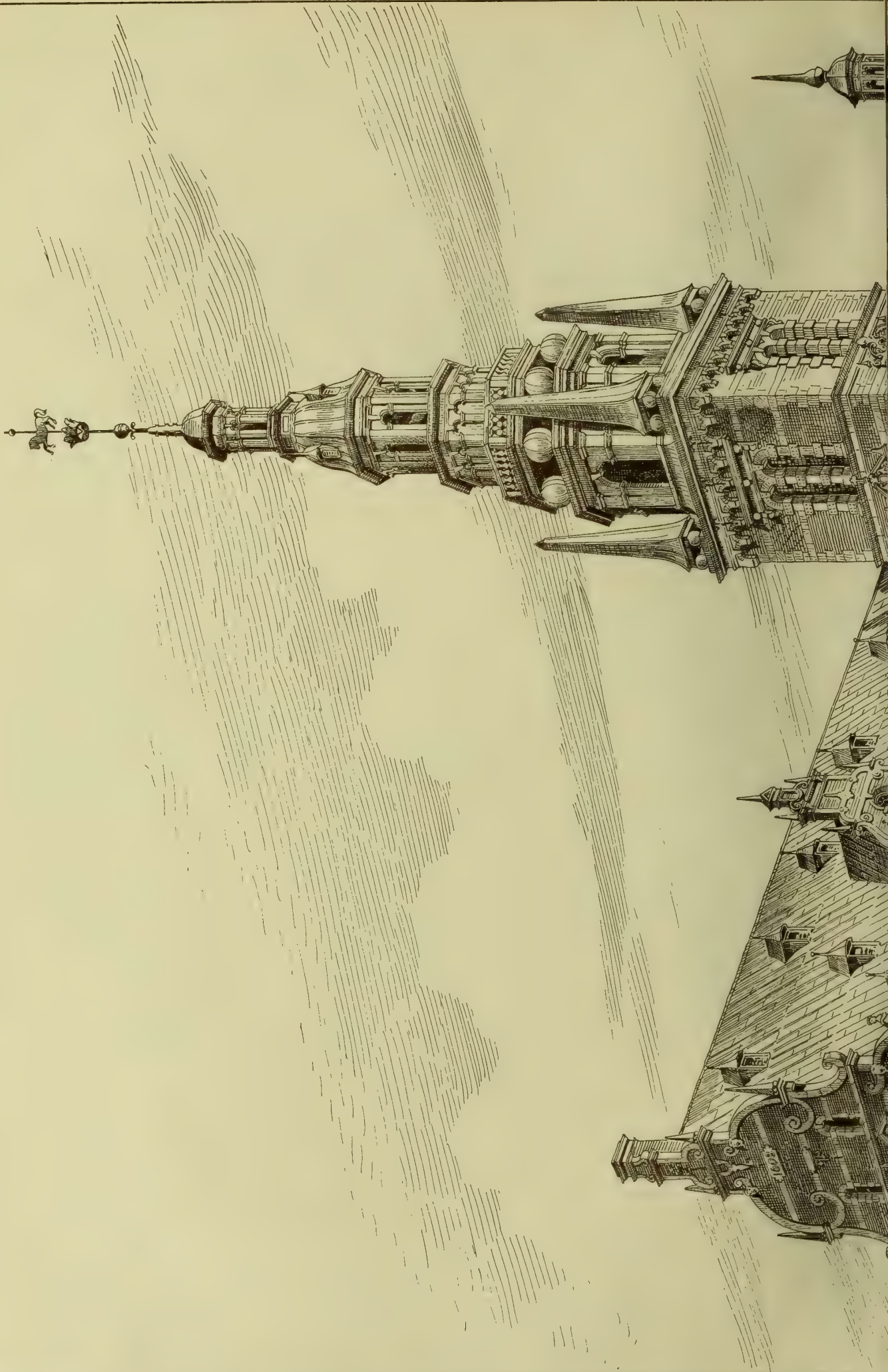




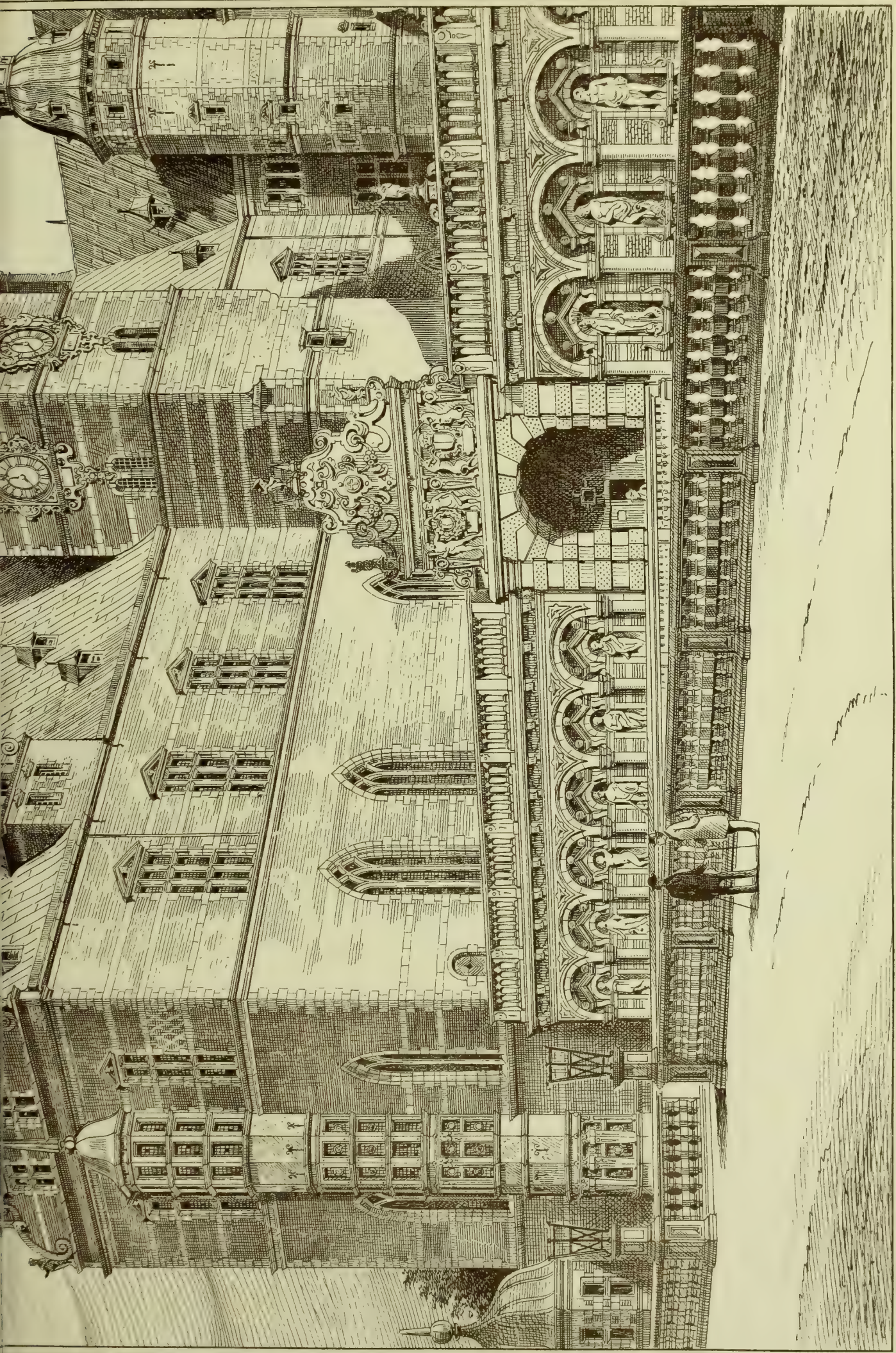




THE BUILDING NEWS, JAN. 3, 1890





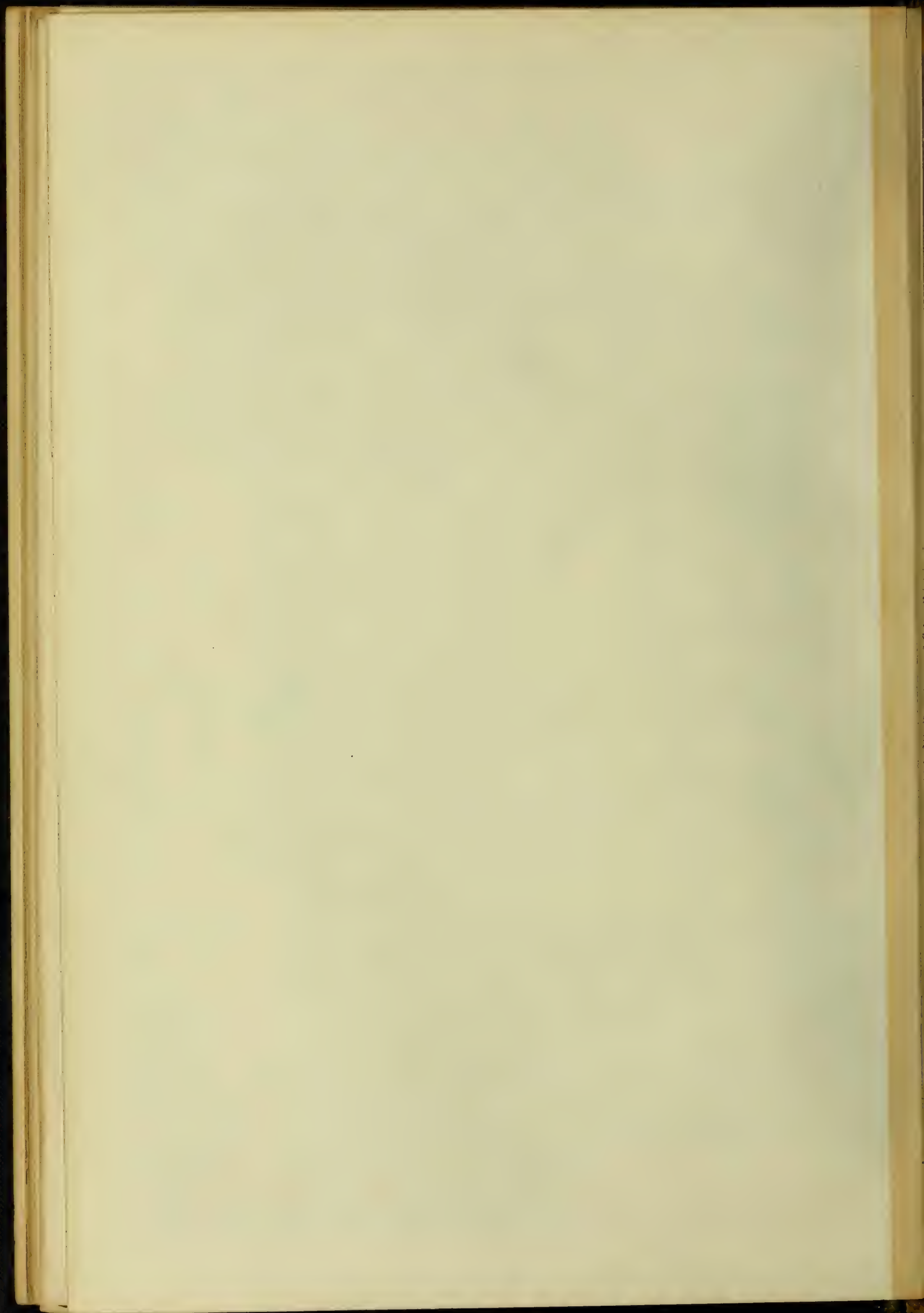


Engraved by J. H. Adams, London. From a photograph by J. H. Adams, Copenhagen.

# CASTLE OF FREDERICKSBORG DENMARK

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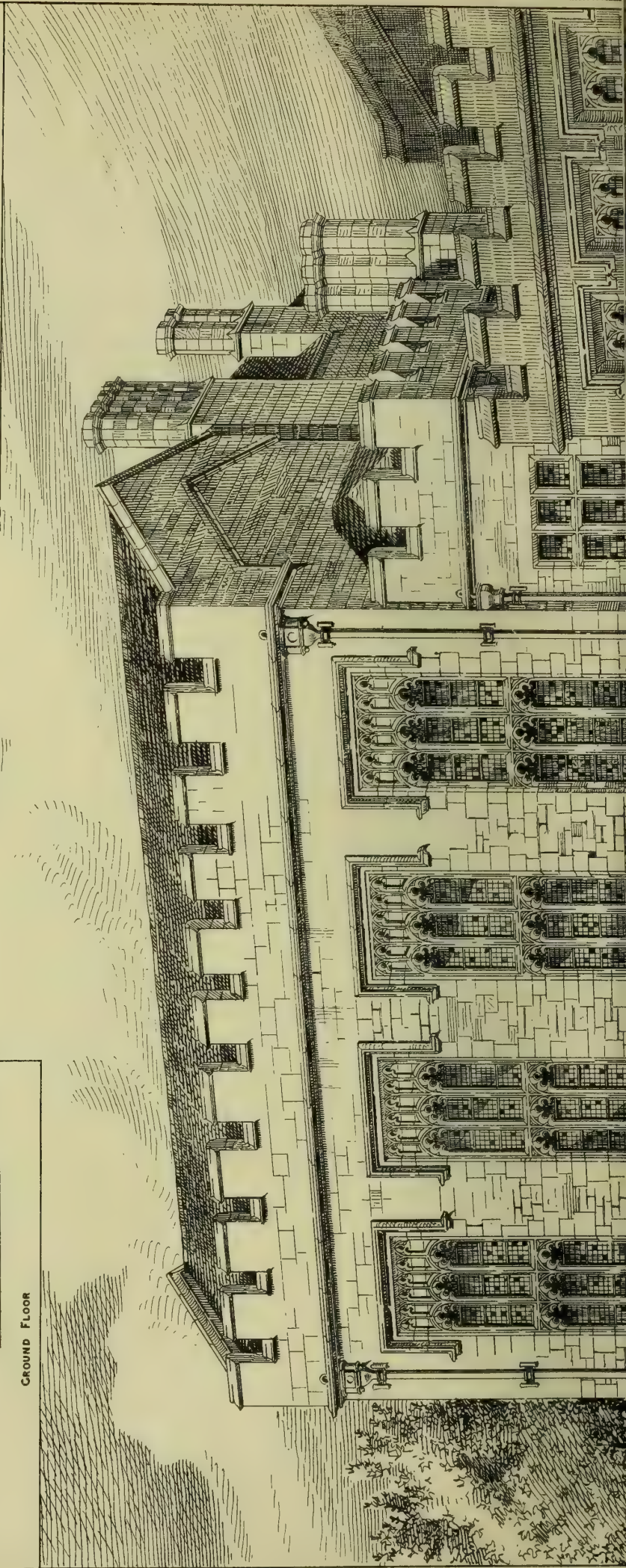
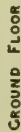




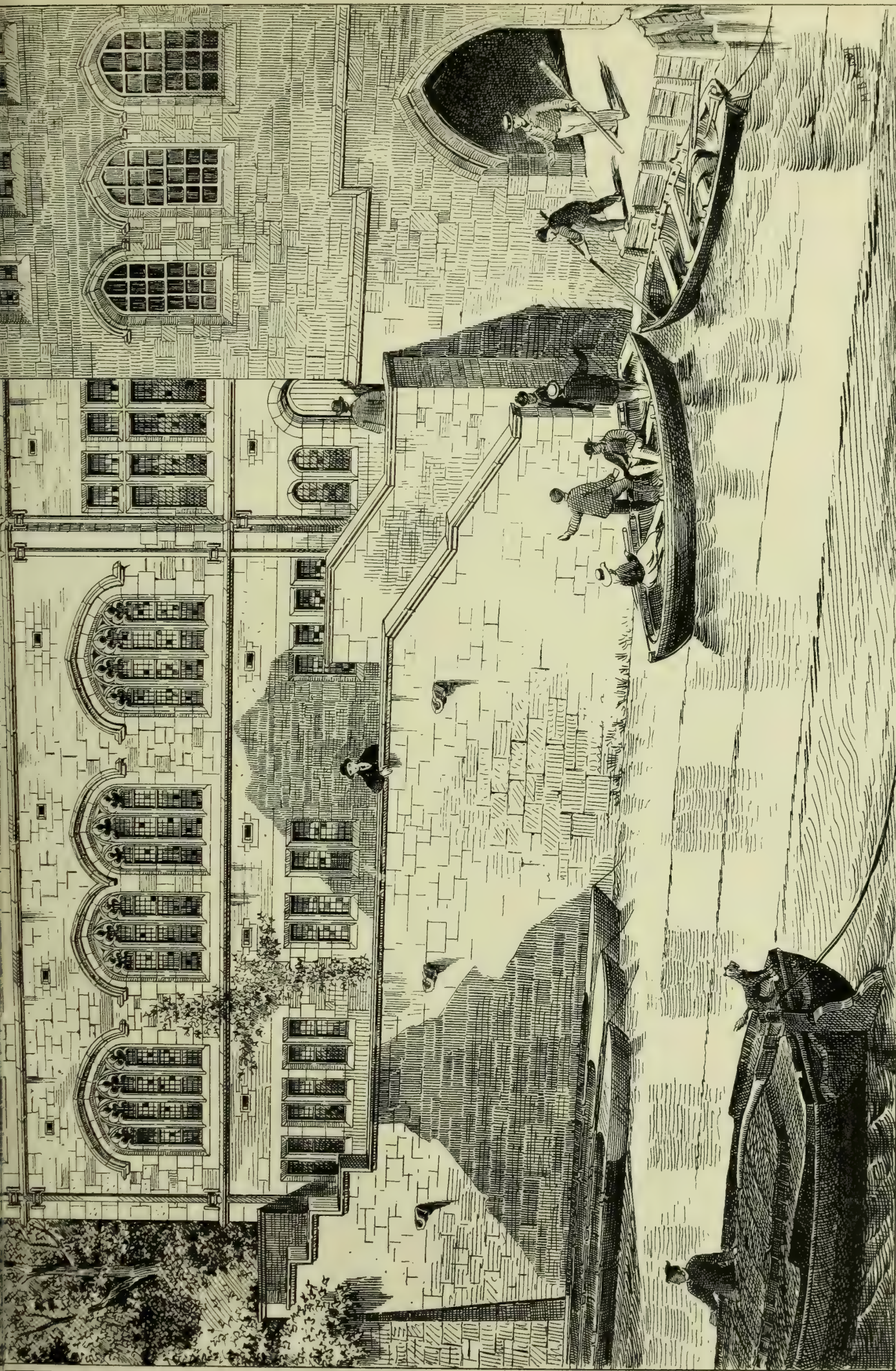




THE BUILDING JEWS, JAN. 3, 1890







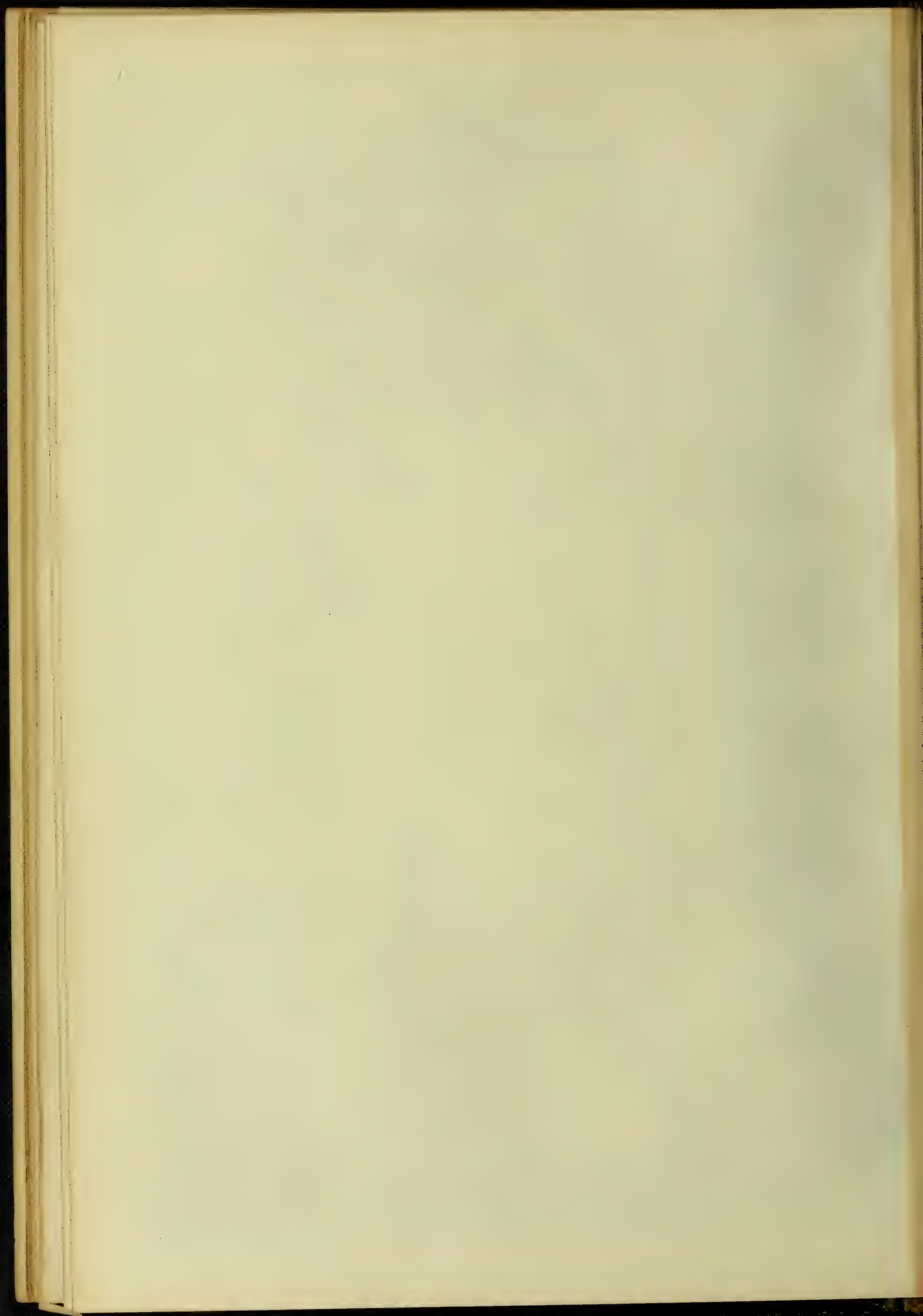
CITY OF YORK MUNICIPAL OFFICES

E. G. MAWBEY, ASSOC. M. INST. C. E. ARCHT.

MAURICE B. ADAMS DEL.

Photo lith. graphed & printed by Thomas Agnew & Sons, Queen Square, W.











THE BUILDING NEWS. JAN. 3, 1890





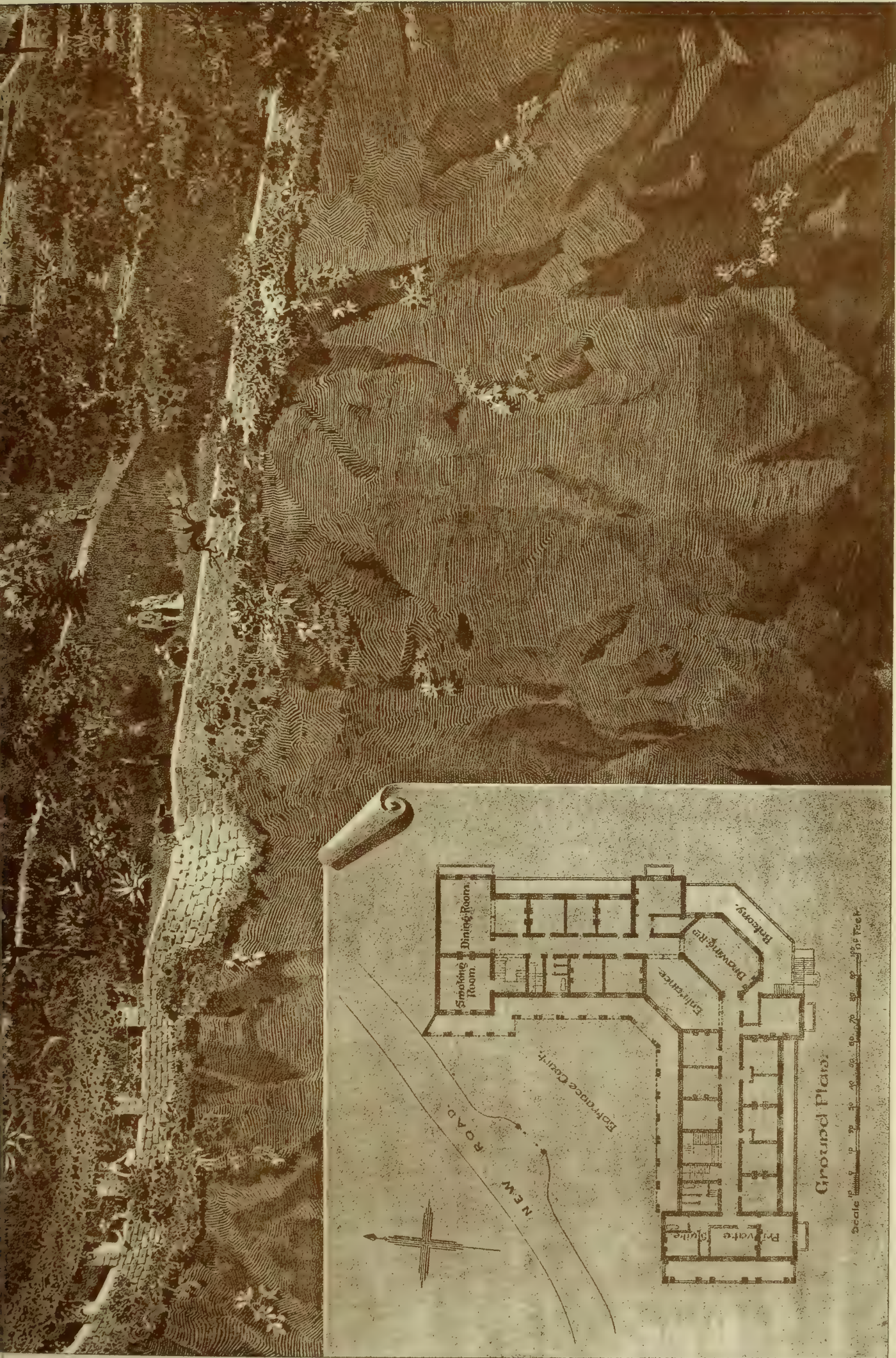
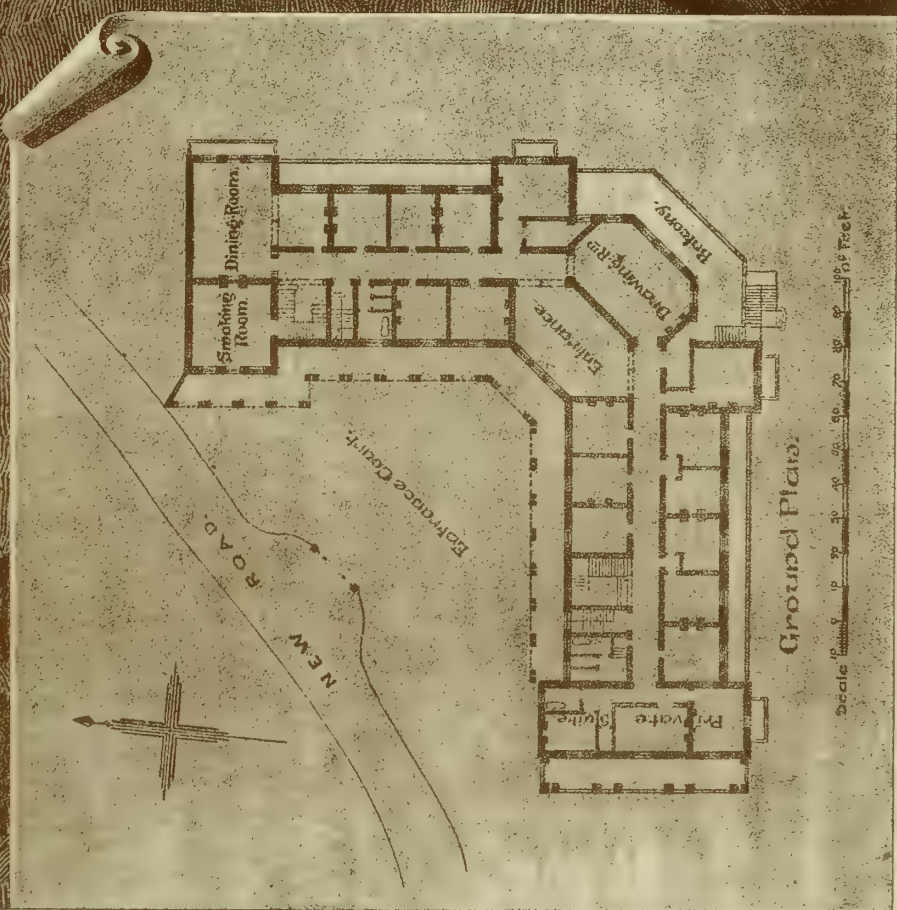


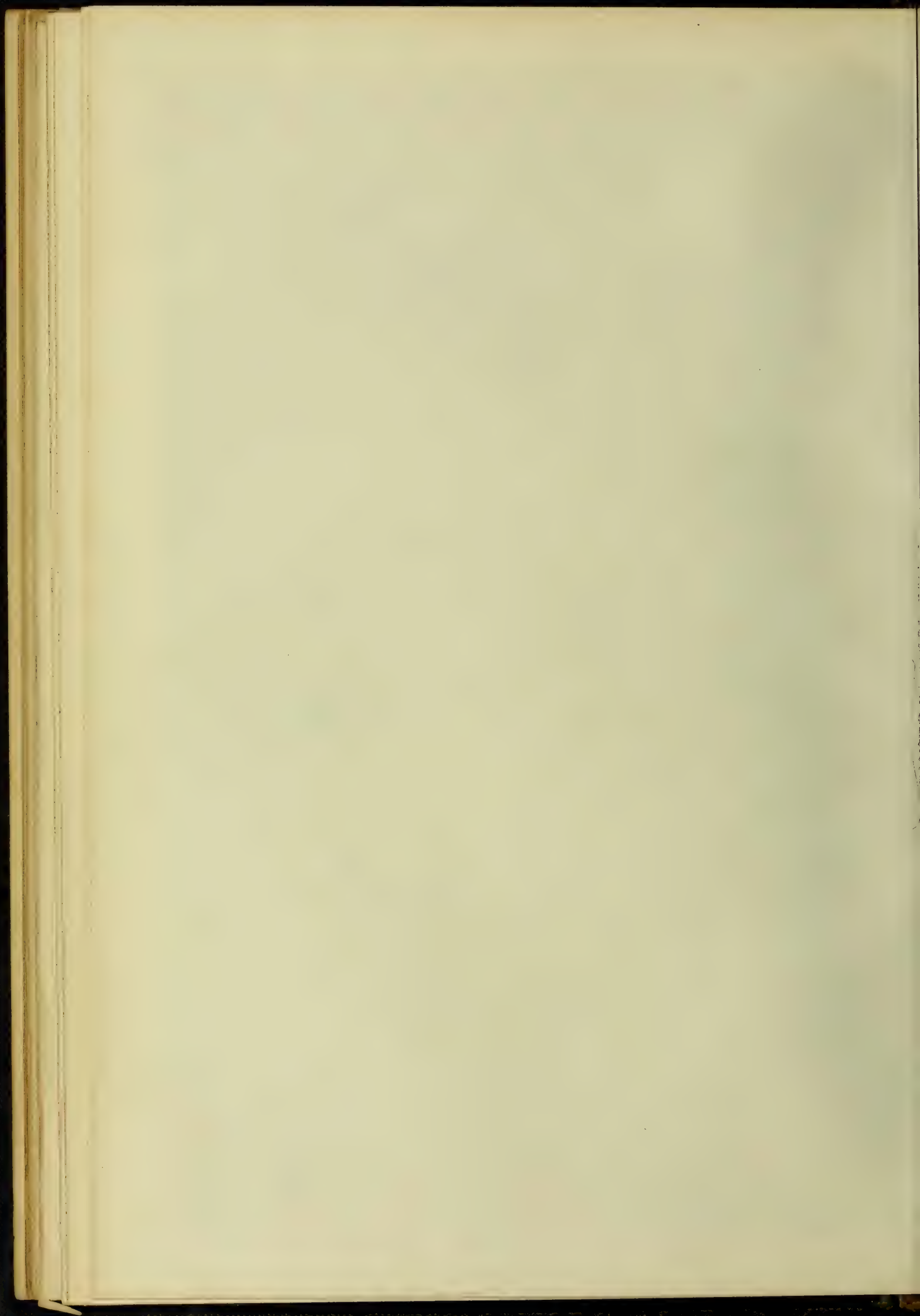
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# REID'S NEW HOTEL; MADEIRA.

SOMERS CLARKE & J. T. MICKLE, F.W.A.I.C., ARCHTS.





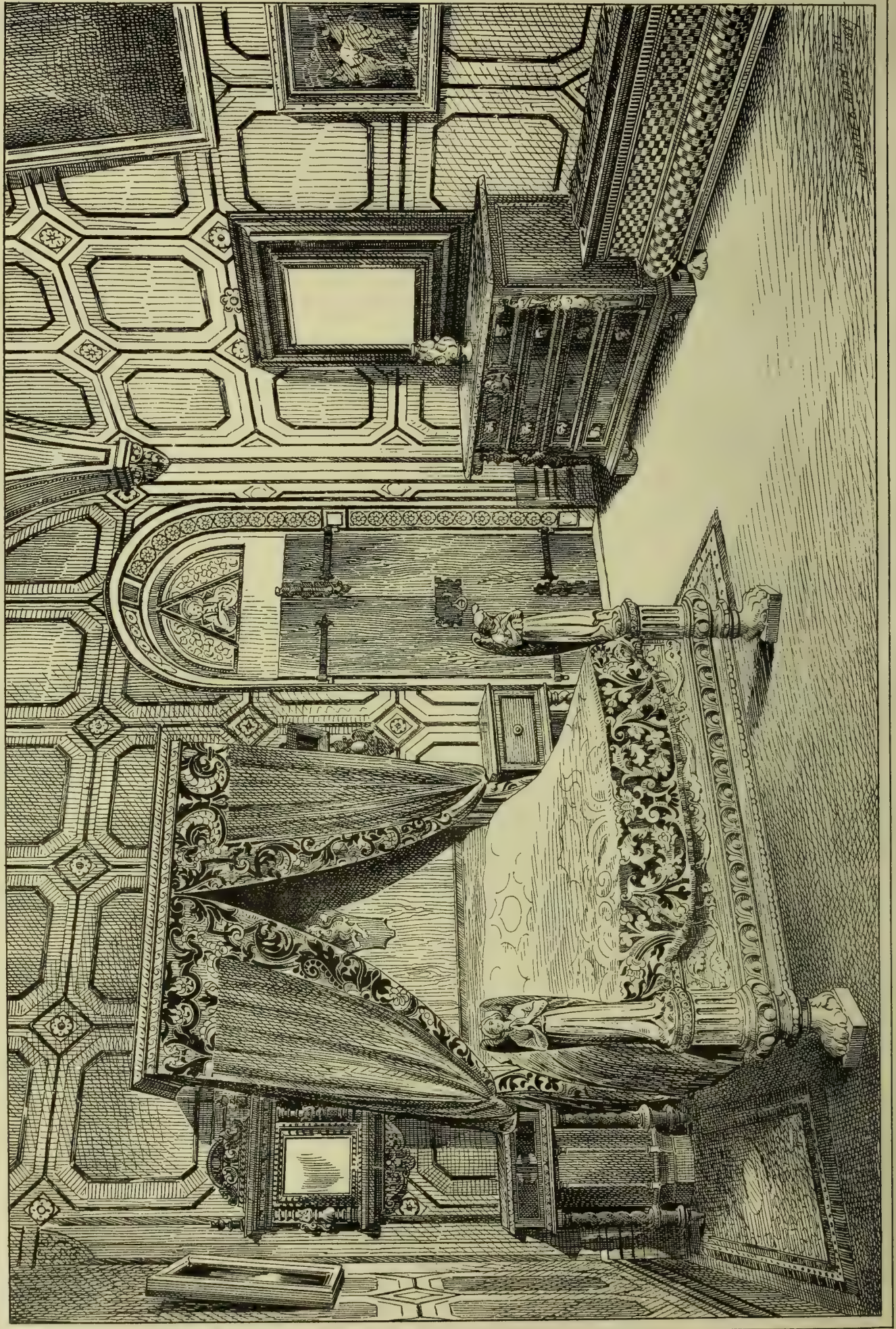




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THE BUILDING NEWS, JAN. 3, 1890

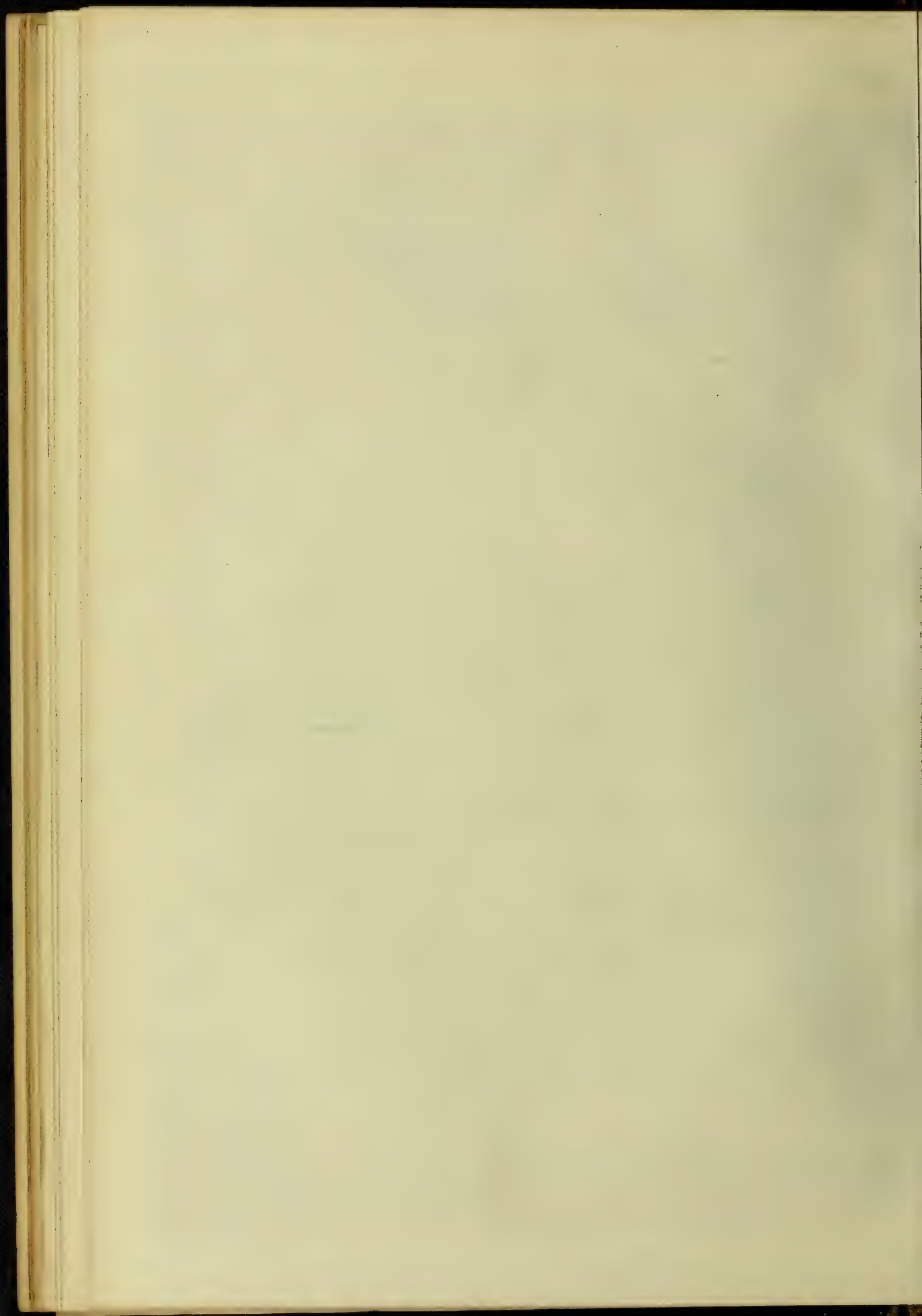


A GRAND BED CHAMBER, CASTELLO DI VINCIGLIATA, FLORENCE.











## THE BUILDING NEWS

AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1827.

FRIDAY, JANUARY 10, 1890.

## BUILDERS AND ARCHITECTS.

THE connection between the two businesses or arts of building and architecture is not very apparent to some people, who look upon the duties of the architect as being in every respect the same as those of the builder, and occasionally lose sight of the more artistic branch altogether. Exemplification of this indifference among the public may be found in descriptions of newly-erected public buildings, which sometimes appear in the provincial newspapers, which entirely ignore the architect while giving the builder's name, who is thus credited with the design as well as the construction and workmanship. On other occasions they find it convenient to transpose the titles, or to credit the architect with faulty building, bad drains, or any unforeseen accident which happens to create a sensation by falling upon or killing people. The architect is held up to censure when any prince of a Royal house is smitten with fever due to imperfect drainage, or any titled personage falls a victim to carelessness on the part of a building artificer. The proper order or respective duties of builder and architect are then reversed. In private practice the architect has probably many times been called in by a client about matters which would be properly attended to by a builder or plumber, or about questions which pertain more to the duties of a valuer or house agent; the more general or mixed his practice, the more often he is called to render such services. A high-notioned or irate architect is naturally indignant when he is asked to give a plan for the alteration of a back stairs, or to do something which a skilful carpenter could undertake quite as well, perhaps better. Yet a very acceptable number of small commissions would be lost to the ordinary practitioner if he refused these small and sometimes *infra dig.* services. Perhaps if the client were aware of the line which the architect was pleased to draw between his own and the builder's work, he would often hesitate; or, if he knew how unskilful he was in technical matters, he would avail himself of the practical man, and so save the commission. The fact is nevertheless suggestive of the inquiry whether the architect's services in works of a purely practical kind are of value. Happily there are clients who think so; they argue upon some such ground as the following:—"If I do not engage an architect the work may be scamped, as I do not know whether the work is skilfully or unskilfully executed"—sound as far as it goes, for it is the judgment of the professional man that is paid for.

Even those representative bodies who have to deal with public funds in the erection of important buildings sometimes make egregious mistakes in distinguishing between the duties of the two vocations, and in last week's issue we noted a glaring case of this, where the Board of Guardians of Wantage actually advertised for "plans, specifications, and tenders" for the erection of a "tramp ward," the advertisement being addressed "To Builders and Contractors." The guardians have mixed up the two businesses in an amusing manner, and have evidently overlooked the fact that it is no duty of a builder to supply plans and specifications. But perhaps we do the guardians an injustice. They probably thought so unpresenting a structure as a tramp ward might

be more fittingly left to the builder to carry out. Quite as amusing incidents have occurred in the remembrance of many architects, in which their duties and emoluments have been strangely confounded. The line of separation between the two vocations is firmer and stronger than it has been. We all know the time when building and architecture were one, when architecture was building and something more, and when the occupation of constructor or "ingeniator" covered that of the architect. We have outlived this epoch. To-day the two classes are essentially distinct, though each is now and then found encroaching on the other. The builder is now chiefly known as a business or speculative tradesman, who undertakes to erect buildings at the lowest cost and on the shortest notice; the architect as a designer, paid by percentage on the cost. The healthful interchange of mind and hand which once existed is no longer met with; the client must take his chances of getting a substantial and well-designed building. No doubt he thinks, and rightly, that good construction should be the first thing to be looked for.

On this ground is to be explained the employment of builders by many persons. They are thought to be more practical, and to devote personal attention to the work. Those who are in the habit of employing respectable firms, as many large building owners do, tell us that they are sure of having just what they ask for, and no more. The plan is prepared strictly to suit requirements, there is no attempt to make a larger or more ambitious design, the work is done according to an estimate, based on certain prices, and all extras are measured and valued at the same rate. Many large tradesmen have found this the cheapest way of enlarging old or building new premises. In reply to further inquiries, we are told that, as a builder must be employed, it is preferable to have one who takes all the responsibility than to employ an architect who is a second master, the idea being that a direct dealing is more desirable than an indirect transaction. A considerable reason with building owners is cost, and the saving of the architect's commission is a strong motive.

We know a few individuals of this class of clients whose experience has enabled them to draw out their own plans, and to lay their intentions pretty clearly before the builder. An architect has to master the requirements before he can prepare a workable design, and even after modification and amendment it may not be exactly what his client desires. Under these circumstances we have the most favourable conjunction for the practice we have mentioned, especially when the structure belongs to the strictly utilitarian character. Beyond a certain point the architect's assistance may become of very little use; but we must remember that these favourable conditions to dispense with architectural aid are rarely to be found. Plain structures intended for technical uses are within the builders' reach, therefore a large proportion of them go into their hands. Though plain, these buildings require to be substantially constructed. One who knows how to put buildings together, how bond should be laid, the quality of good bricks and mortar and timber, is more likely to produce a sound structure than an architect who has only studied the masses and details. The builder is presumed at least to know more about the anatomy of structure, to study materials and workmanship. We do not deny that in many cases he does. He has been perhaps apprenticed in his younger years to a carpenter and joiner, or has a practical knowledge of some other trade; at least, he has the workshop training, which ought to enable a man to detect good from inferior work. Such a man to an employer who has got an idea of what he wants is all that is necessary.

We have here the *crux* of the matter. Experience in building will convince us that these two things are necessary to produce success—(1) Practical Knowledge; (2) an Idea; and without the combination of the two things it is impossible to produce a successful building. If we consider for a moment the ordinary builder's training, we shall come to the conclusion that it is of a nature that can hardly fit him to embody his views in a concrete form. Skilled probably in one trade, or with a general knowledge of them all—as will be found with those who have served an apprenticeship to a general builder—his mind is too full of the technical details or items of the business to allow him much time for embodying his ideas as to the plan or form a building for any particular object should take. Planning and design are not within his *forte*, and therefore he does not trouble about them. Seldom, indeed, has merely technical knowledge made an architect. An authority, speaking on this point, has declared that the "two or three years at the bench" man was not superior to the man who had never been at the bench at all, but had kept his eyes open. Manual skill in the use of saw, chisel, and plane may be of more value to the quantity surveyor, who has to describe and judge of "labours" of different kinds, but it is of no use to one who has to "invent" or think out a plan, to arrange data of accommodation, such as seats or beds, to study plan and grouping in perspective, or to follow precedent. Manual skill does not enter into these functions of design. The training of the eye in copying plans and designs, or even making tracings of them, is more to the purpose, and it is this kind of work that falls very rarely to young men in builders' offices, except those expressly engaged as draughtsmen. Our large firms of contractors keep their own offices, and some employ an architect and a staff of clerks who are engaged especially on the design of new buildings.

The apprenticeship system in England is at fault. Young men intended for the building trades have not the technical schools of Paris, in which different trades are taught rationally, and where a boy passes through several shops in the first year before he is placed to the trade he has a natural aptitude for. The weakness of English workshop training is that the pupil knows nothing of drawing or practical geometry; he merely acquires the manual knack of using the chisel or plane. In France and Germany each trade has to go through stages of drawing and geometry sufficient for the wants of the workman. Youths are taught to draw from models. Here we have no schools except the Government schools of art or the technical classes, generally very badly supported by building apprentices. The recent reports on the French trades seen at the late Exhibition are unanimous that the English workman is far behind his French brother in design. We are told in one report that any boy in the workshop can give a design for almost anything you ask for, whereas the experienced joiner in England has never been taught drawing of art of any kind. A scandal to our workshops. Why do not our wealthy firms institute classes in connection with their own shops? How few bricklayers can even determine the length of radius for an arch when the width of opening and the rise are given. We have known joiners unable to find the true shape of a jamb when it is splayed with a segmental head. To obtain a development of a curved surface geometrically, or the mode of setting out angle brackets, or of reducing or enlarging mouldings, are problems which often baffle the skill of the joiner. The "rule-of-thumb" method is the only resource. We cannot expect such a training to fit men for the duty of advising employers; but practical experience may help



a man along further than the best scholastic instruction, and we see this proved every day amongst engineers. There are a few who have got an idea, but when they have their practical skill is all they need to obtain employment and to insure success. The inventive engineer is the one who generally manages to get on, and the builder who has the same gift is successful.

Those who employ architects have the acuteness at least to see that without an idea—some scheme or design—the builder's work is so much material and labour mainly misplaced. We are not going to say that the architect is always gifted with the "idea"; he may be without one, yet his knowledge of precedents, his more general training of how to meet requirements is a great deal in his favour, and he can probably, by a few strokes of his pencil, guided by a cultivated mind, stored with the ideas of others, sketch out a design that may more aptly suit the intentions of his client. The preparation of designs by builders is attributable largely to the economic view which the employer entertains—the being able to get what he wants in the most direct manner; and if the profession can show that they are capable of uniting these qualifications of good architecture they can quickly recover their lost ground in the public mind.

#### OLD MASTERS AT THE ROYAL ACADEMY.

A VERY interesting and typical collection of the works of masters of the British School of Painting is to be seen at Burlington House. Though not quite equal to former representative exhibitions of the English masters of portraiture and landscape, Reynolds and Gainsborough, the present winter collection is of more general interest, and contains very fine examples of the Spanish and Dutch schools. A few characteristic works of Sir Joshua Reynolds, Thomas Gainsborough, George Romney, Richard Wilson, Constable and Callcott, and other painters of the 18th and beginning of the present century are hung in Gallery I. An excellent specimen of Reynolds's portraiture is the portrait of Mrs. Payne-Gallwey, daughter of General de Lancey, of New York. The face is in profile, the features sharp and pleasing. As one of the master's unfinished works it is interesting as showing the manner this eminent portraitist worked. A patch of dark background colour is put in to throw up the lady's features. Other portraits are those of William Stirling, in blue coat (17), of Miss Fanny Kemble, afterwards Mrs. Twiss, a pleasant representation of the actress, who was a sister of Mrs. Siddons, in white dress with a blue sash. In the large gallery is a full-length portrait of Frederic Howard, fifth Earl of Carlisle (119); also the Marquis of Townshend; Sir William Chambers, R.A., the architect, a three-quarter portrait, seated at a table before papers, looking towards spectator, with crayon in one hand—a very fine, solidly-painted work, the dark background forming a strong setting to the ruddy complexion, in which background the façade of Somerset House is shown. More poetical are the pictures "Hope Nursing Love," a full-length and graceful portrait of a lady in yellow and drab drapery, with the figure of Love on her lap; and the figure of Puck seated on a Toadstool (162). The beautiful portrait of Viscountess St. Asaph, her playful child undraped in front, is particularly graceful in drawing and colour; the mother is seated on the floor in white dress, and her hair falls in ringlets over her neck. The white pigment on this picture, as on some others, has cracked very much.

Whilst Reynolds's portraits are "souls in faces," his colouring is not permanent. Gainsborough studied simplicity and character. In his landscape there is a sweetness

and serene expression, though subdued, as in his portraits and landscapes in the first gallery (3—6). The full-length figure of "The Housemaid" (3)—a portrait of Mrs. Graham, daughter of the ninth Earl of Cathcart—is full of poetic grace. She holds a broom in her hand, the painting, unfinished, in simple brown. The landscapes of rural subjects are also suffused with a soft, mellow light, the handling crisp and decided. We see also three or four portraits by Romney, one of his best in this gallery being "Miranda in a Boat Propelled by Caliban" (43)—an exceedingly graceful composition in which the pretty face of Miranda and the luminous painting and light are worth noticing. The portrait of Mrs. Chaplin (45) is characteristic of Romney's massive touch in foliage, which forms the background, and generally in these portraits we find the influence of Reynolds's idealistic style in backgrounds as well as treatment, though certainly less brilliant.

The sea-pieces and fishing-boats, by Sir A. W. Callcott, as those of Nos. 2, 21, 47, 44, are calm, clear, and luminous examples. Thomas Creswick, R.A. (14), is represented by a splendid example of a stormy sea-piece and shore, the light spray of the dashing waves set off by dark and angry-looking clouds. Sir Edwin Landseer's "Highland Whisky Still" (12) is a fine specimen of pathos and colouring, also the admirably-drawn dead stag and dogs. "Jocko" is inimitable as a portrait of a dog full of life and animation; so also are the "Intruding Puppies" (16). George Morland, the popular painter of rural subjects, public-houses, and stable life, is seen in a few pictures. His "Farmyard" (11), "Pigstye" (27), and "The Mask" are characterised by nice grouping, tone, and feeling. Next are several works by R. Wilson, R.A., all Claude-like, displaying the classical taste for landscape. Nos. 22, 35, 135, the last a view of Sion House from the Thames, a thorough example of his Italian feeling, tranquil and bathed in sunset warmth. With Reynolds, Wilson, and Gainsborough we can compare Constable's works, of which five are hung. Both the latter painted English scenery, both were Suffolk admirers, and their pictures contrast with the Italian landscape of Wilson. Constable's "Hampstead Heath" (39), "The Chain Pier, Brighton" (55), and "Vale of the Stour" (58) are examples of his work in which we see his rougher, unfinished style of painting, sometimes spotty, as in the Chain Pier, and in others powerful. Fresh, breezy, and showery weather, glistening with wetted foliage is seen in his latter picture, and in his fine landscape of "Dedham Lock" (159), where the sparkle of light is in the foliage. We can only glance at the colour and reflection in Charles R. Leslie's "Mother and Child" (38), the nice grouping and tone in W. Mulready's "Horses Baiting" (28), and his inimitable landscape (33, 34). Pictures by F. Danby, John Linnell (32, 37), and one or two Turners, are also in this gallery. A very brilliant specimen of Turner's portraiture is that of Robert Williams, Captain of the Cumberland Fleet, a three-quarter figure in blue coat, holding a telescope (24). John H. Mortimer is represented by an interior group (26), in which the painter is sketching a mask held by a boy.

Gallery II., as usual, is strong. Pictures by Dutch and Flemish painters, in which are fine specimens of Rembrandt, Jan Steen, Adrian van Ostade, David Teniers, Albert Cuyp, Nicolas Poussin, Ruysdael, Huysum, Hobbema, and other painters, are to be found on the walls. "Rembrandt," by himself, is a characteristic bust portrait, warm in tone (61). By Teniers we have a nice figure-group—"The Seven Acts of Mercy" (100). "A Village Dance" (84), in brown tone, and by Van Ostade, tavern scenes and drinking bouts, as in Nos. 67, 77, 95, in his unrivalled finished style and sharp touch, full of humour and expression. A Dirk Hals re-

presents a "Luncheon Party" (70), and we see a bright flower piece by Jan van Huysum, a river scene by Cuyp, a large larder subject (87) by Paul de Vos, and some landscapes by Hobbema (85—89), Jan Both (112), and Ruysdael; also an animated, crisply-painted little subject by Jan Steen, "Skittle Players." Passing from these finished studies of merry-makings, so full of humour and character, we come to the Third Gallery, where portraits by Reynolds, Romney, pictures by Gainsborough, Sir David Wilkie, some fine portraits by Velasquez, also pictures ascribed to Rubens and Rembrandt, Murillo, and Vandyck, are hung. Of these we can only notice the fine centre group of "The Braddyll Family," by Reynolds (124), a composition in which the painter has given us wonderful expression, and with his usual grace and brilliancy of colour—a picture some time ago bought in at Christie's for 1,000 guineas. The figures are life-size; the lady seated with a spaniel in her lap, and the boy the "Brown Boy," once before seen here. A rather pale-faced portrait is the Countess of Carlisle (122). The pictures ascribed to Velasquez, though lacking the artistic sense of composition, the grace of action and colour arrangement of our great English master of portraiture, are full of colour and marvellous technique, as in the four portraits of Don Balthazar Carlos (134—138), two lent by Sir R. Wallace, one by the Duke of Westminster, and one by the Queen. A portrait of a lady (141) is lent by the Duke of Devonshire. In all these the colouring and brushwork give presumptive evidence of this accomplished Spanish painter's skill. The Earl of Carlisle contributes the "Daughter of Herodias with the Head of the Baptist" (148), ascribed to Rubens—the colouring rich. We must particularly notice the four fine full-length figures of St. Jerome (140), SS. Thomas, Andrew, and Cyril (142—144), said to be by Francesco Zurbaran, a disciple of Michael Angelo. There is much strength and vigour of light and shade in these figures. William Peters' "Children" is a delightful composition (127), full of nice colour. A Vandyck (153), a portrait of John, Count of Nassau-Dillenburg, has a very life-like expression, and one or two fine Rembrandts (147, 151, 152), a mellow-toned and rich "Market Cart" by Gainsborough (163), and a landscape by Sir A. W. Callcott (161), may be noticed.

Space prevents our saying much on the interesting series of portraits from the collections of the Marquis Townshend and the Earl of Suffolk, in the fourth gallery. In these are included portraits of Horace, Lord Vere of Tilbury (177), lent by the former nobleman. Horace was one of the great generals of the "Fighting Veres" who took part in the Cadiz Expedition, and was engaged in the defence of the Palatinate against Spain in 1619, for which services he was raised to the peerage by Charles I. Many portraits of officers who served under him in the Netherlands were painted for Lord Vere, and are by a Dutch painter. Those lent by the Earl of Suffolk are attributed to Daniel Mytens, and belong to the same period. The full-length portraits are in standing attitude on rich Eastern carpets, with the handsome costumes, lace ruffs, full trunks embroidered with gold, or with black dress, cuirass and sash, and other symbols of military service.

The Water-Colour Room is filled with an instructive collection of drawings and models by the late Alfred Stevens, whose work in decoration and ornamental design of various sorts is well known, and whose design for the monument of the Duke of Wellington was erected in St. Paul's Cathedral, for which edifice Stevens prepared a scheme for the decoration of the dome. Among the bold and very spirited drawings we note one for a cove ceiling, and for the decoration of a



groined roof, lent by Mr. Hugh H. Stannus; several designs made for Messrs. Benham and Son; designs for vases and plate, lent by Messrs. Minton; a clever plaster model of a mantelpiece, lent by the Sheffield School of Art; pen-and-ink and water-colour designs for slabs for mantelpieces in china (25-40), displaying invention and nice arrangement. Several studies and sketches lent by Mr. John R. Clayton, a large number by Mr. R. S. Holford, Mr. James Gamble, and the Department of Science and Art are worth notice, particularly Stevens's original sketches for the Wellington Monument in pen-and-ink and in plaster, and a very clever design for the eight panels on the door of the Museum of Practical Geology, Jermyn-street, each panel representing subjects illustrative of the practical applications of that science. The designs for the dining-room decorations of Dorchester House in pen and ink and colour, display a free and tasteful adaptation with a true sense of architectural treatment. The scale model of pendentives, St. Paul's, oil painting on plaster, are lent by Mr. F. C. Penrose. Several life studies and copies of Titian's work in the gallery of the Uffizi, sketches in red chalk for figure decoration, are evidences of the artist's study of the old masters, all remarkably free and classically conceived.

#### ARCHITECTURAL BRICKWORK.— XXVI.

##### ARCHES.

AS these articles are not intended to instruct in the elements of brickcutting and construction, for which purpose there are several manuals well suited to the beginner, it will not be within the course of our remarks to describe the various kinds of brick arches—how they are struck and set out. Our readers are supposed to know the geometry of arches—that there are straight, semicircular, and segmental arches. We may here say that the bricks in an arch generally show their thickness, and as this thickness in an arch with radiating joints must necessarily be at the extrados, the brick has to be cut, or rubbed, to the proper splay with the aid of gauges, to bring it to the wedge-shaped form of a voussoir. Hence, we have "gauged" arches, so called, formed of cut and rubbed bricks, to form a fine joint of lime putty. With commoner kinds of arches, the rough-axed, for example, the diminution or splaying of the bricks is done by the axe, or the unequal widths necessary at the extrados and intrados are thrown into the mortar joint in many cases, and a sort of compromise is struck between the brick and the joint. The joints are wider. What the architect has chiefly to consider is the radius and depth of arch bricks used, for it will be obvious that the less the radius the greater will be the thickness of the joint at the extrados for the same depth of arch. The unfavourable effect produced by an arch of small radius with the bricks laid as headers is easily imagined in a semicircular arch of 3ft. span, where, if the bricks were placed as headers, the joints at the extrados would be as thick as the bricks themselves, or about 2½in., and such a mortar joint would not make a solid or compact arch. In such a case, of course, rings of half a brick in depth are employed, and for all arches of small radius an arch of three rings is generally used. As the radius of curvature increases, the joints become less unequal in thickness—as, for example, in a segmental arch, as shown in Fig. 1, where a 9in. arch, formed with heading bricks, is used without very much diminution or taper of the joints. In short, it should be remembered in designing arches of this description that the greater the difference between the radius and the arch depth, or the radii of intrados and extrados, the less is the

diminution of joint and the better is the arch. In the sketch we give, the bricks are laid as heading bond, or with headers in the intrados; but there are two other modes of building a 9in. brick arch. The bricks may consist partly of headers and partly of stretchers, or be in Flemish bond, every other voussoir being divided into two by a joint. The appearance of the intrados of an arch of this kind would be that of Flemish bond. Another arrangement of the voussoirs is to place them according to English bond, in which headers and stretchers are also used alternately in front, though showing like that bond on the face of the intrados. We shall give further examples in our next article.

##### GOTHIC ARCHES.

As an illustration of forming brick arches of small span under a square straight head or lintel, we give a sketch of a portion of a four-light brick window at Wollerton Manor House, East Barsham, Norfolk (Fig. 2). We have omitted the label moulding to show more clearly the principle of construction. It will be noticed that the four centred arches are composed of radiating bricks, with vertical apex joints; these joints radiating through the triangular-shaped spandrel eyes, and meeting the corresponding joints of the adjacent arch. The arches are, we believe, of moulded bricks, as the principal portions of this notable brick Tudor Manor House are built in that material. Unfortunately,

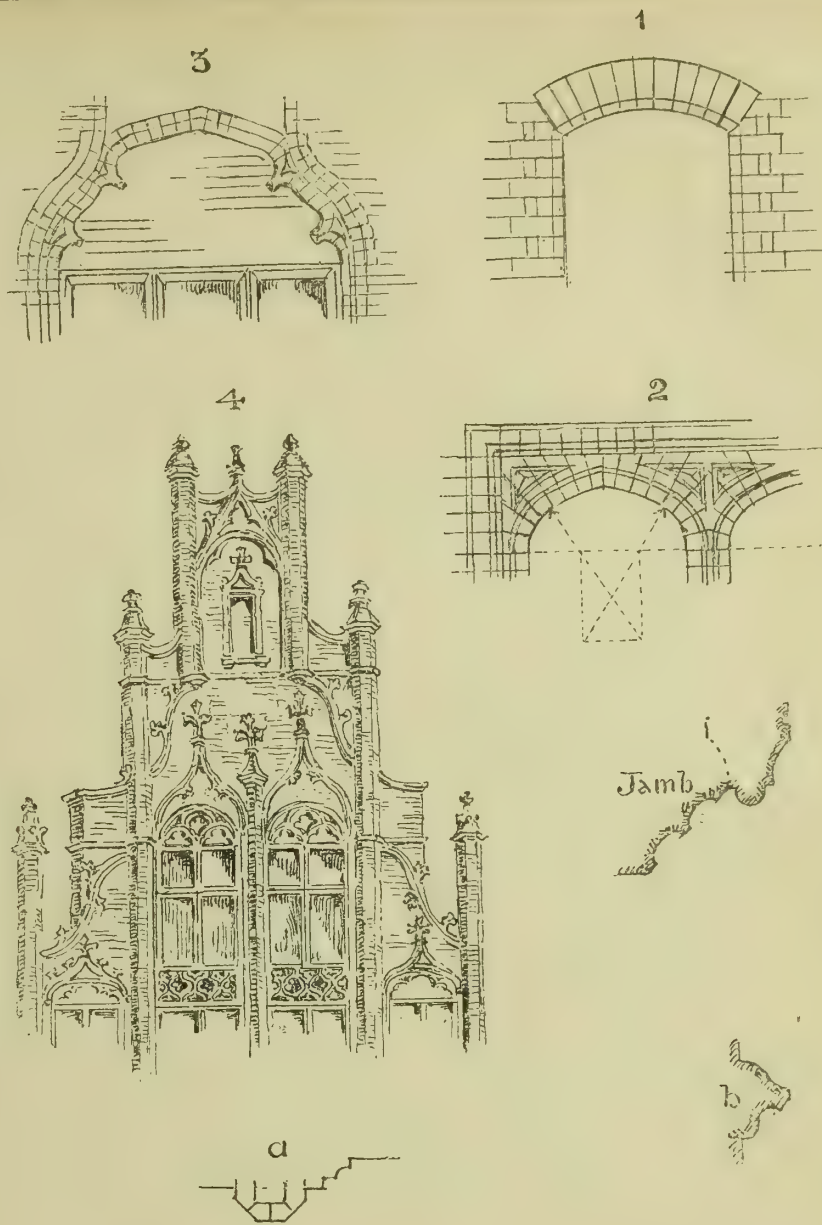
Wollerton House has fallen into ruin. The windows are all of this Tudor mullioned character. The gatehouse is a very elaborate piece of moulded brick design. We gave a view of the house and some details in a late number of the BUILDING NEWS (Nov. 1, 1889). There are some very good moulded brick panels and string-courses round the hall and bay window, and some examples of brick-headed patterns in the walling.

##### TRACERIED ARCHES.

The same method of constructing ornamental arches is found in Flemish cities. Thus, Sketch 3 represents an arched recess over a window of a hospital at Bruges. The cusped curves can be moulded in the manner shown—that is, the joints made perpendicular to the curve of intrados, or the bricks at the cusplings can be moulded or cut to include the points, and the joint lines drawn to a longer radius, to the centres of the main arcs; but much is left to the ingenuity of the brick-setter. It is very evident that in elaborate arch tracery of this kind, it is better and more practicable to adopt as few centres for the joints as possible to avoid cutting the bricks to awkward shapes, and to avoid using too small bricks at points of contrary curvature.

##### OTHER EXAMPLES.

In sketch 4 we represent a rather elaborate gable front of brickwork, in which traceried work of this description is found over the heads of the windows, and in curved labels





having crockets and finials of carved brick or terracotta. The design is taken from, or based on, a Flemish example, and will show the capabilities of brick design.

#### ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, Mr. T. E. Pryce, vice-president, in the chair. Messrs. G. Stephenson, J. H. Mann, P. Field, P. P. C. Smith, A. E. Seaman, T. Parker, and W. Stewart were elected members.

#### SPIRES, TOWERS, AND DOMES.

MR. SYDNEY B. BEALE read a comprehensive paper on this subject. It was illustrated by a series of about 260 large photographs, to nearly uniform scale, classified according to treatment, a selection from Mr. James Cubitt's unique collection, lent by the owner for the occasion. Mr. Beale contended that for boldness of conception, grace of outline, and beauty of detail, none could be found to equal the Gothic and even many of the Classic towers and spires of England. In reviewing the history of spires, he should confine his attention to English forms and English construction. The simplest form of spire conceivable was the four-sided pyramid rising from the square tower with its sides parallel to those of the tower and overhanging, then forming slightly projecting eaves upon a corbel table. The central tower of Southwell Minster was an example. In the Romanesque Period the spire had its first true conception. Thäon Church, Normandy, with a masonry pyramidal termination in height about  $1\frac{1}{2}$  diameter, and a steeper one at Valladolid, with a height of  $2\frac{1}{2}$  diameters, undoubtedly embodied the spire principle. In the Early Gothic Period spires obtained a firm hold on English church builders, beginning with the octagonal pyramid and its attendant broaches of masonry springing from the angles of the usually square tower and butting against the splayed side of the octagon. The simple broached spire had an important change; instead of the spire projecting slightly beyond the faces of its tower base, it sprang from a base area entirely within the edges of the tower. This modification opened up a wide field for elaboration, which was taken full advantage of during the Decorated Period. Beginning with the parapet simply, followed by a combination of parapet and broaches; parapet and pinnacles; parapet, broach, and pinnacles; parapets and angle turrets, elaborated again by double pinnacles, and, finally, by the introduction of miniature flying buttresses, springing from the pinnacles or turrets, and abutting against the splayed side of the spire. The Mediaeval builders in this period produced spires of complicated design and elaborate detail, contrasting with the effective simplicity of the early broached spire in a very marked manner. In the early part of the Perpendicular Period the spire had reached its highest state of development and elaboration; spires were constructed from a vertical polygonal drum standing upon a rectangular tower, the surface of the spire was in some instances enriched with cusped panelling. Crockets had free play on the minor turrets and pinnacles at the spire base and up the ribs of the spires themselves. Ornaments and features were crowded on until the zenith of spire design was reached. Then the reaction came, and square towers were once again generally erected without the superincumbent spire. The decline did not occur, however, until some very beautiful examples of each of the different kinds were left to tell their tale. There are some unique combinations of spire and tower in the minor English Mediaeval parish churches, among which may be mentioned an octagonal spire springing from a tower of octagonal plan from base to summit. It would be difficult to specify the date of the erection of the earliest tower in Great Britain, and what were the exact reasons that prompted its erection. Reasoning upon probabilities, we might arrive at a tolerably reliable conclusion in the latter case. The towers of Mediaeval times in secular buildings served for a look-out, as a refuge, and as a place of vantage in troublous times. Archaeologists assured us that the chief ground for erecting the tower was to procure a position for the hanging and ringing of bells. It was, however, asserted that bells of large size were not cast until a date long after large, massive, and high towers had been in existence, a fact which forbade the idea

of bell-raising being the prime cause for ecclesiastical tower building. Certainly there were many causes working together to justify the erection of towers for one or other of the purposes enumerated. In passing, the author noticed the positions of the tower in regard to the body of a cathedral or church. In the southern countries of Europe the tower was frequently detached entirely from the main building—a notable instance being Pisa. The builders of Italy, in erecting a tower, were dissatisfied unless they produced walls 10ft. thick and upwards. The excessive weight of arch construction brought abnormal loads upon the foundations, producing subsidence, and was the chief reason for the isolation of the tower. A settlement (no uncommon thing) due to the great weight of the tower would have entailed disaster and ruin on the cathedral if the tower had conjoined with the general structure. The position over the crossing of a church, as the site of the tower, could scarcely be improved upon, combining, as it did, the essential advantage of a centralised position, all the component portions of the church leading the eye of the observer up to it when seen externally. In view of the modern tendency in church-planning to reserve a large congregational area about the preacher, this central tower afforded every facility for the effective lighting of a portion of the church usually in the dark. Important English examples included the cathedrals of Salisbury, Winchester, Norwich, Worcester, Gloucester, and the Abbey of St. Alban's. Although the central position for the tower possessed many advantages over any other, to the unstable manner in which central towers were constructed had been ascribed their removal to the west end of the nave in more modern instances. The great inconvenience to worshippers entailed by the frequent works of reparation to the central tower brought about its removal to a position less contiguous to the service. The Mediaeval builders did not as a matter of fact erect their central towers with a sufficient regard to economy of material. The western site, on the extremity of the longitudinal central line of the nave, was a very general position for the towers of the parish churches of England. The extremities of the aisles sometimes came right up to the front or west wall of the tower, thus flanking it on both sides one story high, and in other cases the tower stood clear of the main edifice, only joined thereto on the east side. The latter was the proper arrangement for a single west tower, if it was to receive its full significance and importance. There were other less-favoured positions for a tower, of which the least objectionable one was the transept site, north or south. The position for a single tower to be most avoided was that to the north or south of the west front. In England's cathedral towers were exhibited the respective values of each position. Chichester, with its central and detached tower; Ely, with its central and west tower; the two transept towers of Exeter; the three or more towers of Lincoln, Durham, Wells, York, Canterbury, Peterborough, and Lichfield showed combinations of towers that were peculiarly successful in their architectural grandeur. Each country had some peculiarity of arrangement. Italy gave circular and polygonal plans; Germany had the characteristic oblong plan; the towers, usually extending over the whole west end of the church, had been aptly termed narthex towers; while of English towers the great majority were square, or very nearly so, in plan. A tower that relied for effect upon the beauty and variety of the coloured marbles used in its erection and embellishment, could not be criticised from the same standpoint as the tower that relied upon its fenestration for its effect, or the tower that appealed to the eye by reason of its beauty of outline. We might each have our own sympathies directed towards the tower design of a particular age, style, or country. But there were good grounds, patriotism aside, for maintaining that of the towers and spires remaining from the Mediaeval ages, the erection of North-west Europe, and particularly of our own country, must stand in the first rank. Unfortunately, many a beautiful spire had been lost to us for ever, their ruin and fall arising out of ignorant construction and misuse of material, an evil extending into later and even current time. There was in the Norman period and later an extraordinary prevalence of bad construction, to which was traceable the ruins of many a fine abbey. The evil effect of it was even felt in this century. Contemporary church architecture was not much valued unless a precedent could be stated

for the arrangement and each detail of it. Although no constructor would in these days build up the shafted piers of a church or cathedral with a thin casing of stone, of a thickness only sufficient to work its mouldings on, and then shoot in a loose rubble core, resting content with the idea that a pier had been obtained capable of sustaining the heavy superstructure of a central tower, with the thrusts from the contiguous nave arching, still there were many peculiarities of Norman construction and constructive principles of later styles which were even now religiously followed, and which must subsequently be attended with no less disastrous results than those chronicled in the past. The evil prevalent in the building of many of our towers had been the dangerous overloading of foundations and sub-soil bottoms. This was true of the general body of the cathedrals; the weight brought by nave wall on to the foundations approaching very nearly the supporting power of the soil as far as such strength could be accurately estimated. The evil of overweighted foundations was particularly marked in the locality of the towers, and most notably when the tower was over the crossing. Failure not infrequently occurred at the west tower foundations, and it would be useful to inquire what were the agents generally at work endangering the stability of great towers. Such causes as badly-selected materials (as the case of St. Michael's, Coventry) were not now dealt with. First and foremost, the most destructive agent was the great weight of masonry in the tower itself cumbering the ground unduly; this overweight being sometimes further aggregated by a tall spire of heavy construction. Another cause was the presence of timber in the foundations occurring as piles, serving no useful purpose whatever, but subsequently decaying and endangering the superstructure. It was, of course, possible to build very massive masonry to a great height on ordinary soil if the weight of such construction was evenly and sufficiently distributed over the soil. But what had been the method by which the great weight of many towers had been brought on to their foundations? It had been the almost universal rule to carry central towers upon isolated piers, these piers transmitting the pressure upon usually four points of small area, showing, in some cases, a weight of five tons on the square foot, and in others twenty tons. The very nature of a central tower made it necessary to carry the upper portion upon piers; but when this was done, the piers should be joined again into a continuous construction under the ground-level by the building of inverted arches of the same width as the upper tower walls, and further, they should be bedded in a wider base of concrete to sufficiently distribute the enormous pressure. In church work, inverted arches should be built between all the pier bases of the nave arcading, under the chancel arch, and in any other position in which a concentration of pressure was anticipated. With western towers, where there was no reason preventing the carrying down of the walls continuously on to the foundation, the walls, in many cases, were arched over, and carried upon four piers at the angles of the tower, presumably to economise the material so lavishly bestowed above. Bells had always been active agents in tower destruction, both from their weight and from the strains set up by their movement and vibration. The following rule had been published with reference to the necessary thickness of tower walls intended to support bells: The mean internal area of a tower should be one-half the external area, and then, if well built and of good materials, the tower would safely bear as many bells as could be hung on one level. This particular rule took, however, no account of the height to which the tower might be built. Such rules commended themselves to the unwary by their simplicity, and yet the two or three minutes spent in a calculation of such a nature had brought about a world of anxiety, years of regret, and, perhaps, professional ruin. The errors of misjudged construction were not overrated, for examples known to the whole world testified to the danger, and showed that the science of architectural construction was as far behind our excellence in æsthetic design as the medical knowledge was behind the surgical attainments of another profession. The few principles which governed tower buildings might be enumerated very shortly. After having settled the general plan, outside dimensions, and approximate height, the thickness of walls should



be tentatively settled, being dependent upon subsequent calculations. Such preliminary judgment should be based upon the least thickness of masonry requisite for keeping out weather, consistent with forming a secure and complete bond in the material, and other practical considerations, as window treatment, provision of sufficient abutment for vault springings and corbelling. The approximate weight of the structure might then be calculated, and attention was then paid to the influences which were likely to endanger the stability of the tower when properly constructed. Towers and spires were exposed to the full fury of gales. An allowance for the maximum wind pressure should never be omitted when building a spire. The effect of wind pressure upon a tapering Gothic spire was considerably modified by the plan, elevation, and mode of construction of the spire. The inclination of the sides of Gothic spires, varying as they did from about one in five to one in ten, reduced the estimated horizontal wind pressure by 2lb. and 1½lb. respectively on the square foot. This was so small an amount as to be negligible. For an architect's purpose it was unnecessary to find what the reduction was for the vertical slope of a particular spire, as the error was on the side of safety. The plan, if polygonal, reduced the maximum wind pressure from what it would be if acting upon a rectangular-planned spire, a reduction ranging usually from one-third to one-half for plainly-constructed spires. Further, if the spire was built with rounded or other rolls projecting up the ribs at the line of intersection of the planes of the spire, not only was there more surface exposed to the wind, but the edges of the discharge for the wind were cut off, and its impactive force aggravated. From experiments of wind pressure on cellular surfaces composed of test plates with only one, instead of the usual four edges of discharge, the practice was based of adding one-fourth of the registered pressure on the square foot for each line of discharge cut off. The vertical faces of lucernes, or other features, would slightly modify the effective wind pressure upon a spire. Having obtained a careful estimate of wind effect, the approximate weight of the spire with a tentative thickness of material was then estimated, and the subsequent investigation might be either done by calculation of the moments or by graphic resolution. If the investigation were by taking moments, the point about which the forces were estimated as acting should be one-fourth or one-sixth of the least diameter of the spire from the leeward edge, according to its plan. The calculation by moments was advantageous, as it allowed any modification of the weight of the spire necessary to balance the respective moments in foot-tons or foot-pounds of the wind pressure and the spire weight. By this means a reliable spire would be produced possessing the minimum amount of material required for absolute safety and rigidity. Of all the features of spires that did not contribute to its stability the entasis outline was the most prominent. Its introduction to correct a visual delusion surely subverted the important artistic office of the Gothic spire. Who would say that the spire of St. Vincent's, Caythorpe, or St. Helen's, Broughton, Lincolnshire, and many other highly-entased spires, were not artistic failures? For stability the entasis thickened the spire out at the wrong place; by its adoption the base was cut off at the point where, if anything, it should be widened out. On the other hand, such features as broaches, pinnacles, miniature buttresses and turrets added weight and consequent stability to the spire when clustered round its base. To make the investigation complete the further point that should be inquired into was the tendency of portions of the spire to slide on the bed-joints. This action could not possibly occur if the total wind force was less than the normal component of the weight of the spire above any bed-joint, multiplied by the coefficient of friction of the material used in the construction. Failure by crushing should be looked into; the amount of the pressure on the square foot would, in the majority of spires, be greatest at the base, and would vary in disposition and amount according to the distance of the centre of pressure of all the forces acting in and on the spire from the outside edge of the spire. The amount of this pressure upon a unit of area should, of course, be some fraction of the ultimate crushing strength of the material. If the actual pressure was too near the ultimate strength the thickness of the material of the spire should be modified. The

calculation of a tower ran upon the same lines as those for the spire, the modifications being due to the different plan and elevational shape, and the consequent modification of wind effect. The tower had to answer the same demands for stability against overturn, safety against sliding on any bed-joint, and possess a factor of safety against crushing. The total weight brought by the structure upon a unit area of the subsoil should next be estimated, and be within the limit of safety. An interesting inquiry into the western towers' construction of Coutances appeared in the BUILDING NEWS about three years ago. The result arrived at showed an excess of material in those towers to the extent of 1,000 tons beyond the needs of the case. Mr. Beale instanced as a forcible example of an ill-conceived tower the leaning one of Pisa, and by a diagram to a scale of 4·25ft. to the inch, enlarged from a measured drawing, showed how and why this campanile had sunk so seriously on one side. The tower, circular upon plan, was nearly 178ft. high, with an out-to-out base diameter of 50ft., the height bearing a ratio to diameter of 3½ to 1. The walls of lower story were 13½ft. thick, and the upper 9ft. The tower was entirely of marble, which might be reckoned to weigh 170lb. per cube foot. The reduction of the wind effect registered upon a flat surface, due to the circular plan of this tower, was annihilated by the galleries in consequence of their forming cells for the reception of the full force of the wind. In consideration of this a 60lb. pressure had been calculated. The momentum of this force was ridiculously below the strength of the tower, the ratio being as 1 to 5½. The graphic resolution coincided with the calculated margin of safety. Next should be considered the total weight of the tower upon the earth foundation. The tower brought a pressure of 7 tons on the square foot, and at a fair computation the soil, a sandy one, was only capable of sustaining 4½ tons. This fact obviated the need of any further inquiry into the causes of the subsidence. The tower was thrown from 12½ft. to 16ft. out of the perpendicular, and had sunk bodily down some feet in the earth, which had since been excavated away from its plinth. This tower was a unique example of useless masonry overloading its foundations, still standing, as it did, to tell the tale. Many thousand tons of masonry were in the structure which had no business to be there. It could easily be imagined what the fate of the cathedral would have been had the tower been joined to it. The investigations of Canon Moseley, Rankine, and other noted American, French, and German students had now taken a firm hold upon the constructive professions, and these researches were destined to have a far more weighty influence upon architectural construction than had hitherto been the case, tending to produce in our buildings the fullest economy of material consistent with practical needs and lasting stability. Dealing in the last place with domes, the author remarked that very few, if any, were monuments of architectural and constructive skill. In the erection of domes, a field in which scientific knowledge could have such full scope, construction was drifting in a backward rather than in a forward direction. The most recent dome (that for the tomb of the late Emperor Frederick of Germany) decided that the dual construction still held the field. Since the days of Wren there had been seen no legitimate advance in the matter of dome-raising. The cathedral cupola of London was the first of a new race, and in its essential principles one which has been followed by each successive dome constructed of similar materials. The lighting difficulty had not received the attention it deserved as being really the pith of the whole problem of dome construction. Suppose that the convex surface of the spherical dome, as seen from the exterior, was endowed with the importance and dignity consistent with the magnitude of the structure of which it formed part. Then, by 19th-century reasoning, the inside surface of this identical shell was unsatisfactory by reason of the unpleasant visual exertion required to grasp its contour—a disadvantage due to the great distance from the dome to the level of the inside pavement. This defect was undoubtedly due to the system of admitting the light at the wrong place. No dome interior satisfied the canons of artistic taste so completely as that of the Pantheon at Rome, an interior lighted directly from the sky; again, by universal consent, there was not a more inartistic and depressing dome exterior than

that of the same Pantheon at Rome. The evil effect of the flattened appearance of the exterior and its piled-up abutments had been a more powerful factor in modern dome construction than had the principle of admitting the light direct from the heavens. The former had generated the dual and triple constructions of St. Peter's and St. Paul's, and most subsequent domes, while the principle of lighting from the eye of the dome had not been perpetuated with success. It was not suggested that the great value of top-lighting for the dome had not been fully realised, but rather its non-adoption had been due to the concomitant difficulties having proved too much of an obstacle to its realisation. What were these difficulties? In the first place, artistic and even religious sentiment demanded that the apex at the crown of the dome should be surmounted by a lantern erection so as to annihilate the Mohammedan associations attaching to a bald domical sphere. But this very lantern as now built obstructed rather than let in the light. Granted that for architectural reasons the lantern was essential. Then such a lantern ought to be of such a design and of such a size that it conveyed a bright, strong light from the heavens to the dome interior. If this could be done the need for the dual system ceased to exist. The difficulty of carrying a heavy lantern at the apex of a spherical dome had hitherto proved insuperable. It would remain so while stone or brick was relied upon as the sole medium of construction. The materials hitherto composing domical construction, though possessing a full complement of compressive strength, had not possessed that cohesive strength and tensile resistance in sufficient abundance to resist the aggravating bending moments set up by a load at the apex of the dome. The days of masonry and brick domes existing solely as such were numbered, if not even now at an end. And if a dome could be constructed satisfactorily when viewed both internally and externally supporting a lantern erection, then the dual construction which had been the great bar to domical roofing development would be superseded, and an architectural sham be abolished for ever. He proposed to do away with iron chains in domes, and to provide a series of iron ribs radiating from the eye of the dome, formed by a circular metal curb, and abutting upon a similar curb at the base, the whole cross-braced and tied, and fixed upon expansion rollers. By such an erection a framework would be obtained, which could be calculated to resist any bending moment that might be brought upon it by a superimposed lantern, and no thrusts would be transmitted to the drum or abutments. Terracotta would form a very suitable material for casing the whole of the metal framework internally and externally alike; by blocks interlocking, and treated architecturally inside, with over-lapping joints externally. Such a construction would, he believed, produce a dome which, if suitably treated internally, would be satisfactory artistically, and constructively exceedingly economical—proof alike against fire, frost, and the dreaded hand of time.

A discussion followed, in which the Chairman, Messrs. H. O. Cresswell, A. B. Mitchell, and C. H. Brodie took part.

The Mayor of Wigan laid on Saturday the corner-stone of No. 1 viaduct of the Wigan extension of the Manchester, Sheffield, and Lincolnshire Railway. This company constructed a railway from Manchester to Wigan about four years ago; but the terminus was situated in an inconvenient part of the town. The company are extending the railway so that the station can be placed more in the heart of the town. To carry the station from Darlington-street East to Crompton-street a viaduct will be constructed to span the valley of the river Douglas, and it was the corner-stone of this viaduct which was laid on Saturday. After the laying of the stone the corporation were entertained to luncheon by Mr. Braddock, the contractor.

The model for the monument to be placed over the Emperor Frederick's grave, which Professor Begas is executing, has been inspected and approved by the Emperor and Empress. The Emperor Frederick reclines on the sarcophagus, and is dressed in the Cuirassiers' uniform. On his shoulders he wears a mantle, and the hands, crossed on the breast, hold the laurel of victory and a sword. The lower part of the body is hidden by ermine, which falls on to the steps of the sarcophagus. On either side of the head of the sarcophagus, which bears an inscription, sits an eagle. The sides are adorned with reliefs.



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## ILLUSTRATIONS.

MARLING SCHOOLS, STROUD.—NEW HOTEL, ST. HELIER'S, JERSEY.—THE FONT, BEVERLEY MINSTER.—SOUTH PLACE HOTEL, FINSBURY.—NORTHINGTON CHURCH, HANTS.—CHURCH OF ST. GERVAIS, FALAISE.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

## THE MARLING GRAMMAR SCHOOL, STROUD.

THESE schools originated in a gift of £10,000 from the family of the late Sir Samuel Marling, Baronet. This sum has been augmented by an amalgamation of various old charities of the town of Stroud, under a scheme of the Charity Commissioners, which provides both for the erection and endowment of the new schools. The schoolhouse has been planned on the central hall system, and in the head master's house the main idea has been to combine perfect supervision of the boarders with separation from the master's quarters for the sake both of quiet and complete isolation in case of illness. The building is faced with the Quarhouse (local) limestone, dressed with Bath, and backed throughout with brick. The schoolhouse floors are to be of wood block, the lavatories, &c., lined with glazed bricks, and the roofing is of Broseley tiles. Messrs. English and Sons, of Stroud, are the contractors. The heating of the schoolhouse will be by Grundy's hot-air system, with fresh air ventilating stoves in all the class-rooms. The work is being carried out from the designs, and under the superintendence of the architect to the Governors, Mr. W. Howard Seth-Smith, of London. Our illustration is from the perspective which was exhibited in the Academy last year.

## THE GRAND HOTEL, ST. HELIER'S, JERSEY.

THE Grand Hotel at St. Helier's, a view of which we publish this week, is to be built upon the site of the present Marina Hotel. The accommodation provided includes a dining-room, 65ft. by 30ft., a drawing-room, about 64ft. by 24ft., a billiard-room, 36ft. by 26ft., and numerous private sitting-rooms, with about 80 bedrooms for guests. A special feature in the hotel will be hot and cold sea-water baths, a sea-water swimming-bath, and lawn tennis courts in front and rear of the building. The walls of the building will be covered with rough cast in Portland cement. The roofs will be covered with Broseley tiles. The architect is Mr. Thos. E. Colcutt, of 5, Lancaster-place, Strand, whose portrait we published last week.

## THE FONT, BEVERLEY MINSTER.

THE ancient font of this great church has a very fine and elaborately carved cover to it of Late English Renaissance character, and which forms the subject of the accompanying illustration. Whether the work is suited to its position in a Gothic building or not remains a matter of opinion; but at any rate the cover marks a page of history and illustrates a phase of art which, after all the Mediævalists have said, still has many admirers. At the end of the enriched chain supporting the cover and rising over the final of the canopy is a dove with outstretched wings, typical of the Sacrament. The sculpture is very much after the fashion of Grinling Gibbons' work, and the design in a general way is very like the interior fittings of several of our London City churches, as for instance the smaller font cover in All Hallows, Lombard-street. The illustration is from a photograph by Messrs. G. W. Wilson and Co.

## SOUTH-PLACE HOTEL, FINSBURY.

THIS building, now in course of erection, occupies the site of the Temperance Hotel, of which for many years Messrs. Joseph Armfield and Son have been the proprietors. The building has frontages of 65ft. and 93ft. 6in. respectively to South-place and South-street, and is Classic in design. The materials to be used externally are red gauged brick and Monk's Park stone. The building, when finished, will have a lofty and noble appearance. The hotel throughout will be replete with every modern improvement. Whilst great care has been taken to provide every comfort necessary in a commercial and family hotel, undue and lavish expenditure has been avoided. In the basement there is a fine lofty restaurant, 33ft. by 28ft., with smoking-room adjacent. A space of 50ft. by 22ft. has been reserved for commercial show-rooms, the remaining portion being utilised for kitchen and domestic offices. The ground floor is approached from South-place by an entrance lobby 12ft. wide leading into a spacious hall, from which access is gained to the dining, drawing, commercial, billiard, and smoking-rooms. The grand staircase will form a central feature in the hall. The woodwork throughout on this floor will be in American walnut. Some very fine suites of rooms are provided on the first and second floors, and altogether the hotel will include about 150 apartments. A hydraulic passenger lift has been placed close to the principal entrance, working between the basement and fifth floors. The sanitary arrangements will be on the most perfect and modern system. Mr. James Morter, of Stratford, is the contractor. Mr. W. M. Yetts, A.R.I.B.A., is the architect.

## NORTHINGTON CHURCH, HANTS.

THE church at Northington, near Alresford, in Hants, which has just been pulled down, was a modern structure of no particular architectural interest, though it was improved to some extent a few years ago by Mr. Butterfield. The new church, now in course of erection from the design of Mr. T. G. Jackson, stands a few yards from the site of its predecessor. It is being erected at the expense of Lord Ashburton, and will contain sittings for 260. It is constructed of cement concrete, faced internally with Caen stone, and externally with flint-work, inlaid in various traceried patterns. The stone used for exterior masonry is Chilmark, from the Wardour beds. The fall of the ground eastward allows space below the chancel for a vestry, which takes the form of an octagonal chamber with stone vaulting, the ribs of which spring from a central pillar. The seats are of black American walnut, with carved ends. The work, which is now advanced as far as the timbering of the roofs, has been carried out by his lordship's own men under his clerk of works, Mr. Potter, very much to the architect's satisfaction. The carving is executed by Messrs. Farmer and Brindley. We give a view of the chancel and organ.

## CHURCH OF ST. GERVAIS, FALAISE.

THIS ancient Norman town, still partially enclosed within its old walls, and retaining its "Porte des Cordeliers," is most celebrated in the eyes of the antiquary for its Castle, one of the few Norman fortresses remaining in France, the seat of the Dukes of Normandy, and the birth-place of William the Conqueror. The ruin is grand and picturesque, commanding the town from an eminence, where it is isolated on three sides, rendering it a stronghold of the first importance. The donjon keep, rising abruptly from the edge of the precipitous rocks of Norren, is now little better than a mere shell. Here is the cell in which tradition says that William was born, 1027. From the windows a fine view of the Val d'Ante is obtained, where the mills and tanneries crowd the banks of the stream, along the slopes of which, the story says, Duke Robert first espied Arlette, the tanner's fair daughter, washing in the running brook, and became so enamoured of her beauty that she was taken as his mistress, and he continued faithful to her until death separated the lovers. She then became the wife of Herlwin, of Conteville, and the mother of Odo, the fighting Bishop of Bayeux. The chapel here is now occupied as a powder magazine. The "Talbot Tower" is 130ft. high, and is crowned with machicoulis, but the roof was destroyed in the 16th century during the religious wars. It is said to have been built by "Valiant Talbot" between 1118 and 1450, and its walls are 15ft.

thick. The zinc roof on the top is out of all character, and the stone used in 1835, when the structure was repaired, has perished in such a rapid manner as to contrast very unfavourably with the original masonry erected over 400 years ago. Turning to the subject of our illustration, the Church of St. Gervais, we have little account of it to give, and no drawings or sketches of the church seem to have appeared elsewhere. The square central tower is Norman, dating from the beginning of the 12th century; but the roof is modern, like much of the interior work. The Late Gothic of the nave and aisles is thoroughly French, and typically Florid in its detail. The porch has some large iron gates of 18th-century workmanship, which seem to go very well with the building. The fountain, the cross, and the neighbouring houses crowded round the church add to the quaintness of the picture, though churchmen may well take exception to the way in which the sacred walls have been encroached upon by the dwellings erected against the church. The Trinité is a Debased Gothic church, profusely ornamented, chiefly of the 15th and 16th centuries. It stands in the Place de la Trinité, at the foot of the castle.

## CHIPS.

One of the daintiest New Year's souvenirs we have seen is the really charming little ivory calendar and pocket-rule issued to their friends and customers by Messrs. R. Boyle and Son, the leading ventilator manufacturers and engineers, of 64, Holborn-viaduct. It will go into the waistcoat pocket or pocket-book, and is practically imperishable. The gorgeous but yet tasteful black and gold letter of greeting which accompanies the useful little present is a most creditable specimen of fine art printing.

The Tiverton Town Council at their last meeting decided to raise the salary of the borough surveyor, Mr. J. Siddalls, to £250 per annum.

Twenty thousand pounds is the total cost of the new premises, including a large composing-room and foundry at the top of the building at Milford House, in Milford-lane, close to St. Clement Dane's, Strand, erected for the *Daily Graphic*, and Messrs. J. and S. Flint Clarkson are the architects. Necessarily a good deal of special construction has been involved in this work, and the machines are of great size. These are placed in the basement, and are equal to printing 50,000 complete copies of the paper in an hour.

Two memorial windows have just been presented to the parish church, Girvan. They are placed in the south transept of the church, and were designed and executed by Messrs. Ballantyne and Son, Edinburgh.

At the last meeting of the Society of Medallists it was decided to offer prizes of £20 and £5 respectively for medals or models of medals in metal or plaster. Objects in competition should be sent to the secretary, Mr. H. A. Grucher, British Museum, by the 1st of April.

Messrs. Munro and Tubbs hope to begin work for the Cyprus Exploration Fund on the site of Salamis in a few days' time. Mr. and Mrs. Bent are starting for Athens, with a view to an archaeological tour in Asia Minor and Bulgaria.

The Public Free Libraries Committee of the Manchester Corporation have arranged for the delivery of three free lectures at the Reference Library, King-street, on the second Monday in January, February, and March. The first, to be given on Monday evening next, will be on "Secular Architecture," by Mr. Alf. Darbyshire, F.R.I.B.A.; the second on "Ecclesiastical Architecture," by Mr. Percy Worthington; and the last on "Sculpture," by Mr. John Cassidy.

It is announced that the rebuilding of the Palace of Laeken will be begun immediately.

Mr. Samuel Hurst, architect, a native of Bury, but recently in business at Southport, ended his life by taking narcotic poison in a field at Rochdale on Thursday night. He had been unfortunate in business, and a few weeks ago underwent his first examination at the Liverpool Bankruptcy Court. In consequence of his business troubles he had to give up his home, and he and his wife and three children went to his mother-in-law's residence at Rochdale. The second examination in bankruptcy was to have taken place on Thursday last, but Hurst was absent. He was 40 years of age, and was a Sunday-school superintendent. At the inquest held on Saturday a verdict of suicide while in a state of unsound mind was returned.

The first sod of a new brewery was turned at Caerphilly, near Cardiff, last week. Mr. W. D. Blessley, of Cardiff, is the architect; Mr. T. Rees, of Merthyr Vale, the contractor; and Messrs. Llewellyn and James, of Bristol, are the engineers.



## WAYSIDE NOTES.

THE death of Joseph Brentano, at the early age of twenty-seven years, is one of those regrettable incidents in the history of architects of all nations that are, unfortunately, by no means of rare occurrence. Too often we have seen young architects successful in competitions of more than ordinary importance who, through premature decease, have never lived to carry out their designs. In many such instances the cause of death may be directly referred to over-work, or, perhaps, more properly speaking, to the pressure of responsibility on a constitution unable to withstand the strain. I do not know whether in this case we are justified in ascribing the fatality to this cause; but until one hears definitely to the contrary, it is but natural so to do. Whatever may have led to the loss, it is one to be deeply lamented, even though it be to another country's credit that the lost one carried off the laurels in a competition for a work that attracted the attention of the wide world—the reconstruction of the façade of Milan Cathedral.

Yet while lamenting the death of Joseph Brentano, the fact of his youthfulness should be one more encouragement to those young architects who are too prone to bewail their lot, and complain that they have no hope of any marked success until long years have passed over their heads. The incident reminds one of the truth of the assertion that where real talent and energy go hand-in-hand, the age is one of opportunities for the young. With the perfecting and purifying of the architectural competition, those opportunities should increase. I never had much, if any, sympathy with those who are of the melancholy Jacques type of character, believing that such persons find it easier to lie down and complain of the times than to be up and doing, and putting their shoulders to the wheel. The constantly recurring cases where young men, who couldn't grow a beard if they tried, carry off first prizes in competitions, should be enough to give the lie to the complaints of the dissatisfied. Such incidents should serve to show them that the fault is on their side, and that their condition is only to be bettered by superior sobriety, energy, and perseverance, and—in competition work—by a steadfast faith in the righteousness of that principle of "retail" competing which I am never weary of urging upon all.

I had hoped, when last at Canterbury, that the old Kentish minster would long remain innocent of any further operations of the kind that I come to believe more firmly day by day destroys the soul of a building, and leaves but a marble-like effigy, which is not even a truthful semblance of the outward and visible form of the structure as it left the hands of the builders of the Middle Ages. I had hoped that enough had been done in the past at Canterbury to insure the immunity of the building for years to come, and that the "true glory" of the old cathedral might indeed never be ravished. Vain hope! From your laconic paragraph in last week's issue, I learn that the restorer is once more girt about the loins and essaying the war-path with insidious designs specially directed against glorious old Canterbury cathedral. The building, you say, is to be handed over to the tender mercies of our only Mr. Christian. Poor old Canterbury! It is one of those sweet old English Cathedrals to portions of which, when we escape the turmoil of business pursuits, and forget for a moment the prostitution of the architectural muse to 5 per cent., and to cubes, supers, runs, and numbers, we can turn with a sense of happiness and relief that comes over one at the sight of pure old architecture, undisturbed by the unsympathetic "restorative" processes of humanity, but lovely in silent, slow, and natural decay. Being particularly attached to this old building, I feel the more grieved at the news that a few years may now see its moral destruction, and artistic and architectural death—one more old English cathedral enrolled in the now long list of those which "restoration" has caused to appear mere ghosts of their former glorious selves.

Where will operations commence? On the grand old Bell Harry tower? If so, our regret is more poignant. The square belfry at the crossing of Canterbury Cathedral, that rises in such a noble outline, when seen from the quiet Close, and round which the jackdaws wheel and caw incessantly throughout the live-long day in

the green spring-time; has in its architecture acquired that character that only comes to a building, as to a man, with age and a cycle of troublous years. Is not restoring a work of architecture like enamelling, to a smooth and characterless surface, the face of an old man?

I pity the enthusiastic architectural student of the unborn generation. He will have little of the grand old architecture to enjoy and study and love, as these have had who are now passing away—I may, with more accuracy, say who have passed away. Instead of true architecture as left by the old builders, plus the sweet aid of Nature, and her bounteous garlands of lichens, mosses, climbing plants, and wild flowers that blossom in the cracks and crevices of any old building unsullied by modern hands, he will have the cold, dead, mummy-like images left him by those who have, in a worldly sense, flourished on the restoration mania. Surely in that day it will come about that the flickering lamp of Gothic art will go out for ever! If the only examples before the student of to-morrow are to be the buildings that to-day are being restored to the very backbone, void of all architectural, archaeological, and artistic interest—cold and repelling—mere phantoms of a spirit long since passed away, will he not become sad and troubled, and in the bitterness of his heart revile the names of the arch-restorers, while he permanently transfers his affections and sympathies to an alien style. Yes, then, I take it, will be the very death of Gothic principles, and then, as some compensation, perhaps, will earnest attention be bestowed on a manner of well-building where style shall not be the whole end and aim.

About this time of the year an architect has just room to swing the traditionary cat in his offices, and that is all. Through post and by hand have been arriving for some weeks a perfect flood of *almanacs* of one kind or another. The cry is, Still they come! What on earth do the various tradesmen and manufacturers imagine to be the use of a pile of almanacs for the year of grace, 1890? Surely they don't imagine that one can plaster every square foot of the office walls with Mr. Jones, Brown's, or Robinson's almanac, profusely illustrated with various specimens of their manufactures? Is their invention so poverty-stricken that they can think of nothing but almanacs? It is like worked-slippers and the eligible curate. If they can think of nothing original, I give manufacturers of architectural goods a golden hint when I say that for 1891 they might save their money for other purposes than the production of almanacs of all shapes and sizes that have only to be relegated to the wastepaper basket.

I fancy that you hit upon an idea that will prove exceedingly popular and attractive when you commenced the publication of the proposed series of photographs of contemporary British architects. The least inquisitive and curious like to know what Mr. So-and-so who built or designed this or that, or did or said something else, is like. Curiosity, says Burke in his "Essay on the Sublime and Beautiful," has an appetite which is very sharp; but, the essayist truly adds, it is very easily satisfied. The "counterfeit presentments" are, for the most part, excellent and speaking likenesses, several being exceedingly happy. I would send you a sun-picture of my own countenance, only it is really unnecessary; for if you would kindly reproduce a photo of a blanket having four holes burnt therein with a red-hot poker, I feel sure that you would sufficiently convey to your readers the ordinary intelligent facial expression of the ancient

GOTH.

Sir Arthur Blomfield inspected last week the tower of St. Lawrence's Church, Ludlow, which is being underpinned and recessed from his designs, and has since certified that the foundations are now perfectly secure. The work was not, he thinks, undertaken a moment too soon, and the failure originated from a slight movement in the foundations, which most probably occurred very shortly after the tower was built. The cracks might not have got worse had it not been for the shaking of the tower in high winds and the vibration caused by the ringing of the bells.

The memorial stones of a Swedenborgian church in Devonshire-street, Keighley, were laid on Friday. The church will be Gothic in style, and will have a spire. Mr. John Haggas, of Keighley, is the architect.

## NOTES FROM EDINBURGH.

THE story of the past civic year has to record an unprecedented increase in the city rates. Notwithstanding the cessation of the Improvements tax, and an unusual increase in the annual rental (£61,200 as against £39,300 last year), the amount of assessment is 3d. per £1 more than the preceding year. The result is, perhaps, in part to be attributed to lavish expenditure in prosecution of the scheme for improving the Water of Leith, also to the purchase of recreation grounds; but it is evident that there has been injudicious financial management, and the committees responsible for the expenditure are too large to secure the proper consideration of the several matters remitted to their care. The remedy proposed is reduction of the numbers composing each committee, giving to each less to do, in the hope of its being more thoroughly done. Contracts, it is said, would not have been entered on, and much needless Parliamentary expense saved in prosecuting the Water of Leith Drainage Scheme, if more attention had been given to details. A Bill is being promoted for the purchase of the Braid Hills, to provide a golfing ground for golfers who are to be shut out of Burntsfield Links. There are few cities in the kingdom which can boast of such extensive recreation parks and hills, and there are few which need them less. The health statistics of the city are as before, the rate of mortality per thousand having been as low as 11 and as high as 25.

The year has been, like its predecessors, a favourable one for all the building trades. No complaints are heard of want of employment, and the labour market has been steadily improving. The work done has been, much of it, of a kind that will leave its mark on the architecture of the city; there is much of the same still in early stages of progress, and the suburban growth continues, so that the prospects of the coming year are promising. In addition, the Electrical Exhibition building, which is making progress, gives employment to a great variety of trades. A new public school, to accommodate 1,900 pupils, is to be erected in the Sciennes district, not far from one of the first of those built after the passing of the Education Act of 1870. The new asylum is another large undertaking, and the Water of Leith scheme will be the work of years.

The National Portrait Gallery is fast approaching its long-desired completion. The building was opened for the portrait department in July, and has been serviceable also for accommodation of the Art Congress. The eastern section is still in the hands of the masons, who will soon, however, see the close of their labours. The completion of the western and the eastern façades has made a very striking change on the aspect of the edifice, as it has now been decorated with four massive octagonal angle turrets, which have richly crocketed spires. The elevations east and west are altogether different from those north and south, and have a look of the Perpendicular Castellated style, with more of variety in the character and placing of the lights. Many people will prefer this variety to the monotonous arrangement characteristic specially of the principal façade. Here, however, there is much to admire in the fine range of windows and the niches for the statuary. But there is far too much dead wall above it, and a want of emphasis and a look of weakness in the piers of the ground arcade, where there are no impost mouldings, and where some buttressing would have been desirable to give the vertical lines, here altogether absent, or overpowered by the horizontal character of every detail, impressed on the eye by the near or distant perspective. Whilst, however, we might wish to see a little more of the Northern Gothic in the northern façade, it may be that this could be attained only by destruction of its character, as representative of the style in which civic buildings were built in mediæval days, and a gift so excellent and well adapted for its every purpose must not be rashly criticised.

The New Public Library is another interesting subject completed, or nearly so. The plaster work is finishing, and the whole interior will, for the principal rooms, soon be ready for the floor and finishings and furniture. On the ground floor, which comprises a great extent of open cellarage, the steam heating apparatus, now in working order, is located. The apparatus is a very powerful one, and keeps the large interiors at a very comfortable temperature, even in the present condition of the new plastered



surfaces. The ventilating fan chamber is not yet made. The access to the upper floors is mostly in the darkness of borrowed and very defective daylight; but the contrast on entering the reading-room, the lowest of the three principal apartments, is so much the more agreeable. Here there is what may well be designated a great abundance of light, transmitted, on three of the sides, and which, without the dubious supply obtained from the remaining one, would be amply sufficient to light the whole interior. The apartment takes the form of a large central square, with four recesses, separated by lofty pillars and arches. The walls and piers are all lined with white faience and some coloured bordering. The plaster decoration has been designed without that superfluity of detail which makes an interior, when dusty and discoloured, so unpleasant to the eye.

The one defective feature is the east side, where the light is dismal contrasted with the brightness in every other quarter. The light is poor at its best, and at its best only in the early portion of the day, when it will be least of all required.

The departments over the reading-rooms are similar, or nearly so, but with more of ornamental detail. This is specially the case with the upper room, the consulting library, which, with better proportions, has also a large central dome. The hall occupies the best part of the central frontage, with the staircases at either end. The principal staircase is located in a building projected far beyond it, with a view to preserve light from the east side for the reading-room on the floor below. This arrangement has been fatal to the aspect of the George IV. street frontage. The great projection of the staircase tower unavoidably reduces the breadth of frontages at its side; and the Cowgate elevation is the only one that does any justice to the building in the way of giving a fair impression of its magnitude. The ornamental details of the style selected (a kind of French Renaissance) are of a florid type and make matters worse. The tower has its own independent Mansard roof, with an immense frontispiece to its dormer window, out of all proportion to the opening behind, and which at a little distance looks as if some of the larger monuments of the Greyfriars Churchyard had migrated for a more conspicuous position. On the other hand, the central and principal frontage has no visible roof at all, and the large pavilion roof, containing the interior dome, is too far recessed to have any practical value in preserving the unity essential to the designs of so large a building.

The West Kirk restoration has been postponed for a lack of the necessary funds, the actual estimates having exceeded the amount allowed (£14,000) by several thousands more. The design will be curtailed and brought within an expenditure of £17,000. Many think the money would be better spent in cheaply improving and restoring the accommodation of the present church, in keeping with its present rustic surroundings, and in the erection of another church on a site more suitable for its style, and in a better position for the congregation of the Mother Church of modern Edinburgh.

The old church certainly stands too low for effective design with the ordinary garniture of such Classical details, being planted in a hole, with its roof about the level of the eye at Princes-street; and besides this serious disadvantage, the church, as it is, with its naked carcase, is dropsical enough in its proportions for the spire. What the effect will be on the spire when towers and transepts and apse are added has not, perhaps, been duly considered, so that, probably, among contingencies may be reckoned a further sum for the improvement or enlargement of the spire.

The controversy between the R.S. Academy and its critics continues, the latest phase being a long defence on the part of the Academy of its management, and which seems good enough as a reply to any charge of gross mismanagement. Nevertheless the fact remains, that in its long and prosperous career it has done nothing for the artistic encouragement of architecture as a distinct branch of the art it was chartered to promote. The assumption made that the exhibition of paintings owes its pecuniary success entirely to the paintings is not strictly demonstrable or true, for though the architectural section has long been meagre, and devoid of much interest for the general public (for which the Academy may

be in part to blame), there must always be a considerable number to whom they are of more or less importance.

## PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LX.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.

SCREENS (Continued).

ft. in.	ft. in.	
2 10 2	8 0	2in. deal moulded both sides framing, four panels high, class rooms 1st floor.
2 20 0	40 0	8. Hatfield's patent roller sheaves, fixed with screws and countersunk holes and four oils.
20 0		Iron runners and fixing in deal flooring, and countersunk holes and four oils.
20 0		Iron guide and fixing and four oils on wood.
2 10 6	11 6	Do., and fixing to brickwork and four oils.
2 2 10 6	6 9 8	Fir wrot. all round, and framed bearer (out of baulk).
2 2 10 6	42 0	Fir, wrot. framed and moulded out of 9in. by 4 1/2in. mould, 14in. girt.
2 9 6	19 0	12. Mitred and returned moulded ends to do.
2 10 6	11 6	Do. as last, but plugged to wall.
2 2 10 2	40 8	2. Mitred and returned moulded ends to do.
2 10 2	4 0	Fir wrot. all round and framed, and twice beaded out of baulk.
3 16 9	9 27 0	Deal wrot. stop, 2in. by 1in., planted.
2 4 0	8 0	2in. deal moulded, fixed sashes in small squares with stout bars.
2 13 0	10 21 8	21oz. glass as before.
2 13 0	26 0	Labour scribing 2in. to brickwork.
2 2 11 0	8 6	6 sashes in 16 small squares each. Size, stain, and twice varnish.
2 2 10 6	4 0	1in. deal wrot. and twice beaded lining, and grounds plugged to walls.
2 9 6	2 0	Deal moulding, 4in. girt.
2 2 10 6	4 0	Size, stain, and twice varnish on framing.
2 9 6	2 0	Add on mouldings.
2 10 6	2 10	Add on dado.
2 13 0	10 21 8	Add on landing.
2 13 0	6 13 0	Add on moulding.
40 6	8 0	2in. deal moulded both sides framing, four panels high, as before, made to slide.
2 50 0	100 0	16 Hatfield's patent roller sheaves, &c., as before.
50 0		Iron runner and fixing in wood flooring and four oils.
2 5 0	10 0	Iron guide, &c., as before, and fixing to wood and four oils.
41 0	11 6	Deduct and add do. fixing to brickwork.
2 40 0	80 0	16. Brass flush handles and fixing to deal.
41 0	11 6	Fir wrot., all rounded and framed bars (out of baulk).
2 40 0	80 0	Fir wrot., framed and moulded out of 9in. by 4 1/2in. moulding, 14in. girt.
41 0	11 6	12. Mitred and returned moulded ends to ditto.
2 41 0	6 18 10	Fir wrot. all round, twice beaded (out of baulk).
2 41 0	82 0	Deal wrot. stop, as before, planted.
40 6	4 0	2in. deal moulded sashes, small squares, stout bars.
8 20 9	90 0	21oz. sheet-glass in small squares.
2 4 0	8 0	Scribing 2in. to brickwork.
4 13 0	10 43 4	16. Sashes in twenty squares (small) size, stain, and twice varnish one side.
4 13 0	52 0	1in. deal wrot., and twice beaded and grounds plugged to walls.
4 13 0	4 0	Deal moulding, 4in. girt.
2 45 2	8 6	1in. deal wrot., with beaded casing and backings to iron stanchion.
2 41 0	4 0	Size, stain, and varnish on framing as before.
2 40 0	323 0	Add on mouldings, &c.
2 40 0	160 0	Add on ditto.
4 13 0	10 43 4	Add on linings.
4 13 0	6 26 0	Add on mouldings.

ft. in. ft. in.  
4 13 0  
4 0 208 0 Add on casing.  
Provide the sum of £ for desks and other fittings, &c.

TIMBERS TO FLOORS.

51 6	4 10	Fir wall plate.
43 0		4in. by 3in. fir wall-plate, scribed and bolted to iron girder.
43 0		9 1/2in. W.I. bolts, 5in. long, with H.N. and W.
4 11 6	46 0	9 holes for do. through R.I. girder.
4 3		4in. by 3in. fir plate as last class-room.
4 3		12 1/2in. W.I. bolts as before.
67 0		12 Holes as before.
43 0		Fir wall-plate, class-room.
2 36 0		Add kindergarten.
2 15 0		Add teachers' room.
9 0	19 4	Add.
20 6		Add landing and hooks.
8 0		Do.
31 15 9	76 3	Fir-framed joists, kindergarten, &c.
2 15 9	2 0	Add extra for trimmer.
2 18 15 9	88 7	Fir-framed joists to class-room.
2 15 9	2 0	Add extra thickness for trimmer.
18 19 9	55 7	Add joists to classrooms.
2 19 9	2 6	Add trimmer.
43 22 9	168 2	Add joists girls' school.
2 22 0	3 6	Add trimmer.
13 15 3	31 0	Add joists, teachers'.
8 15 9	19 8	Add hooks.
2 15 9	2 0	Add trimmers.
13 6	2 6	Add do.
1 1 4 9	8 2	Add landing.
4 50 6	202 0	Herring-bone strutting to 11in. joists.
2 35 6	71 0	Do. to 9in. do.
9 20 6	184 6	Do. do.
61 0	61 0	ROOFS.—TILER.
5 6	5 6	Red tile ridge, with plain roll, set and pointed with cement. To be purchased of Messrs. Cooper and Co., Maidenhead, Berks.
2 8 0	16 0	Ddt. do.
3 27 0	81 0	Add do.
2 1		Termination of ridge with two hips. Do. do. with two valleys.
2 1		Broseley, strawberry-coloured, nibbed tiling, laid to a 4in. gauge, each tile secured with two zinc nails, and deal battening for tiling, and 1 1/2 rough boarding in batten widths, and inodorous roofing felt, laid with proper laps to be allowed for.
2 17 3	31 0	Add do.
2 1 0	2 0	Add do.
2 21 9	13 3	Add.
2 21 9	11 0	Add.
2 21 9	12 6	Add.
2 61 0	122 0	Cutting and waste filing at ridge.
2 5 6	11 0	Ddt. do.
29 0	29 0	Add to turret.
4 8 0	32 0	Add ridges.
6 27 0	162 0	Add hips.
4 5 6	22 0	
2 44 0	98 0	



ft. in.	ft. in.	
8 11 9	94 0	Add valleys.
4 17 0	68 0	Do.
4 14 9	59 0	Do.
4 1 6		Ddt. tiling, battening, boarding,
11 6	69 0	&c., to back gable.
4 11 6	46 0	Cutting and waste tiling abutting
		against wall.
2 13 3	26 5	Add.
2 11 0	22 0	Add.
2 12 6	25 0	Add.
2 25 6	51 0	Add.
2 10 9		
2 6	53 9	Ddt. tiling, &c., for chimneys.
2 9		
2 9	10 4	
2 5 6		
4 6	49 6	Ddt. do turret.
2 26 6	53 0	Cutting and waste to tiling chim-
9 3	9 3	neys.
51 6	51 6	Double course tiles in cement at
		eaves.
2 24 0	48 0	Add.
2 17 6	35 0	Add.
2 18 0	36 0	Add.
4 21 0	84 0	Cutting and waste tiling next gutters.
2 5 6	11 0	Hip tiles, to proper angle, set and
		pointed in cement.
2 24 0	48 0	Add.
4 11 9	47 0	Valley tiles, do., do.
2 17 0	34 0	Add.
2 14 9	29 6	Add.
2 31 0	62 0	Cement fillet and pointing to verge.
4 11 6	49 0	
2 13 3	26 6	Deal tilting fillet to gables, 3in. by
2 11 0	22 0	1 1/2 in.
2 12 6	25 0	
2 31 0	62 0	Add.
2 10 9	21 6	
2 5 6	11 0	Add to chimney.
2 2 9	5 0	
51 6	51 6	Add eaves.
2 24 0	48 0	
2 17 6	35 0	Add do,
2 18 0	36 0	
51 6	51 6	7in. by 3in. wrot., one side eaves
		boarding.
2 24 0	48 0	Add.
2 17 6	35 0	Add.
2 18 3	36 6	Add.
51 6	51 6	1in. deal wrot., one side fascia, and
		4 oils.
2 24 0	24 0	Add.
2 17 6	17 6	Add.
2 18 3	18 3	Add.
51 6	51 6	5in. C.I. moulded eaves gutter, with
		proper red-lead joints bolted to-
		gether and securely fixed to
		eaves, fascia, and 4 C.
2		Stopped ends.
2		Outlets.
2 17 6	35 0	Add.
2		Stopped ends.
2		Outlets.
2 18 0	36 0	Add.
2		Stopped ends.
2 1		Outlets.
4 28 6	114 0	4in. square C.I. R.W.P., with orna-
		mental collar joints of red lead
		and tow and 4 oils.
4		Shoes and 4 oils.
4		Purpose-made moulded, ornamental
		head to R.W.P. to design.
2		Purpose made swan-neck bend and
		4 oils.
2 7 0	14 0	R.W. pipe and 4 C., as before, to
		porches.
2		Swan neck, as before.
2		Shoes.
2		C.I. R.W. head, as before, and 4
		oils.
2 25 6	57 0	C.I.R.W.P., and 4C. at ends as
		before.
2		Shoe and 4C.
2		Purpose made R.W. head and 4C.
2		Purpose made swan neck.
8		Galvanised W.I. wire gratings, and
		fixing over outlets in gutter.
8		Do. to R.W. heads.
2		Forming semicircular aperture
		through 14in. stone wall, 9in. dia-
		meter, and turning arch over
		same for exit of water from
		gutter.
CARPENTER'S WORK TO ROOFS.		
60 0		
11		
2		
4 1 1	9 2	Fir-framed ridge.
4 1 1	4 4	1/2 in. W.I. screw bolts.
2 9 0	4	Heads, nuts, and washers.
11		
2 9	2 9	Fir-framed ridge, back gable.

ft. in.	ft. in.	
2 27 6		
11		
29 6	8 5	Add.
11		
2	4 6	Add.
150 19 0		
4 1/2		
2		Fir-framed rafters.
32 33 0		
4 1/2		
2		Add porches.
114 13 3	330 10	
4 1/2		
2		Add front gables.
38 3 3		
4 1/2		
2		Ddt. do.
150		End of 4 1/2 in. by 2 in. rafter, wrot. and
		cut, and 4 oils.
2 6 0		
9	2 3	Fir-framed hips.
3		
2 24 6		
9		
2	9 2	Add.
2 12 3		
9		
2	4 7	Add valleys.
2 11 0		
9		
3		Fir-framed valley.
2 12 9		
9	15 6	Add.
2 17 7		
9		
3		Add.
		2 Rough York stone corbels to take
		ends of timbers next chimney.
170 0		
4 1/2		
3	26 1	Fir wall-plate.
6 18 0		
4 1/2		
3		
2 17 0		
9		
2 1 2	29 9	Fir-framed bearer to porch roof.
2 17 0		
3 10	130 4	Planing to fir.
8 4 1	32 8	Labour to moulding, 6in. girt,
		stopped.
16		Moulded stops.
2		Moulded end to 14 by 9 bearer.
2 17 0		
4 1/2	4 3	Fir-framed plate above bearer.
4		
2 17 0	28 4	Planing to fir.
2 17 0		
4	11 4	4 oils.
4 17 0		
1 2	79 4	4 oils on bearer.
4 9		
4 3	12 9	Add.
2 17 6		
6	17 6	1in. deal wrot. one side fascia in
		S.L., fitted in between rafters, and
		4 oils.
2 8 5 6		
4 1/2	9 8	Fir-framed rafters or ceiling joists
2		to porch.
2 15 0		
4 1/2	2 10	Fir wall-plates.
3		
351 0		
7		
4	68 3	Fir-framed purlins.
8 24 6		
7		
4	28 7	

GOVERNMENT TESTING STATIONS.

THE building operations in America are generally on a vaster scale than those of other countries. In viaducts, lofty tenement buildings, hotels, bridges of iron, the States have held their own at least with respect to scale. To meet these demands upon constructive skill, the Government have thought fit to establish testing machinery. Thus we know what the Franklin Institute of Philadelphia has done, the labours of Professor Thurston in Hoboken, the great testing machines at Watertown Arsenal, yet with these great institutions the results of tests are not readily accessible, or are lost sight of or forgotten. A memorial has been got up by Mr. Cluss and has been accepted by the recent annual convention of the American Institute of Architects to be submitted to Congress, for the purpose of obtaining Government assistance in the establishment of special institutions, testing-stations for building materials. The proposal will no doubt be adopted. The gist of the memorial is that for safe building, static coefficients of strength and elasticity of the materials must be ascertained and controlled whenever a case of importance occurs. The hardness and durability of building stones from newly-opened quarries or new strata

of old quarries should be tested. Combinations of different materials ought to be observed, and the best conditions for using mentioned. An appeal is made to the Federal Government to establish a central head station as a nucleus for harmonious methods and guidance of local institutions to be maintained by States or large central cities, the station to be under professional specialists of high repute. The officials so appointed are to determine the quality of materials submitted by interested parties according to a scale of charges, and in case of litigations these decisions would have weight. Every class of construction and material would be within the scope of the station. We have often expressed our opinion that these testing establishments ought to be promoted or encouraged by every State as a protection to the public, and for the progress of constructive science.

ROYAL ACADEMY ADMISSIONS, JANUARY, 1890.

STUDENTS, UPPER SCHOOL.—A. E. Bartlett, B. F. Fletcher, C. H. Norton.  
STUDENTS, LOWER SCHOOL.—C. W. Baker, C. Bywater, A. J. Edwards, E. Gibson, S. M. Herbert, H. L. Paterson, R. A. Reid, F. D. Smith, J. S. Stewart, G. Streathfield, H. Tooley, A. B. Yeates.  
PROBATIONERS.—H. P. Adams, W. E. Barry, John Beggs, D. Blow, J. Borrowman, A. W. Cleaver, J. B. Elhson, C. Evans, F. Fellowes, D. B. Niven, F. Rhoades, A. Dunbar Smith, D. C. Veazey, H. H. Wigglesworth.

COMPETITIONS.

SHEFFIELD MUNICIPAL BUILDINGS.—We understand that among the six designs selected by Mr. Waterhouse, R.A., in the preliminary competition for the new Municipal Buildings, only one is by a Sheffield firm of architects. Mr. J. W. Pye-Smith, the town clerk of Sheffield, writes us:—"In reply to your letter of the 7th inst., I regret to inform you that my instructions are such that I am unable to disclose the names of the authors or any particulars of the six designs chosen for the final competition."

CHIPS.

A new Fisher-lads' Home has been erected at Grimsby, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilator.

On Friday, the 3rd inst., Mrs. Fielden, wife of Mr. Thomas Fielden, M.P., opened a sale of work at Slade Church of England School, Todmorden. The school has been raised a story, provision being made for 150 additional scholars. The new floors are of concrete, laid with wood blocks, the total cost being about £700. The work has been carried out by local contractors, under the superintendence of the architect, Mr. Jesse Horsfall, M.S.A., Todmorden and Rochdale.

Extensive alterations have just been completed at Kitwells Park, Shenley, Herts, for Mr. Alfred J. Lambert. The hall has been altered and rearranged in Jacobean style, with new staircase, columns, dado, chimney-piece, and ceiling-beams, all in oak, from designs by Mr. Reginald Pinder, F.R.I.B.A. New parquet floors have been laid down by Arrow-smith and Co. in reception-rooms and hall, and the old fireplaces fitted with Pridgin-Teale and "Nautilus" grates, and oak Jacobean mantels. Messrs. Boff Brothers, of St. Alban's, have had the contract for the house work, and Mr. Carter, of Shenley, that for the stables and farm.

The Edinburgh Town Council have consented to the proposal to convert the old session-house in St. Giles's into a memorial chapel to the late Dr. William Chambers.

A Baptist chapel with schools attached is about to be built at Maryport, from designs by Mr. C. Eaglesfield, of that town.

A new county police-station has this week been completed at New Brompton, near Chatham. It has cost between £3,000 and £4,000, and was built by Messrs. Naylor and Son, from plans by Mr. F. W. Ruch, the county surveyor.

Mr. G. F. Watts, R.A., has presented to the town of Leicester, as the nucleus of art collection, his well-known picture of "Orlando pursuing the Fata Morgana." The Corporation of Leicester have under consideration a proposal for erecting a permanent art gallery in the Town Hall square in the centre of the borough.

Mr. Thomas Miles Richardson, whose water-colour architectural subjects are well known, died on Sunday at his residence, in Porchester-terrace, aged 77 years.



# ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**BIRMINGHAM ARCHITECTURAL ASSOCIATION.**—At a meeting of the Birmingham Architectural Association, held on Tuesday evening, Jan. 7th, Mr. W. H. Lloyd, vice-president, being in the chair, a paper was read by Mr. F. B. Andrews, A.R.I.B.A., on Pershore Abbey, which was rendered of special interest by the very full manner in which it was illustrated by drawings and photos. Of the history, Mr. Andrews said that much was veiled in obscurity, owing greatly to the fact that fires had been of frequent occurrence in the abbey, destroying, with much else of value, the records of its early years. Various authorities fix the date of its foundation in 604, 681, and 689 A.D., and other dates in the 7th century, of which 681 seems the most probably correct. It was at first dedicated to SS. Mary, Peter, and Paul, and given to the secular canons, but finally became the Benedictine Abbey of SS. Mary and Edburga. Records are found of its restorations, after fires, in the years 1020, 1056, 1102, 1223, 1288, the fire in the last-named year reducing nearly the whole abbey to ashes, together with the town, of which it was the central building. The remains at present existing are the choir, choir aisles, south transept and transept tower, and two small chapels north and south of choir, and sufficient remains of the foundations have been traced to define the form of the Lady-chapel, nave, north transept, cloisters, abbot's lodge, frater, common room, and chapter-house. The south transept, built a few years before the Conquest, is the earliest part of the remains, and the nave and lower part of tower are of the 11th century, the Lady-chapel of the 13th century, and the lantern and belfry stages of the tower of the 14th century. The south transept has a vault of 14th-century work, bearing, amongst others, the arms and rebus of Abbot Newton (1413–1456). The choir has a semi-hexagonal plan at the east end, though the surrounding ambulatory and the Lady-chapel appear to have been square on plan. The tower is of special interest from the very marked resemblance, pointed out by the late Sir G. Scott, which it bears to the tower of Salisbury Cathedral, for though comparatively simple in its detail, the belfry stage is throughout a plainer version of the first stage of the 14th-century work in the Salisbury tower, and the lantern is an absolute translation into the later work of the 13th-century lantern at Salisbury. "The details," says Sir G. Scott, "bear considerable resemblance. The distribution of windows, blanks, and piers is absolutely identical, and so also are the very remarkable bands of quatrefoils," &c. "While speaking, however, of the details as being simplified from those at Salisbury, I must except the internal features of the lantern . . . they are far richer and more beautiful; indeed, I scarcely know of a lantern story so beautiful, and it stands, as far as I know, quite alone in its design." In conclusion, Mr. Andrews mentioned the many interesting buildings which surround Pershore, and which, with the abbey, make the neighbourhood of singular interest to the architect. A hearty vote of thanks was accorded to Mr. Andrews on the motion of the chairman, supported by Messrs. Cotton, Doubleday, Bidlake, and H. R. Lloyd, by a unanimous vote of those present.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The fourth ordinary meeting of the Liverpool Architectural Society was held on Monday, Jan. 6th. The president (Mr. T. Mellard Reade) in the chair. A paper was read by Mr. James L. Thornely, entitled "Monumental Brasses," with special reference to those of Lancashire and Cheshire.

A scheme has been prepared for the acquirement by a syndicate of an extensive tract of land between Black Rock, Brighton, and Rottingdean, including the cliff and the beach below. Sketch plans have been prepared by Mr. Arthur Loader, of Brighton, for erecting five concrete groynes on the sea-front of the acquired land, and the erection of a seawall with parapet fence below the cliff, the land behind and above being laid out in building plots.

The Théâtre de la Bourse at Brussels, destroyed by fire on Tuesday, was a new edifice, built in 1885, according to all the known rules of insuring safety. It was Renaissance in style, and covered 1,863 square metres of ground. The fire broke out in the heating place under the stage, and quickly reduced the fine building to a carcase.

# Building Intelligence.

**BEARSDEN, GLASGOW.**—Operations have just been begun at the village of Bearsheden for the erection of a Catholic College for Glasgow and the West of Scotland, the gift of Archbishop Eyre, and to be called St. Peter's Diocesan College for the Priesthood. The site extends to about 12 acres. The architects are Messrs. Pugin and Pugin, of Westminster. It will be in the Domestic Gothic style, and, when completed, will provide residential accommodation for about 40 students, with the requisite staff of professors. The buildings will include lecture-halls, professors' rooms, rooms for the students, reception rooms, library, refectory, kitchen, and servants' offices. The total cost of the buildings, together with the laying-out of the grounds, is estimated at £30,000. In the mean time, however, only the college proper is being erected, and the contract for this section of the work is about £18,000. Mr. John Devlin, Glasgow, is the contractor.

**EDGBASTON.**—Less than four years have elapsed since the completion of a considerable enlargement of Edgbaston parish church, but it has been found necessary to enlarge still further. Previously to the last alteration the church consisted of a nave and north aisle under a single gable roof. By the advice of the architect, Mr. J. A. Chatwin, of Birmingham, the form of the roof of the nave was altered so as to allow of the construction of a line of clerestory windows upon each side, the roof of the old north aisle being converted into a lean-to. A new south aisle was erected under an independent gable roof, and a new chancel, chancel aisles, and organ chamber were provided, affording room for a hundred additional worshippers. The present enlargement is effected by the construction of an extra south aisle, the wall and four windows of the older aisle being removed outwards to a line about 16ft. further away from the nave, and an arcade of moulded columns in harmony with those in the rest of the building being substituted for it. The new aisle has also a gable roof of open timber corresponding with its companion. The new aisle will accommodate about 160 persons, and the cost of the enlargement is upwards of £1,000. It was opened on Saturday.

# CHIPS.

A partnership has been entered into between Mr. James Lemon, J.P., F.R.I.B.A., M.I.C.E., &c., of Lansdowne-house, Southampton, and Westminster, and Mr. John H. Blizard, A.M.I.C.E., who for eleven years past acted as a chief assistant to Mr. Lemon. The partnership took effect on New Year's day.

It is understood that the contract for the work to be done at the foot of Thirlmere lake in building the dams and diverting roads, &c., in connection with the Manchester Waterworks, has been let to Messrs. Grisenthwaite, Penrith, and Beatty Brothers, Carlisle. The contract is about £120,000, and in a few weeks it is expected that over 1,000 men will be employed.

The late Alderman Thomas Willington George, of Leeds, who died on the 30th of August last, aged 87 years, leaving personalty valued at £33,920, has bequeathed to the Corporation of Leeds all his oil paintings as a small contribution towards the formation of a public Picture Gallery for that town.

The local board of Handsworth have increased the salary of their surveyor, Mr. E. Kenworthy, from £300 to £400 a year, but no extras are to be allowed in future.

New infants' schools, attached to All Saints' Church, Normanton, Yorks, were opened on Monday. Messrs. Leake and Co., of Normanton, were the builders.

At Glasgow, on Monday, Lord Provost Muir repeated his offer of £20,000 towards the provision of a city art gallery, and was sanguine enough to believe that with the surplus from the Exhibition and substantial subscriptions from Glasgow firms a sum of £200,000 would ultimately be raised.

New board schools, in Westoe-road, South Shields, were formally opened on Monday. They cover a site of 2½ acres, and accommodate 2,003 children. The cost was £15,900, including furnishing, and the outlay was equal to £7 18s. 9d. per head. Mr. J. H. Morton was the architect, and Mr. R. Allinson the contractor.

Mr. Henry Maden has promised to the town of Bacup a public playground, and to give £5,000 for the erection of public baths in the town, if the town council select a suitable site.

# TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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# ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation Advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

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# SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

# NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., LI., LIH., and LVI., may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—T. G. S.—A. Co.—E. Le C.—G. and T. E.—M. and S.—G. B.—W. E.—T. G.—R. and R.—J. P.—E. C. H.

J. S. (Discharge of Sewers.)—The remarks in the notice referred to were based on Emil Kuichling's paper in the Transactions of the American Society of Civil Engineers for January, 1889, published at 127, East Twenty-third Street, New York.

# Correspondence.

# THE ARCHITECTURAL ASSOCIATION.

To the Editor of the BUILDING NEWS.

SIR,—At the present time almost all large societies and many of the London volunteer regiments have a Masonic Lodge attached, and it appears to me that the Association might well start and support such a lodge to enable the senior members to meet for social purposes, with or without antiquarian researches, such as are indulged in by the "Quatuor Coronati" Lodge, to which I belong. You, Mr. Editor, will, I am sure, receive and forward to me any communications on the subject.—I am, &c.,

MARK MASTER.

# COMPETITIONS AND GUINEA ENTRANCE FEES.

SIR,—I observe that two competitions are announced where the competitors are asked to plank down a guinea to obtain the particulars. Cannot promoters of competitions understand that it is exceedingly unfair to ask men to bind themselves with a forfeit to do a work of which they know nothing? How can any sane man undertake to prepare an unknown number of drawings of unknown scale and dimensions? How can any architect of experience bind himself to waste two months of his time, and probably £50 besides, in a competition before he knows who will be the assessor? It stands to reason that, if the professional assessor be an eminent Gothic architect, the competitors who do only Classic architecture have no chance; and if the assessor be, on the contrary, a Classic architect,



then the Gothic ones are out of the running. This kind of imposition on the architectural profession is now becoming usual, and it is high time that it be resisted by common action on the part of the victims.—I am, &c.,

LAWRENCE HARVEY.

### REID'S NEW HOTEL, MADEIRA.

SIR,—But a few days since I returned from Madeira. A view and description of Reid's New Hotel appeared in your New Year's number. The description was written before I left England: perhaps, now that I have returned, a few notes may not be without interest. The conditions under which work is carried on in a small island, a backward possession of Portugal (probably the most backward country in Europe next to European Turkey), the simplicity of methods, the difficulty of meeting any fresh conditions that may arise consequent upon the fact that you have no foundry, rolling-mill, brick-works, quarried stone, or indeed any place or magazine in the nature of the large establishments to which we can turn for what we want—all these circumstances bring one face to face with conditions of things more akin to those under which our forefathers worked in this country some two hundred and fifty years ago, and the difficulty of course is to face the requirements of to-day with the old-world people and methods. Outrageous duties are imposed upon everything imported, and consequently in preparing the design this had to be borne in mind at every moment. Cranes, derricks, travellers, &c., are unknown. The stone for walling arrives on the site on donkey-back, and is carried about the building by the men, generally one stone at a time. The stone is a tremendously hard and tough blue basalt, some of which, however, has a natural cleavage. The walls are built with this basalt, and abundance of mortar and stone chips. The mortar, with its strong gritty sand, makes fine and excellent work, thick and solid walls, which one longs to transfer to this country.

This is the ordinary walling of the island. Chimneys, however, are rare; indeed, they are almost an introduction of the chilly Englishman. They are ingeniously made by building in a wood mould, or drum, with a handle on the top. This being perpetually pulled up, after being surrounded with the layer of wall, leaves a circular flue, rather rough inside. Getting such flues round corners or out of the vertical is a troublesome job, and as it was considered necessary that all rooms in the new hotel should have fireplaces, the design had to be humoured accordingly.

The one idea of plan possessed by a Portuguese is symmetry. Architects in the island, were there any, would promptly starve. There are only little journeymen builders, whilst joinery and carpentry are distinct. When a new house is to be built, it is hard to say who will devise it; but it will probably be a copy of Sig. Somebodyelse's house, and the one essential thing is that it shall be symmetrical. In every room every door must have either a door or window opposite.

A small bungalow possessed by a friend of mine had in it about 60 doors, and one room about 12ft. square had four doors opposite four windows. It was impossible to put furniture against the wall in any place.

With the constructive difficulties I was well acquainted before I made my designs; but I was not prepared to find, on my arrival in November last, that the Portuguese superintendent of the works was beginning to revise and improve my plans by introducing the laws of symmetry as understood by him. But so it was.

The concrete and iron balconies were a great novelty. Stone slabs of sufficient size cannot be got, and even if procured would be lifted with extraordinary difficulty and danger.

Sig. Julio, the superintendent before named, who cannot speak or read English, had thought out an ingenious way of constructing the balconies. He proposed to push great rough slabs of basalt between the rolled joists, resting them on the lower flanges, and then buttering up the whole with cement mortar. The weights would have been quite beyond what the iron was calculated to take, and we had to find volcanic scoriae for the concrete, as neither coke nor pumice stone nor brick could be had. The good signor was proposing to leave out the iron struts under the balconies, as he conceived it would appear such a triumph of construction to see

these big balconies hanging out upon nothing at all.

It might be supposed that, where things are so primitive, some tradition of decorative art might survive. There have been, in times past, very good workers in plaster. Many of the ceilings are well designed, and were carried out by hand, and not cast. These plasterers are no more, and have left but the feeblest successors. Pointing to existing examples, one has had to modify designs and live in hope. I will not trouble you with more "experiences," and only trust that should my remarks ever reach the island and be conveyed to the ears of Signor Julio, he will know that I have much to thank him for—more particularly his thorough determination to understand everything before he put it into execution, and then to see it done well.—I am, &c.,

SOMERS CLARKE.

15, Dean's-yard, S.W., Jan. 7.

## Intercommunication.

### QUESTIONS.

[10199].—**Fireproof Floor.**—Would one of my fellow-readers kindly acquaint me of the best means of providing a fireproof floor over a heating-apparatus room? Being confined for head room, would particularly wish it of the least depth, but strong. It has to be laid with paving squares.—BOAZ.

[10200].—**Swimming Bath.**—What is the simplest way of heating water in swimming bath (60ft. by 23ft.)? There is a small furnace for hot-water apparatus for a lecture-hall about 60ft. from end of bath.—PUNCH.

[10201].—**Damage.**—A's house was erected quite 100, and B's, say, 50 years ago. B. has just pulled his house down, and with it A's chimney, which has been supported by said wall. A's wall is only half brick thick, and contains timber, and is now not weatherproof since the removal of B's wall. The flank wall of B's house was, for the first two floors, built on arches and piers forming recesses to A's old wall, which has been used for the last 50 years as the party-wall between the two properties. Is B. liable to be made to rebuild A's wall, as the removal of his wall has caused the damage?—J.

[10202].—**Spring Ballroom Floor.**—Will some experienced person kindly give me full instructions for laying a spring ballroom floor? By this name I mean a floor which has a springing motion.—FLOOR.

[10203].—**Bridge Construction.**—Heating.—Will some obliging reader recommend the best practical books for commencing the study of bridge construction, both masonry and iron? Also any work that may be published on the heating of buildings by hot air and hot water?—SUBSCRIBER.

[10204].—**Crushing Weight of Stone.**—Shall be obliged if some one will kindly state the resistance to crushing of Monk's Park Bath stone and Ancaster stone, when both stones have been similarly tested?—J. H.

### REPLIES.

[10175].—**Buttress.**—Permit me to thank "E. W. T." for his reply to my query, and to ask his help a little further in fully settling the question raised. The case was not a supposititious one, but was an executed example, the said example having buttresses 2ft. 3in. projection, and it was intended to typify the usual and fairly common roof placed over a Gothic chapel. "E. W. T." speaks of collar-beam roofs as being very treacherous, and says no one would think of putting on such a roof. Yet collar-beam roofs are ordinary enough on Gothic chapels, the walls of which (in case of galleries) are some 25ft. high, and the span 50ft. or more, and the buttresses do not seem to project so much as the rule would seem to require for safety. In was in order to determine the necessary projection of the buttress in such cases that I put the question, and to obtain a rule for varying spans and height of walls.—J. W.

[10176].—**Air to Grate.**—The discharge inlet for cold air to ordinary room grate should be under the fire-ribs, and, if possible, at the back. For a common room-grate, a 3in. diameter pipe, or a flue equal thereto, will be sufficient to supply air for combustion, and the supply should be under control by a valve in the pipe or flue. The discharge mouthpiece under the fire should be in the form of a slit at the back of grate, under the ribs. If "J. W." is willing to allow the extra expense of removing the ribs, and get new hollow ribs cast, with a slit in the under side, for the distribution of air, and a proper connection to the pipe or flue be made on the back of the hollow ribs, this method is much better than the former, but more expensive. A supply of fresh air under the fire reduces the cold undercurrent of air at floor level, and, consequently, the extraction of air at the floor level. To provide for proper extraction from the room, "J. W." should insert a back-flap ventilator under the ceiling, communicating with the flue from the fireplace.—W. B.

[10183].—**Renaissance Decoration.**—Drawings of the decorations of the Appartamento Borgia, in the Vatican, were made by Mr. F. W. Woodhouse a few years ago. The Appartamento Borgia was named after its founder, Borgia, Pope Alexander VI. The decorations represent allegorical pictures of the seven sciences; in the lunettes mythical scenes, such as Isis and Osiris, occur, and other subjects are taken from Sacred history.—G. H. G.

[10192].—**Steaming Windows.**—Ventilation is the only remedy for vapour condensing on the glass, and this can be effected by apertures in the window.—G. W. G.

[10193].—**Measured Drawings.**—I do not know of any book that gives instructions for measuring buildings. The centres for tracery and arches are readily

found by taking the width and rise of the arcs, and by these dimensions the centres are determined by geometrical means. The back vols. of the "B.N." contain hints as to drawing mouldings. A small plumb-line vertically hanging from the upper member is the best way to obtain the insets to the different members.—G. H. G.

[10194].—**Valuation of Coal Mines.**—Hoskold's "Engineering Valuing Assistant." Longmans, Green, and Co., London.—A. H.

[10196].—**Galvanised Iron.**—I consider that galvanised-iron cisterns and pipes do not injure water in the least, and are, for that reason, much to be preferred to lead.—H. L.

[10197].—**Bacon Smoke-House.**—I have been professionally connected with several buildings of this kind. Build a chamber with brick sides, of sufficient size to hang twelve sides of bacon, and roof with a hipped roof of slates, terminating in a louvre lantern for the escape of smoke. If "Perplexed" will go to a large bacon-curing establishment he will see at once the simplicity of the construction, or I will give him further details by post.—H. LOVEGROVE.

### LEGAL INTELLIGENCE.

**ALLEGED INFRINGEMENT OF THE BUILDING ACT.**—At the Mansion-house Messrs. Ashby and Horner, builders, were summoned on Monday by Mr. H. M. Lachlan, one of the district surveyors of the City of London, in respect to a certain building now being erected by them in Printers-street. It was alleged that a breach of the 13th section of the Metropolis Building Act, 1855, had been committed. For the defendants it was stated that a very important and novel point of law would be raised in the matter. Mr. Alderman Phillips said as the London County Council were not represented by any legal adviser, he should adjourn the hearing for a fortnight in order that meanwhile the district surveyor might take their instructions. The summons was consequently postponed.

**RE GREEN AND LEE.**—The receiving order in this case was made on the 7th of November, the debtors trading as builders and contractors at Anton-street Works, Hackney, and a statement of affairs has now been furnished, showing gross liabilities £14,372, of which £10,985 are unsecured, and assets £4,545, after providing for preferential payments. The debtors state that they entered into partnership in May, 1887, their capital amounting to £6,764, and they attribute their failure to losses on contracts, particularly in respect of buildings at South Audley-street. The Official Receiver observes that the usual and proper books of accounts have been kept, and the debtors have furnished a statement in explanation of their deficiency, the losses on contracts being estimated at £3,156. The total drawings of the partners for 1888 and 1889 are returned at £2,671.

**DISTRICT SURVEYORS' FEES.**—(Hayward v. Sandon Brothers. *Re* Tavistock-chambers, Hart-street, W.C.)—It will be remembered that in this case Mr. C. F. Hayward, district surveyor of St. George's and St. Giles', Bloomsbury, sued Messrs. Sandon Brothers to recover an amount of £56 5s. as fees due to him as district surveyor, upon the erection of the above premises, which consist of four shops and two sets of chambers on the ground floor, one set of chambers and box-rooms on the basement floor, and eight sets of chambers on the upper floors, all the latter approached through one entrance, and having one staircase, and being let as separate tenements. When the matter was brought before Mr. Bridge, at Bow-street, on October 4th, 1889, he decided in favour of the district surveyor, upon which Mr. Edward Morten, counsel for the defendants, gave notice of appeal, as his contention, and that of Mr. W. Seckham Witherington, defendants' architect, was that sec. 27, rules 1, 2, and 3, applied only as to the "separation of buildings and the limitation of their areas," and not to fees, which are settled under sec. 49, schedule 2, part 1, as not to exceed £10. Leave to appeal was given, and Mr. Bridge suggested that Mr. Morten should draw the case, and when approved by Mr. Hayward, it should be submitted to him for signature. When, however, the parties appeared before Mr. Bridge, Mr. Hayward claimed his fees under sec. 27, rule 2; but his solicitor, in approving the case, inserted also rules 1 and 3. Mr. Bridge objected to rules 1 and 3 being mentioned unless facts could be argued showing what sum Mr. Hayward would be entitled to if rule 3 applied to the question of fees. These could not be arranged, and Mr. Morten pressed the magistrate to state the case under rule 2. Eventually the magistrate declined to state any case, and the summons was dismissed, Mr. Hayward's solicitor advising him not to take one under rule 2. No order as to costs was made.

The town council of Brighton have resolved to pay a fee of £100 to Mr. Philip C. Lockwood, the former borough surveyor, for acting as borough surveyor from the 4th October until the 25th November last, and for his continuous services in London on business of the corporation up to the present time.



## Our Office Table.

SIGNOR GIUSEPPE BRENTANO, the architect who gained the first premium of 40,000 lire in the recent International competition for the reconstruction of the western façade of the Duomo of Milan, died at Brussels last week at the early age of 27 years. We illustrated his prize design for Milan in our issue of December 21, 1888. The late Giuseppe Brentano was the son of Signor L. Brentano, engineer, of Milan, and was a pupil at the Royal Upper Technical Institute in that city. Among other prizes won by him was the Travelling Studentship, awarded by the authorities of Siena in 1885.

A BIRMINGHAM builder writes, asking builders and contractors generally throughout England whether they do not think the time has arrived for them to take steps to guard themselves against losses incurred by the sudden increase in the prices of materials after the contractors themselves have signed their contracts for the work. Brickmakers and merchants of every kind care, he thinks, very little about the builders they supply, who are the only losers. The prices of materials have been raised at least 25 per cent. during the past few months; whereas contracts in many cases were signed one, two, or more years back. It is unjust, he adds, to call upon the builder to pay such increases without the same being allowed to him by the engineer or architect, as the case may be. He recommends that a special clause be added to every contract to the effect that should a sudden rise in the price of materials take place after the builder has signed his contract, a fair proportion of such increase should be added to his tender, and appeals to builders and contractors as a body to take the matter up at once and settle it.

## WATER SUPPLY AND SANITARY MATTERS.

PONTEFRAC T WATERWORKS.—The sinking for these waterworks had last week attained a depth of 107ft. in solid Red Sandstone rock, the yield of the water being about 700,000 gallons per day of excellent quality. At this depth a quicksand fissure was met which passes directly under the permanent buildings, and would always endanger them. Under these circumstances, the engineer, Mr. George Hodson, M.Inst.C.E., of Westminster and Loughborough, has decided to commence a new sinking, the cost of which will be about £1,000.

The trustees and directors of the Crichton Royal Institution for the reception of the insane at Dumfries have resolved to devote £12,000 to the erection within the grounds of a chapel which shall constitute a monument to the founders, Dr. James Crichton, of Friar's Carse, and his wife, who devoted to this purpose a sum of £100,000. Mrs. Crichton died in 1862, having survived her husband for a period of thirty-nine years. The church is only designed to accommodate 350 persons. The plans have been prepared by Mr. Sydney Mitchell, Edinburgh.

A new Home for Crippled and Incurable Children, built at a cost of £5,000, in George-street, Cheetham Hill, Manchester, was formally opened on Monday. The home accommodates 40 children, and stands in grounds of an acre and a half. On the ground floor are two day-rooms, one for boys, the other for girls. Hot-water pipes are carried throughout the whole building. The dormitories are on the first floor, the servants' rooms being above them, and the cooking and laundry quarters in the basement. Near the staircase, and communicating from the top of the house to the bottom, is an elevator. Messrs. Robert Neill and Sons, of Manchester, are the builders, and Messrs. Maxwell and Tuke, of the same city, the architects.

The water works at Darvel, Ayrshire, which have just been completed by the contractor, Mr. Duncan McKerracher, Bo'ness, from the plans of Mr. A. A. Haddin, C.E., Glasgow, were opened on Friday. The supply is procured from the Barr Hill, about a mile from Darvel, and the springs will give twenty gallons per head per day of the population. The storage tank has a capacity for 78,000 gallons, or about two days' supply.

The new produce market at Hereford was formally opened on Wednesday week. It has an area of 1½ acres, and has cost £5,000 for site and £2,000 for fencing-in. The contract for masonry has been carried out by Messrs. W. P. Lewis and Co., and that for ironwork and fencing by Mr. J. H. Morley. Mr. John Williams was the clerk of works.

## MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Academy. "Painting," No. 3, by Prof. J. E. Hodgson, R.A. 8 p.m.

Royal Institute of British Architects. Business Meeting. 8 p.m.

TUESDAY.—Society of Architects. "British Art; as it Was, as it Is, and as it Should Be," by Alfred Fisher. 7.30 p.m.

Institution of Civil Engineers. "Recent Dock Extensions at Liverpool," by George Fosbery Lyster, M.Inst.C.E. 8 p.m.

WEDNESDAY.—Institution of Civil Engineers. Students' visit to the Permanent Sewage Works, at Crossness, of the London County Council. South-Eastern train to Abbey Wood, leaving Charing Cross at 12.20 p.m.

Society of Arts. Discussion on Sir R. Rawlinson's paper on "London Sewage." 8 p.m.

THURSDAY.—Royal Academy. "Painting," No. 4, by Prof. J. E. Hodgson, R.A. 8 p.m.

FRIDAY.—Architectural Association. Discussion on "The Progressive Examinations of the R.I.B.A.," to be opened by Arthur Cates, V.P.R.I.B.A. 7.30 p.m.

Bradford Historical Society. "Some Fragments of Bradford History," by Wm. Scruton.

Architectural Association, 9, Conduit-street, W.—January 17. Discussion to be opened by Arthur Cates, Esq., in a short Paper on "The Examination in Architecture in the Past, Present, and Future." 7.30 p.m.

## CHIPS.

Ald. J. G. Naylar, J.P., builder, of Rochester, was last week presented with a handsome ivory-handled walking-stick by the members of the benefit society connected with his own works, as a token of esteem and respect.

The fourth annual dinner of the Birmingham students of the Institution of Civil Engineers was held on Friday evening, at the Colonnade Hotel, Birmingham. Mr. Charles Hunt, in the absence of Mr. E. Pritchard, president of the branch, occupied the chair, and there were about twenty-five present.

The town council of Doncaster decided on Friday to increase the salary of the borough surveyor from £150 to £200 a-year.

A new edition of the list of members of the Institution of Civil Engineers, corrected to the 2nd inst., being the seventy-second anniversary of its establishment, has just been prepared, from which it appears that the aggregate number of all classes is 5,804. The number at the same date last year was 5,616.

The new wing which has been added to the Sunderland Infirmary in memory of the late Mr. James Hartley was opened on Wednesday week. The wing has been built from designs by Mr. John Eltringham, and cost £13,000.

New premises in Castle-street, Liverpool, were opened by the British and Foreign Marine Insurance Company on Wednesday week. The building has a frontage of five stories in height above the street level, making a total in height to ridge of roof 84ft. Standing upon its granite base and its subbase of Dumfries stone—each a story high—the structure is of terracotta and red bricks. The architects are Messrs. Grayson and Ould, who have designed most of the modern buildings in Castle-street; the builders, Messrs. Jones and Sons, Pleasant-street; the granite is from Messrs. J. and D. Newall's, Dalbeattie, Scotland; the terracotta is from the works of Mr. J. C. Edwards, Ruabon; and the stone and wood-carving were executed by Mr. Edward Griffith, Chester.

Edward Palmer, builder, was summoned by the Wimbledon local board, at the Wandsworth police court, on Wednesday week, for using inferior materials in the construction of a dwelling house. The magistrate imposed two penalties of £5 and 40s. respectively, in addition to the costs.

The new Staffordshire industrial school for girls is now completed. The building, which is situated on the high ground leading from the Lichfield Trent Valley Station to that city, has been built by Messrs. Treasure and Sons, of Shrewsbury, from plans prepared by Mr. Meredith, of Kidderminster. Accommodation for 25 girls is provided.

The Harbour Commissioners of Llanely received at their last meeting a report from Sir A. M. Rendel, who had been consulted with reference to Mr. Kinipple's scheme of forming training banks for the improvement of the harbour, which had been suspended on account of the unanticipated cost. The report, which was adopted, expressed a general concurrence with the plan carried out by Mr. Kinipple, remarking that it is sound in principle and in entire accord with successful precedents elsewhere. So far, however, it had not been pushed forward enough to yield any considerable result, and he recommended that the present training bank be extended 2,500 yards towards Barry Port.

## Trade News.

### WAGES MOVEMENTS.

BIRKENHEAD.—An aggregate meeting of the house carpenters and joiners of Birkenhead and district was held on Friday evening to consider the reply of the Liverpool Master Builders' Association to the proposed alteration of the working hours of the Liverpool and Birkenhead districts. Mr. Jos. Tweedle (chairman of the United Committee of Carpenters and Joiners) presided. Mr. Broster (secretary) read the correspondence that had passed between the men's association in Liverpool and the master builders. The effect of the alterations proposed by the men would be an increase of 1s. 0½d. per week in the wages, and a reduction of 5 hours per week in the hours of labour. The reply of the employers was that they could not concede to the demands. A further letter from the Carpenters' and Joiners' Association stated their firm adherence to the notice of alterations—which expires April 30—and their intention to use all legitimate means to bring the movement to a successful issue. Ultimately it was resolved:—"That this meeting of carpenters and joiners pledges itself to work in harmony with the Liverpool United Trade Committee, and firmly adheres to the notice for alterations of the working rules sent to the Master Builders' Association; and will use every legitimate means to bring the proposals to a successful issue."

BRISTOL.—At a meeting of the members of the Bristol Master Builders' Association, held on Friday evening, it was resolved unanimously that on and after the 28th of March, 1890, until further notice, the wages of the operatives of the various branches engaged in the building trades will be increased ½d. per hour.

DUNDEE.—A meeting of the master joiners in Dundee was held in Lamb's Hotel on Saturday, when it was unanimously agreed, as a compromise, to offer the men 7½d. per hour as the standard rate of pay, thus splitting the difference between the two parties. The strike has lasted four weeks.

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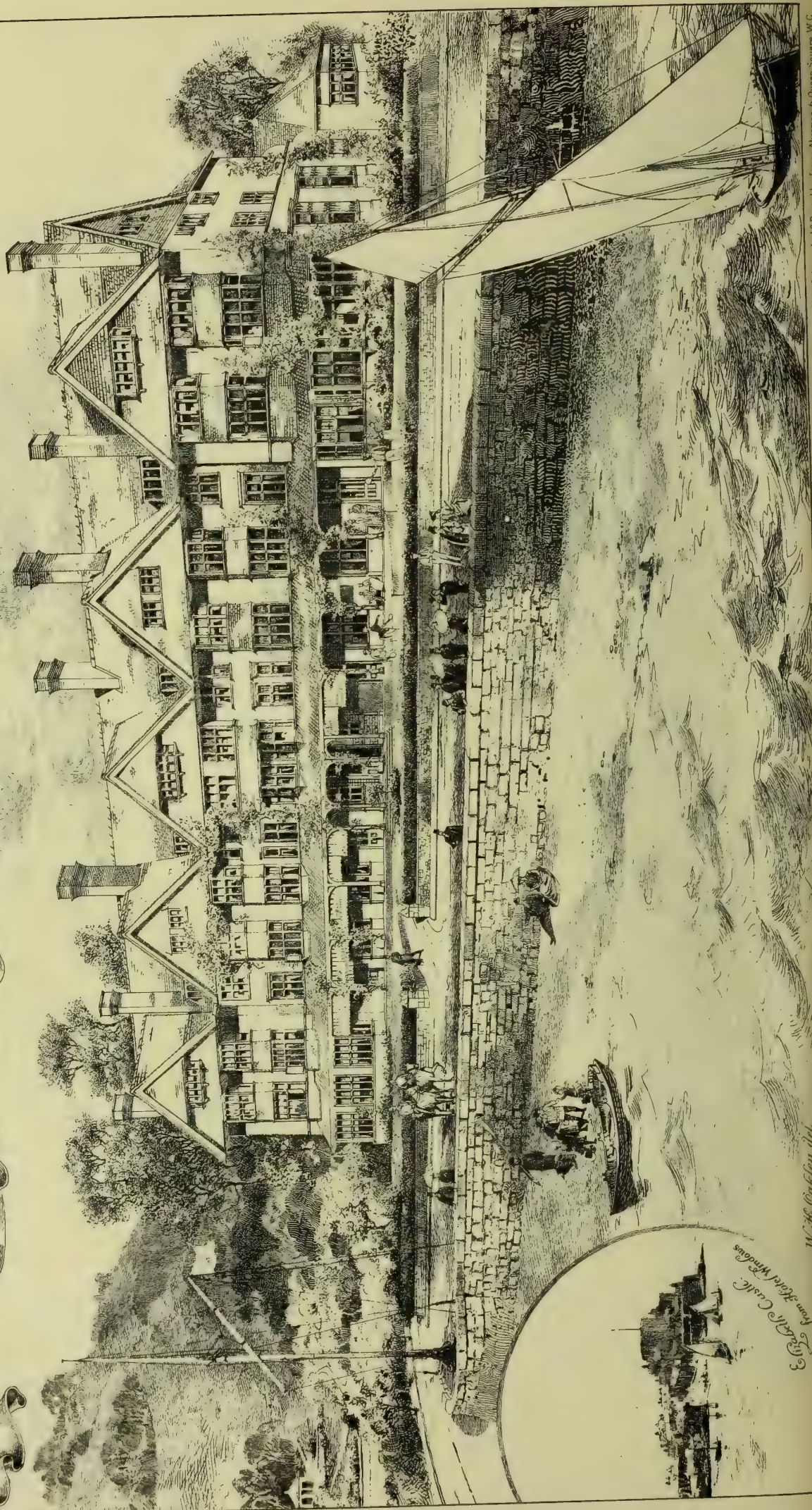






THE BUILDING NEWS, JAN. 10. 1890.

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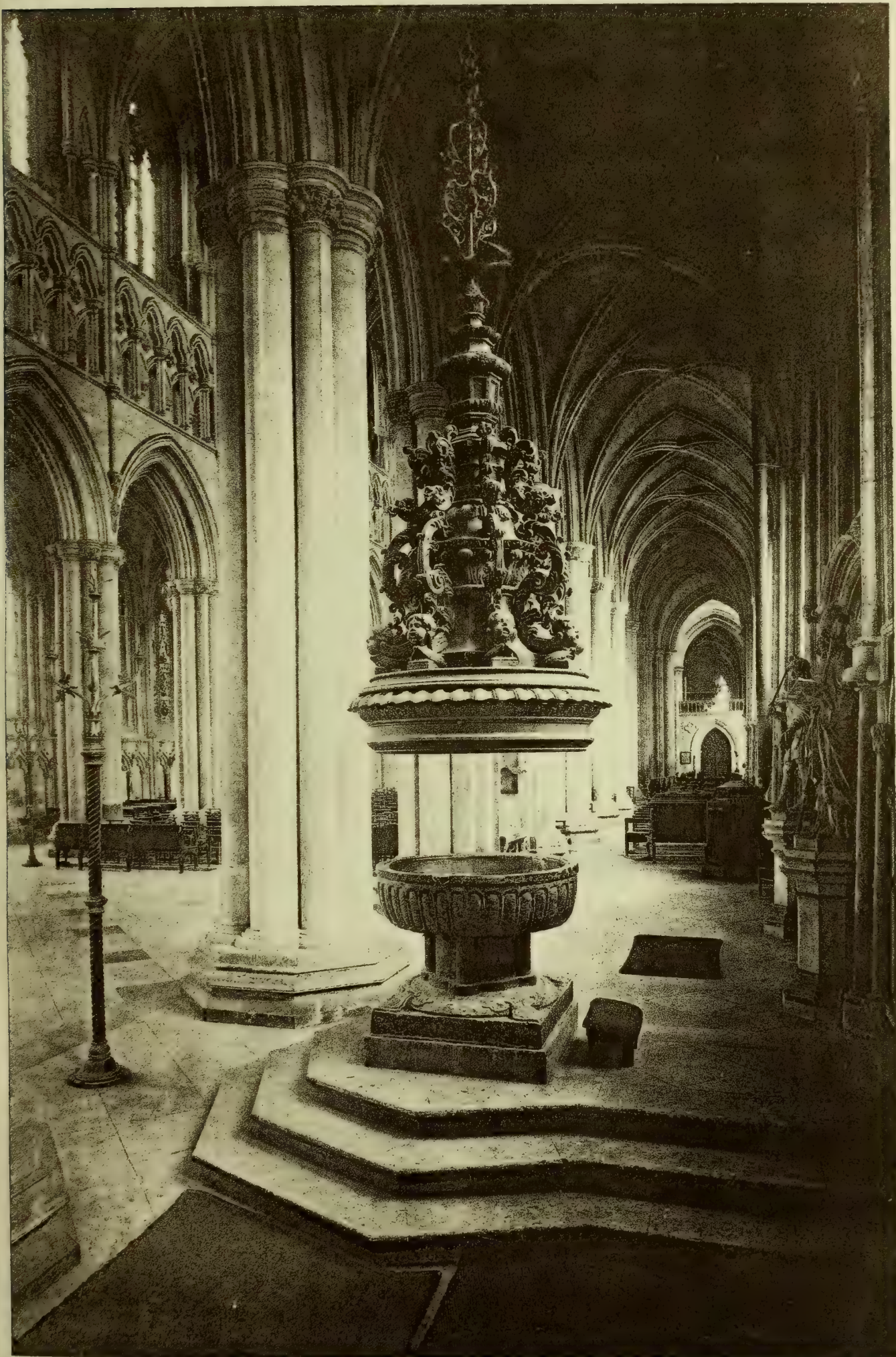
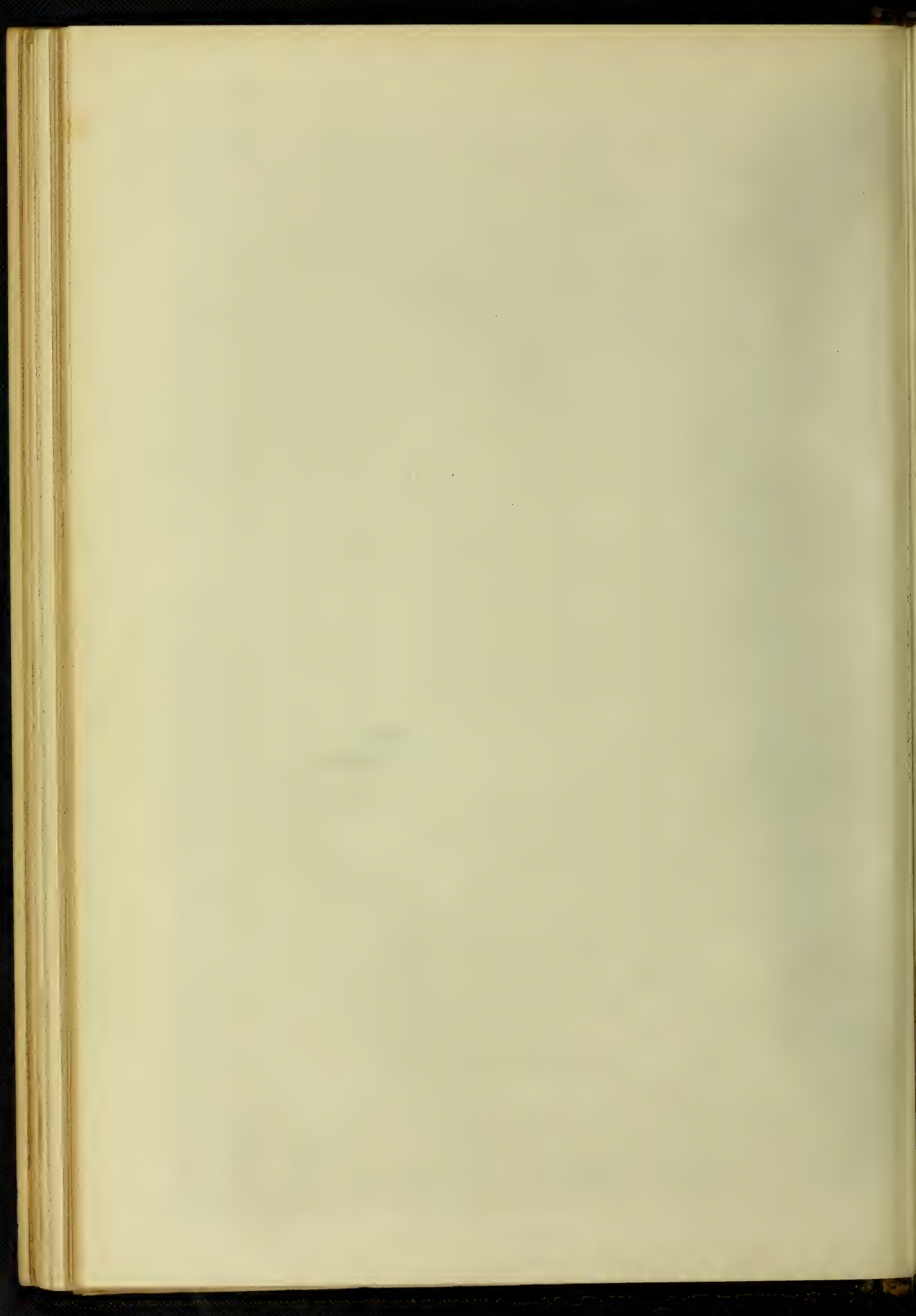


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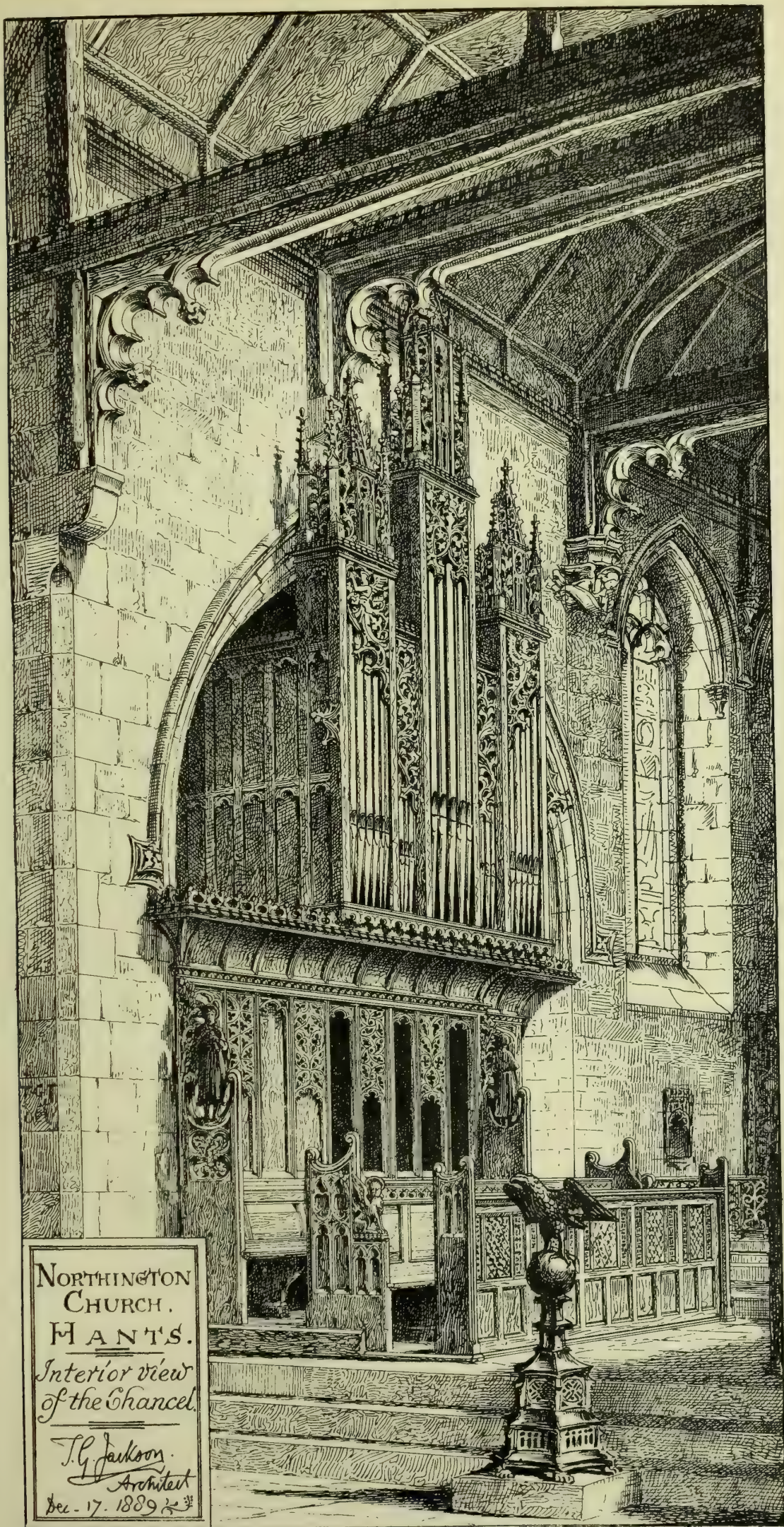
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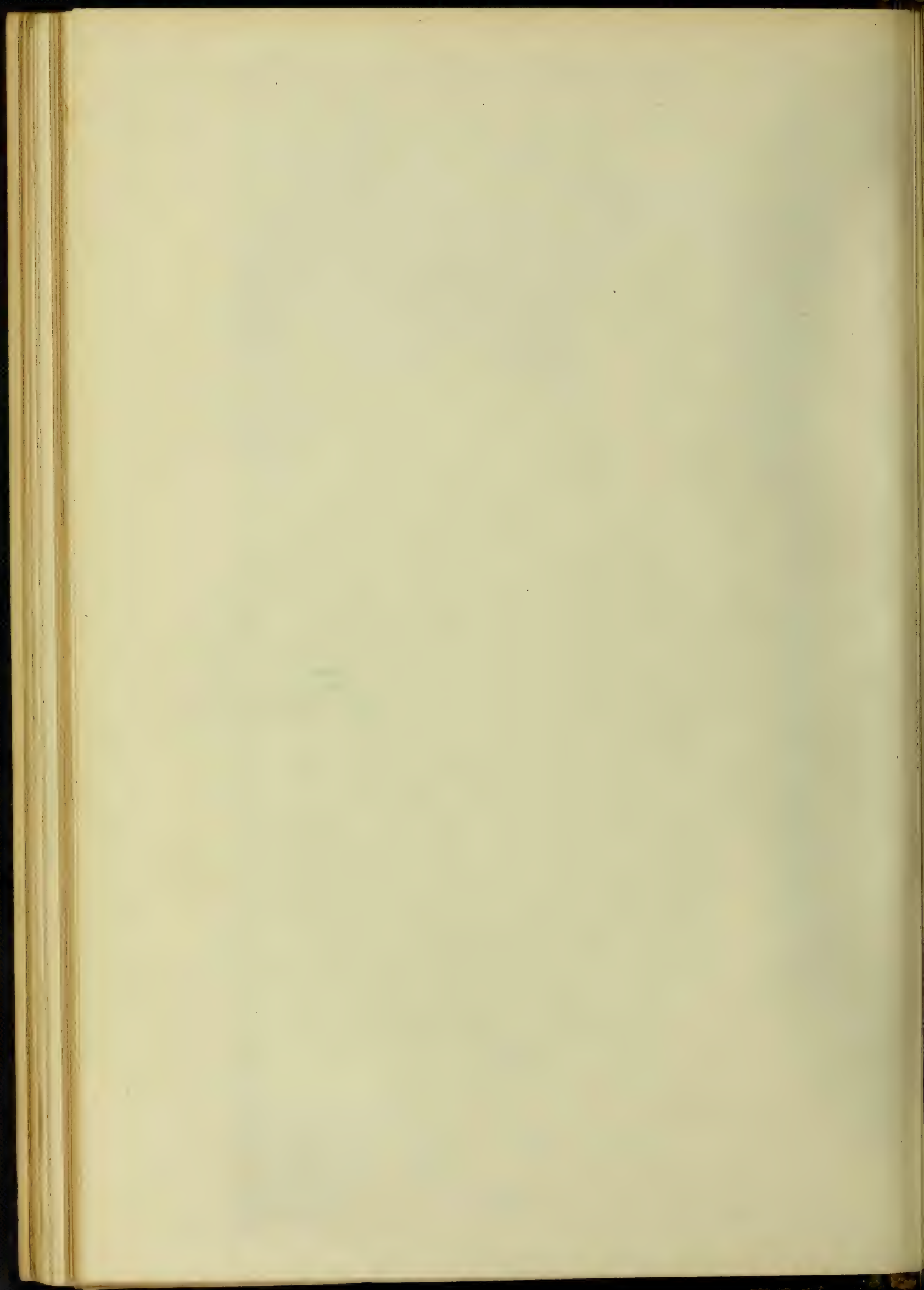










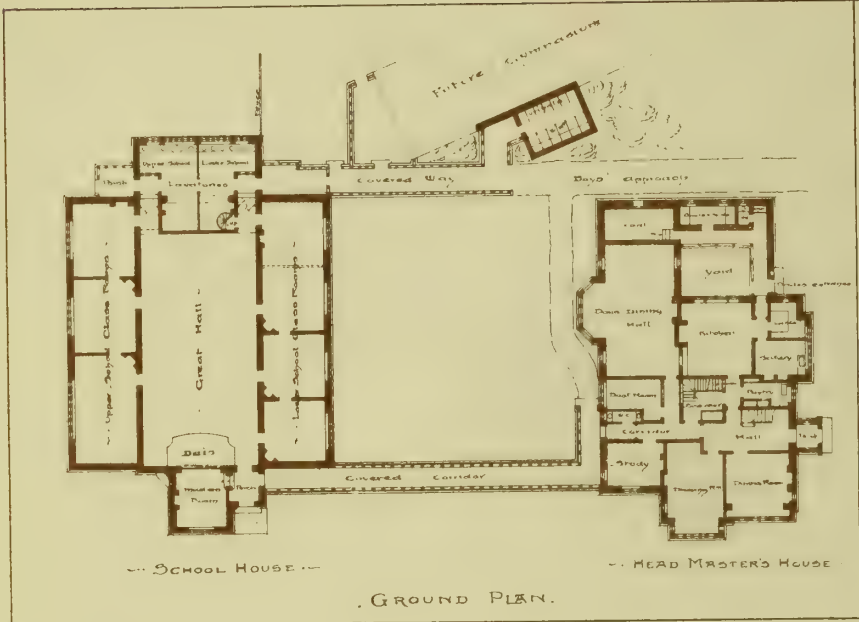








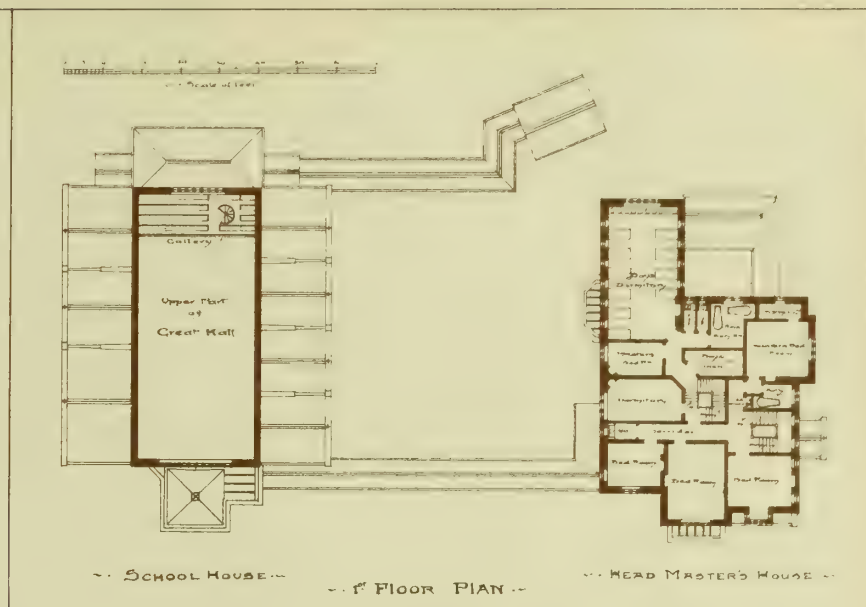
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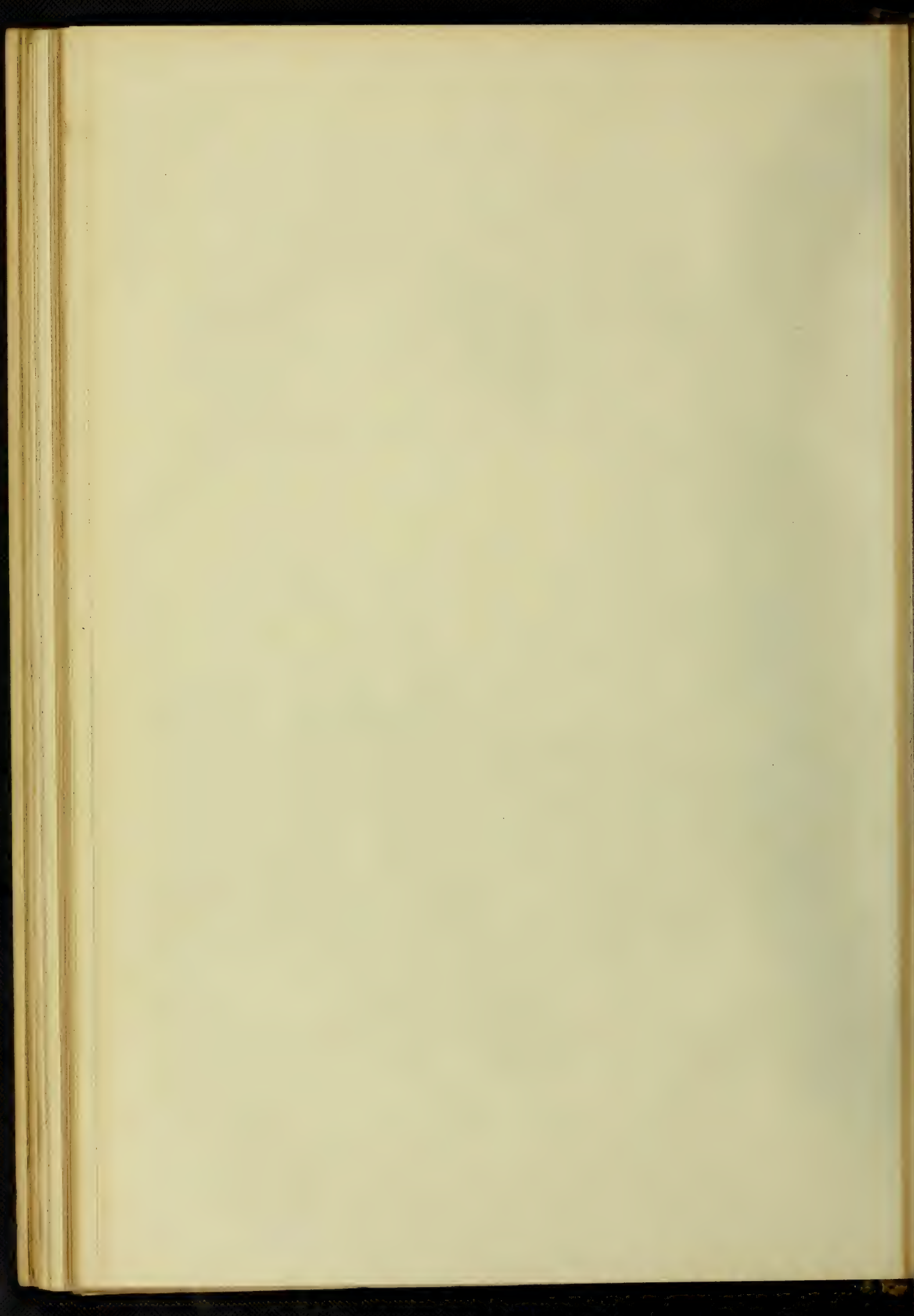
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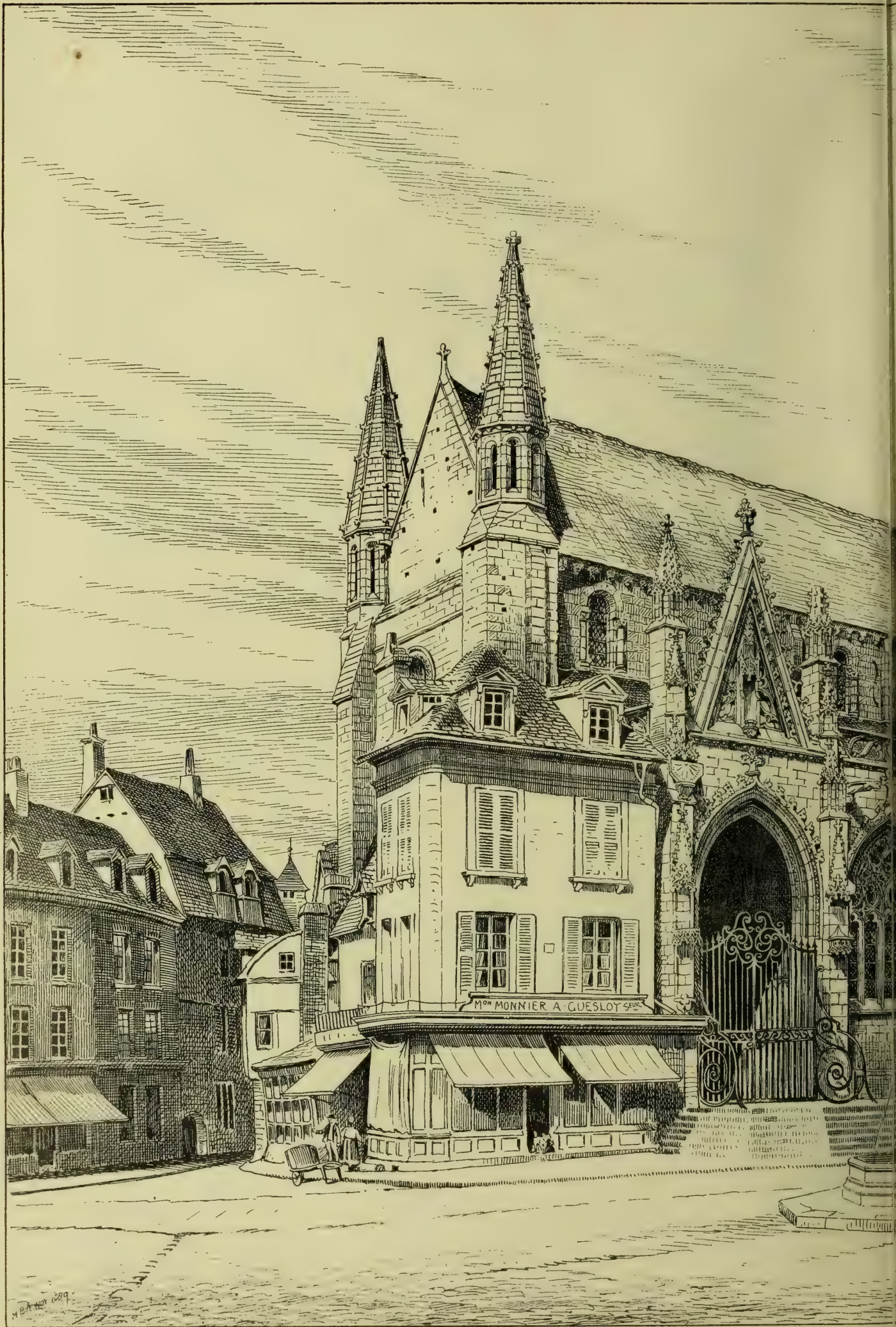






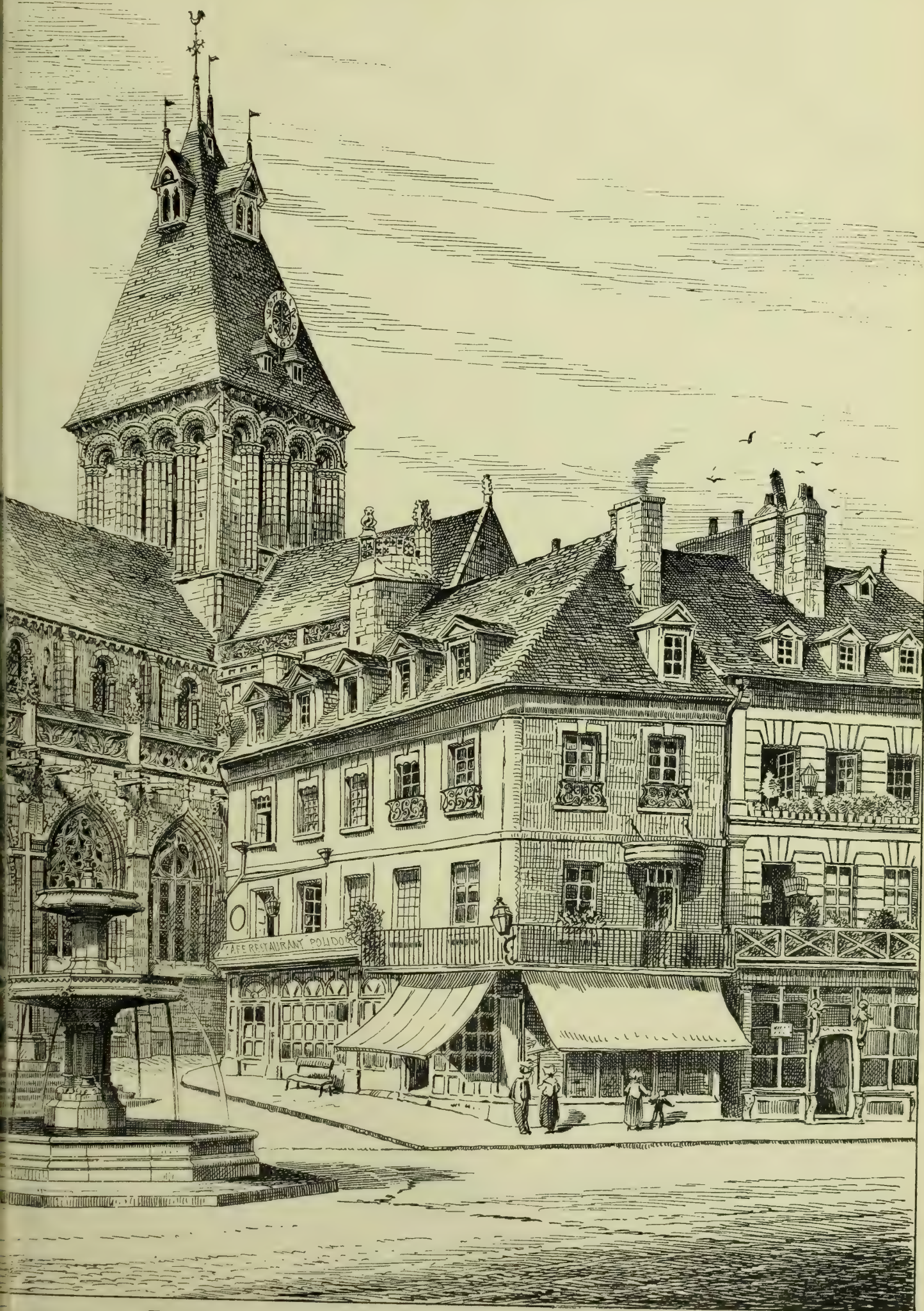






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## THE BUILDING NEWS

AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1828.

FRIDAY, JANUARY 17, 1890.

## DEFECTS OF CONSTRUCTION.

TO draw up an indictment against contracting builders for errors of construction and omission would be a tedious matter, for we might have to include in the list many points about which the specification and drawings of the architect were not so clear as they ought to be. Probably there is hardly any building of importance erected that can fairly claim to be exempt from errors of some description or the other. Important blunders have been discovered, it is well known; in structures erected for departments of the public service. In the recently-built public offices at Whitehall mistakes of a serious kind have been pointed out; many of our judges and law officers of the Crown have pointed out defects in the new Courts of Justice, and we all know that the Houses of Parliament have ever since their construction been open to almost every kind of charge from architects, engineers, and sanitary authorities for errors of design, planning, construction, drainage, warming, and ventilation. Against its style and excessive elaboration of detail, the earlier critics levelled a vast amount of bitter invective, and they mercilessly attacked its architect; even the commissioners who recommended the stone were criticised, and not unduly if they are responsible for a result which has cost so much to treat by preservative processes. Quite as serious an indictment was laid against the plans first adopted for warming the Houses, and lately the faults of the old drainage system have been made manifest, and new schemes of ventilation and disposal of sewage carried into effect. We do not say that all this criticism was called for; some of it no doubt was prompted by feelings of jealousy, much from a desire to find fault and self-advertise. Every great work is subjected to this ordeal of public opinion; but it survives, as people begin to form a more impartial judgment. What appears to be a mistake at the onset is found to be capable of explanation, or a fault magnified at first beyond its proper importance, begins to assume a less objectionable aspect as time goes on.

Our meaning as regards "defects" of construction must, therefore, be taken in a more restricted sense, and do not include those debatable points upon which theorists, specialists, and artists will always have their opinion and agree to differ. There are some, indeed, who have their "fads" in construction as in other matters, and will carry them out in spite of the common sense of other people. We will first take a few of the commoner defects found in buildings in connection with the chief trades, and we must say that the conventional specification is very often at fault, sometimes at variance, with the best construction or with practical experience. We sometimes read, for example, that concrete is to be thrown from a height into trenches, when it is a matter of experience that a very unequal resistance is offered by this means of concrete laying, as the material is consolidated at certain points only, and the intervening lengths are simply shovelled in or levelled. One strong objection to the practice of throwing is that the heavy ingredients are separated from the fine. The plan now resorted to by careful hands is to deposit and pun the concrete with rammers, not heavily, but lightly. The proper mode of mixing concrete with unslaked and hot, fresh-ground lime, sand, and ballast, and

mixing the ingredients dry, and afterwards just slaking the lime, is not the plan specified, but the old formula of mixing the ingredients all together is still often adhered to. The usual specification clauses scarcely describe the proper methods of wall and arch building, and are confined simply to the kind of bricks and mortar to be used. The imperfection and rottenness of the broken-brick wall are the result of not distinctly specifying that "broken bricks are not to be used except as closers." It will take us too far into detail, however, to pursue this course of inquiry; we will rather, therefore, confine ourselves to the general statement, that in wall construction we find, among other defects, an absence of thought in arranging the points of support. While great care may be taken with long lengths of solid walling, piers, angles, and buttresses, where attention ought to have been directed, are neglected. Failure is generally found to take place at an angle or a pier. Why? Because the "line of pressure" has not received the attention it deserves, or the foot of the buttress—the "toe," so to speak—has had no special study given to it—a point on which all the pressure falls. In piers we find the foundation, or the composition of the masonry or bond often defective, and as they generally carry great weights, a very little disturbance or extra loading is liable to cause settlements of the building. This has been the cause of some of the fractures found in the London Board schools, as in the Salter's Hill School. A large number of the sudden collapses of buildings are attributable to defective pier construction, though the fault has been often laid to the iron girders, if there are any employed. Would it not add much to the value of the architect's plans if the piers and parts of the walling upon which the chief weights rest were distinguished by a darker colour, or notified on the drawings? Builders would then have their attention specially directed to those points.

The exposure of brickwork to the weather is often the cause of injury to a structure; but little attention seems to be paid to it. Owing to the porous bricks, or the want of courses of asphalt, which ought to be inserted at intervals in lofty walls, they become sodden and saturated with moisture, causing dampness. The portions exposed to the weather, like parapets, and chimney stacks and gables, ought to be protected by good lead copings, or asphalt beds. All projecting members, like cornices, are valuable if composed of impermeable materials, with lead or asphalt coverings; but very few buildings have provisions made to guard against the evil of allowing our walls to absorb water which, through the inner warmth, evaporates into the building. We may here dwell on the carelessness with which ground floors are constructed; we mean the absence of maintaining an air current under boarded floors by apertures in the walls. Specifications provide for air bricks in the outer walls; but seldom are they introduced in the inner sleeper walls which carry the bond timber and joists. The basement floor of many a large building in the metropolis, and floors of some public halls which are laid just over the ground, have been relaid after a short time, owing to the rotten condition they were found in. It would be better if architects insisted on solid wood-block floors laid on concrete, carried on iron joisting or brick piers in these situations. That the soil under every building should be drained, and the surface laid with a bed of concrete, is no less important as an item of good building. Before dismissing brick construction we may refer to the very slight attention given by builders and architects to arches, which may become, as we all know, dangerous agencies. A wide, flat brick arch, bearing a heavy load, and placed near the angle of a building, has a tendency to push

out the angle, and to throw the weight or pressure on a very narrow margin of the foundation. Arches in this situation are, if possible, better avoided, and replaced by a girder, unless a good buttress is built to resist the thrust. Then we have mistakes in "anchoring" where beams or girders are anchored to walls. Many structures have been pulled to pieces by iron ties, which go through the wall, and when a fire burns away the joist, or makes the iron sag, tend to throw the wall outwards or inwards. By the substitution of a cast-iron socket, built into the wall, with a lug cast on the seat, over which the joist can be notched, we avoid all the risk and danger of the iron anchor. There should be a free air space at the end of the box or socket to prevent the decay of the timber. These methods are too often neglected or are left unspecified. A great deal may be said about fireproof floor construction, the expedients necessary for preventing the expansion of the iron; but the systems before the architect in the form of terracotta blocks interlocked together, like Blanchard's and other patented systems, leave little to be desired.

Touching stonework, the defects that are chiefly to be met with consist of inattention to the "natural bed" of the stone, improper selection of material, and defective cramping. Numerous edifices in the Metropolis are standing rebukes to the ignorance of their builders under the first of these heads. The rapid decay of the stone in the Houses of Parliament is attributable partly to the wrong laying and partly to the elaborate mouldings, which have retained the moisture instead of shedding it. In buildings where the stone has been set upon its edge lamination has taken place, and decay is found to have made rapid strides. Investigations of decayed stone have generally revealed the fact of the presence of carbonate of lime, the want of projecting members, or defectively-cut mouldings, which have helped to retain instead of throwing off the water. These defective members, by causing dripping on the stones below them, hasten the decay of the stonework under the projections. Unless the binding material of the stone is silicious, there is little hope for any building stone in London and smoky towns. Are the right characters looked for? Every quarry contains good as well as inferior stone. The presence of mica is particularly bad, and so is all material soluble in acids. Instead of a proper selection being undertaken in the quarry, the architect does not trouble; his specification qualifications being deemed sufficient. With regard to proper projecting mouldings, the mistake is often made of not sufficiently undercutting them to shed the water; hence we find many of our public buildings decayed in the flat parts below the cornices, where the water dribbles and soaks into the stone, dissolving out the soluble binding material and leaving lamination or crumbling surfaces. The subject is too extensive to discuss here in all its bearings. In the construction of cornices the proper counterbalance should be obtained if possible, supplemented if necessary by tie-rods or anchoring to the work below. The subject of cramping and dowelling stonework is not looked after as it ought to be; we find iron imperfectly treated used for cramping stones together, or the metal cramps are insufficiently run with lead or brimstone, or covered over with cement. The proper form and material for dowels for connecting together the stones of mullions and pillars is often left to the workman. A Portland cement dowel is probably the best and strongest, and as it can be applied to any irregular mortise or surface, it is preferable to stone, slate, or metal.

In the selection of timber we have the same mistake. It is thought to be no part of the architect's duty to inquire into timber brands and qualities and shipments. A large opportunity is thus left open for introducing



inferior timber into building. In this branch of technical knowledge the architect has to appeal either to books or the practical timber-dealer. To judge timber in the log can only be learned by a long experience, as the age and maturity of the tree have much to do with the matter of sapwood and its position. Questions of seasoning and conversion are equally beyond the ordinary architect's knowledge. We cannot wonder at the large quantity of American spruce and Swedish timber used in place of Baltic goods. In other branches—ironwork, for example—we are apt to rely too implicitly on the manufacturer, and to leave all the constructive designing in his hands, and in contracts for many of our large structures the matter of testing is too often neglected by the architect. Many ordinary defects could be pointed out if our space permitted. We allude only here generally to the imperfect foundations of iron columns, and the want of a spreading base; the inaccurate setting of columns, so that the line of pressure does not truly coincide with the axis; improper sockets or templates for girders, and no allowance for expansion or contraction in the connections. These and very many other defects of building are the results of routine and habit—the acceptance of, and compliance with, specification formulæ which must necessarily leave unnoticed many of the more important points in the execution of the design.

#### THE INSTITUTE PRIZE DRAWINGS.

**THE** Soane Medallion and £50 was offered this time to the best design for a public day school, for 400 boys, on a corner site; but no design was considered sufficiently meritorious. The area of site was a rectangle, 140ft. by 100ft. One of the few good designs is that with motto "Usui Civium Decor Urbium," a classically-treated elevation in sepia, broadly handled, of good detail. The large assembly hall, 80ft. by 30ft., forms the central block on first-floor level, and is lighted by lofty windows; the side wings and back block contain the class-rooms. The entrance is in the centre, and a square gymnasium, well lighted, is on the same axis, with master's and dining-rooms in front. "Non Felix Vir qui acquirebit," with late French Gothic features, shown by a sketchy perspective, has the class-rooms along the side wing, and the lecture-room in the rear. The assembly-hall is over it. A wide recessed entrance under a large archway is one of the salient features of the elevation. "Y Not," in an elaborate Renaissance style, is represented by a firm line perspective, somewhat spotty in effect. The gymnasium and assembly-hall occupy the front block with a square tower-like entrance and staircase, and a projecting wing on the right-hand side for lecture theatre, class-rooms, and laboratory, clever in detail but wanting in pleasing outline. "Vi et Arte" is of Flemish Renaissance character, shown by a brown perspective. "Georgian" is a clever, artistically-drawn set with a bright colour perspective in red brick and rough cast, Dutch in character; the plan having projecting wings, one of them the gymnasium and the other the hall. "Cedric," in Late Gothic, L-shaped, and with a heavy corner block, has merit; the assembly hall is in the front, the class-rooms in the side block. "Alpha" is Classic, drawn in sepia and of the same general plan, A.D. 19th century. A "Student's Idea," "Honeysuckle" are other designs.

The Tite prize, for which five designs have been submitted, hardly calls out the talent we might have expected. "Privacy" is the best design that is hung, and is of an enriched French Renaissance character, with end gateways, the screen being broken up by pilasters, behind which are rooms inclosed by an inner wall arranged on a curve. The

drawings are extremely neat. "Progress," "Italia," "Perrault," "Cinque Cento" are poor in conception and design. The Grissell Medal, for a design for a timber spire, has been responded to by eight designs. "Anno 1889" is certainly a design marked by ability; the outline is picturesque, and the grouped pinnacles at base clever. The author shows an ingenious system of timber framing, and considerable skill in the details of timber construction; the sections are remarkably neat and clear, and indicate the horizontal wind and vertical pressures on the spire. "Science" shows a spire 120ft. high, and a base of 36ft. square, with two tiers of lucerne lights. A very crowded sheet of details, showing connection of timbers, is sent by "Labor ipse Voluptas."

For the Silver Medal and 10 guineas there are several competitors. We notice some capital measured drawings of Cranborne Manor, Dorset, including plans, sections, and elevations, with sepia sketch of the Manor House. The measured drawings of Pluscardyn Priory, Elginshire, by "Wolfe of Badenoch," represent this fine Transitional Norman and Early English edifice. The sketches of Llandaff Cathedral are weak, near which are some pencil sketches, &c., from Ludford Hall, Salop, Salisbury Cathedral, half-timbered houses at Shrewsbury, by Mr. G. F. Bankhart. Mr. John Begg is also a competitor for the Pugin Studentship, and sends some admirable sketches of the rood screen, central tower, and other exterior and interior features of Lincoln Cathedral, including the "Angel Choir." Mr. Detmar J. Blow sends sketches and illustrations of some French churches, very feelingly executed; Mr. H. P. Burke Downing, some beautifully sharp and clear drawings and reproductions from sketches of churches in Kent, Sussex, Herts, &c., brightly executed, and a series of church plans; and Mr. G. Orrell sketches of Furness Abbey. The coloured sketches from Milan, Verona, Padua, Venice, Florence, and other Italian cities, by Mr. Francis Masey, and the clever pencil and ink sketches by Mr. C. E. Mallows are interesting studies. The work of Mr. H. V. Lanchester for the Owen Jones Studentship comprises some clever sketches in colour of mosaic and other decorations from Italian churches; and Mr. A. N. Prentice sends several sketches of merit from Florence, Bologna, Verona, Sienna, Milan, and other Italian places.

The following awards were made on Monday last:—

**SOANE MEDALLION AND £50.**—Like the gold medal for Architecture at the Royal Academy this year, this, the principal prize at the Institute, was not awarded; no design being considered worthy of the honour. Three Medals of Merit were, however, given in the following order:—"Georgian," Mr. F. W. Bedford, Eaton-terrace, Eaton-square, S.W.; "Cedric," Mr. C. Spooner, Margrave-gardens, Hammersmith; "Nineteenth Century," Mr. E. W. Gibson, Belmont Villa, Leicester.

**THE TITE PRIZE AND £30.**—"Privacy," Mr. James Cromer Watt, Bayley-street, Bedford-square.

**THE GRISSELL MEDAL.**—"Anno 1889," Mr. W. Percival, Longton, Staffs. Medal of Merit.—"Labor Ipse Voluptas," Mr. T. F. Pennington, A.R.I.B.A., Bedford-park, Chiswick. Second Medal of Merit.—Mr. J. A. Pile, Silvan-grove, Old Kent-road.

**SILVER MEDAL FOR MEASURED DRAWINGS.**—Motto—"Wolfe of Badenoch," Mr. A. Mackintosh, 14, Richmond-crescent, Bournemouth. N. Medal of Merit, Motto—"Pupil," Mr. J. E. Mowlem, Swanage, Dorset.

**PUGIN TRAVELLING STUDENTSHIP, 1890.**—Mr. John Begg, Bernard-street, Russell-square. Medal of Merit.—Mr. Detmar J. Blow, Park-hill, Croydon.

**GODWIN BURSARY (£50 and Silver Medal).**—Mr. Alfred Arthur Cox, A.R.I.B.A. (Grissell Medallist, 1887), St. George's-terrace, S.W., who will go to America.

There were no competitors for the Institute Silver Medal and twenty-five guineas, offered for an essay on "Fenestration."

**THE ASHFITEL PRIZE,** offered to the candidates passing the compulsory examination with most honours, was won by Mr. H. Baker, 18, Maddox-street, who obtained most marks out of the 79 passed competitors.

The Masonry Class Prizes of £10 and £5 were awarded to Mr. H. A. Woodington, Brixton-hill, and to Mr. A. W. Anderson (Institute Medallist, 1884), Warwick-gardens, Kensington, W.

#### THE SOCIETY OF ARCHITECTS.

**THE** fourth meeting for the present session of the Society of Architects was held at St. James's Hall, Piccadilly, on Tuesday even-

ing, the President, Mr. Robert Walker, of Cork, in the chair. Messrs. James William Frazer, Salisbury-place, South Shields; and Frederick Montague Grafton, 17, The Bund, Shanghai, were elected as members. The Secretary, Mr. G. A. T. Middleton, announced the decease of Mr. John Rhind, of Inverness, who was elected a member in 1887, and on the motion of the President, seconded by Mr. E. Tidman, it was agreed to send a letter of condolence to the relatives. The Secretary also stated that several donations to the library had been received, including a large illustrated folio, "Das Neue Rathaus in München," presented by the author, Professor Georg Hauberrisser, of Munich, hon. member; "The History of Cirencester," by K. J. Beecham, member; and a work by John Birch, member. Votes of thanks were passed to the donors, on the motion of Messrs. H. R. Gough and W. Allport.

The following paper, which was illustrated by between forty and fifty dissolving views from photographs specially taken for the purpose by the author, was read by Mr. A. Fisher, of the School of Art, Gosport, Associate, entitled:—

BRITISH ART—AS IT WAS, AS IT IS, AND AS IT OUGHT TO BE.

A history of the development of Art is, the lecturer remarked, to a great extent, a history of the people. No better indication of the progress of civilisation can be found than in that seen in connection with their art works. In the early periods, the architectural, industrial, and pictorial arts were so closely related that it is impossible to consider one section without the other. All sections at that time were practised by the same individual, and their division in modern times is much to be regretted, as it destroys the greatest interest in art, causing some individuals to confine their thoughts and ideas to one narrow groove from which they often look with scorn on other branches. Our study of British art naturally commences in the pre-historic period, and the question arises, "Had we a style of our own in early times?" After a careful examination of the art remains, it will be seen that there were distinct features peculiar to ourselves, though these were afterwards modified by Eastern influence. An examination of British pre-historic remains shows that, though differing little from those of other races, they had some art feeling, for form at least. These remains may be considered as belonging to the period of Early Celtic art. Respecting the Later Celtic, it subsequently came under various influences, beginning with the Roman invasion. These periods of influence so overlap each other that it is difficult to clearly define their limits. Though, judging from the numerous remains in the country, a large number of Greco-Roman artists must have been imported, their influence on the native art was not very marked, for, on examining the sculptured crosses and illuminated manuscripts, and comparing them with some of the mosaic pavements, such as the one at Brading, we find few traces of Roman art. It was more affected after the introduction of Christianity (in Roman times), which ultimately brought in the Byzantine influence. But it is not improbable that the "mosaic pavements" and other art works found in these "Roman villas" were executed by native workmen under Roman direction. Professor Westwood, in his splendid work on the "Illuminated Manuscripts," considers it to be clearly proved that "at the time when art was almost extinct in Greece, Italy, and other parts of Europe—viz., from the 5th to the 8th century, a style of art had been originated, cultivated, and brought to a marvellous state of perfection in Great Britain, absolutely distinct from that of any other part of the civilised world, was carried abroad by Irish and Anglo-Saxon missionaries, and had some influence on the schools of Charlemagne and others." It is certain that the arts must have been cultivated for ages before they arrived at the perfection shown in their crosses or illuminated manuscripts. Though we have unfortunately no remains in existence of either "sculptured crosses or illuminated MSS." belonging to Pre-Christian times, it is unquestionable that the early Christian "works" were simply copies of so-called heathen examples, for they are ornamented with Pagan signs and symbols; besides, it is well known that ornamented stone pillars were used in pagan religious ceremonies. It is probable that these heathen symbols were adapted to Christian uses



so as to reconcile the people to the new form of religion. The English and Irish stones are generally pillars of a rectangular section, and surmounted by a Latin or wheel cross, while the Scotch stones are usually large and flat, with the crosses sculptured on the surface. The Irish and Scotch stones contain more figures than the English: in some cases the former have figures in all four faces. But in all the execution and variety of the ornament are remarkable features, and the workman seems to have had full scope for his inventive powers. It is not easy to make a selection from the numerous examples of illuminated books, but among the best known are the Golden Gospels of Stockholm, Book of Kells, Book of Armagh, early part of 9th century, and the Book of Durham, or Gospels of Lindisfarne, close of 7th century. The first named of these three was executed in the 6th or 7th century, and having been stolen by a Scandinavian force on one of their pillaging excursions, was bought from them, at a great cost, by a Saxon earl (Alfred) and his wife, and deposited at Canterbury. It did not, however, stop there, for it was found on the Continent in the 17th century, purchased by a Swedish gentleman, and given to the Stockholm Library, where it now is. In the illustrations of this volume the treatment is ornamental rather than natural, without any relief, and very little shadow in the figures: the surroundings are architectural. The "Book of Kells," traditionally said to have belonged to St. Columba, is unquestionably the most elaborately executed MSS. of early art now in existence. The "Book of Durham," executed at the close of the 7th century, may be seen at the British Museum. It is a small volume, splendidly illuminated. The authorities spent £150 on its binding. All the figures of these times, though possessing native originality, were more or less influenced by the Byzantine type. This may be seen on comparing the examples just named, with one or two known to have been executed under that influence, such as those at Chichester, brought from Selsey when the bishopric was removed to Chichester; and also with the figures in the Byzantine pictures in our National Gallery. Many of the figures in their illuminated manuscripts, however, are very rude, and all are more remarkable for their brilliancy of colouring and gilding, than for the intelligence of the faces or the accuracy of the drawing. Among the rudest examples are the MSS. of St. John's College, Cambridge, and at the Library of St. Gall, in Switzerland. The Saxons, before their settlement in England, were too much given to warfare to have cultivated a taste for art; later on, however, they adopted the British style, adding to it some modifications received by them from the Byzantines, but all so-called Anglo-Saxon work is really Late Celtic. The invasions of the Norsemen were not without their influence on the native art, consisting mainly of the grafting or adoption of the forms and symbols of their religion on those of the Christian religion in order to bring them within its fold. The Crosses at Kirk Braddon in the Isle of Man, and the Font in Kirk Bride Church, Cumberland, are considered good examples of this type. Representations of the gods of the Vikings are here used as an introduction to, and explanation of, the Christian form of worship. But amid all these changes the native art retained its principal features, and remained truly a Celtic or British style down to the time of the Normans. After this date it gradually deteriorated and practically became extinct in the 15th century. With the Norman invasion came a gradual change. Norman art itself at first was of a very rude type, and was used mainly in the embellishment of their churches. It had now become almost a universal practice to decorate their churches with sculptured and painted figures and ornament. The forms used in the ornamentation were very simple, and the colouring chiefly used to give effect to the ornament. From the 13th to 16th centuries the art efforts were mainly expended on the walls of the churches in the shape of pictures of Scripture scenes; but there are records of the reigns of John and Henry III. showing that these monarchs also spent large sums in the decoration of their palaces, chiefly by foreign artists. It was during Henry III.'s time that the first bronze statues were cast in England. The incised figure at Brading Church, Isle of Wight, and the rood screen at Ranworth Church, Norfolk (published recently in the *Building News*), are fairly representative types of the works executed during this period. They

both belong to the 15th century, though ruder work is often met with. There are a few portraits of the 15th century to be seen at Windsor Castle. A revival took place in Henry VIII.'s time. He attracted some foreign artists to his court, one of them being the famous Holbein, who painted the portraits of many court personages, including five of Henry's wives, among them being Anne of Cleves. Some of these portraits may be seen at Hampton Court Palace, but it is singular that we have none of his works in the National Gallery. The style of Holbein was rather of a sombre and heavy character, and he certainly does not appear to have flattered his sitters. Art flourished much more under Mary than under Elizabeth, the latter reign, in fact, is almost a blank in the history of art. But Charles I. generously encouraged all men of ability, and devoted large sums to the formation of an art collection; among others he purchased the famous Raphael Cartoons. He induced Rubens and Vandyck to settle for a time in this country, laying a foundation which afterwards bore remarkable fruit in spite of the disastrous check given to art during the Commonwealth. Both Rubens and Vandyck are well represented in the National Gallery and also at Hampton Court. With the death of Charles, art for a time was banished, the splendid collection he had formed was ruthlessly broken up by the Parliamentarians. Valuable pictures, which now grace foreign galleries, were given away or sold for trifling amounts; not only were the pictures scattered, but many fine paintings and sculptures on the walls of the churches were scandalously destroyed or whitewashed over. The art culture of the nation was seriously checked under the Commonwealth. With the restoration of Monarchy came the gradual restoration of art, though this is not, perhaps, due to Charles II. so much as to those he had around him. Though we had no native artists of note, such a large assemblage of foreign artists at the Courts of Charles II. and following monarchs could not fail to establish a foundation of knowledge which afterwards led to the foundation of a National School of Art. It was not, however, until the middle of the 18th century that the native revival showed signs of development into the modern English school. But from this time onwards we have such names as Hogarth, Reynolds, West, Gainsborough, and others too numerous to even mention in detail. Hogarth was practically the father of the English Modern School. His paintings, which were quite of a different type from any before his time, caused great enthusiasm by their humorous subjects. His works were principally satires on the vices and follies of his day. His success was not acquired without hard work and a great amount of perseverance. Sir Joshua Reynolds was contemporary with Hogarth and became the first President of the Royal Academy. His chief pictures are portraits. He attained some distinction as a writer by the publication of his famous discourses. Sir Benjamin West was born in America, and succeeded Reynolds as President of the Royal Academy. His works are not now considered of a high order, and he is chiefly celebrated for his having instituted a remarkable reform in the customs of art. Up to his time, when representing historical subjects it was considered the correct thing to represent all the figures in classical costume. In his picture of the Death of General Wolfe, he insisted on painting the soldiers and others in the exact costume of the time of the event, in spite of the objections of Reynolds and other members of the Academy. No one now thinks of representing this class of subject otherwise than in their natural dress; but nevertheless it was a bold step of West's to run counter to the rules and customs of the Academy at this time. Reynolds afterwards withdrew his objection, and the reform became a permanent one. Gainsborough was also a contemporary of Hogarth. His *Blue Boy* was noteworthy as being painted expressly to prove the falsity of a rule laid down by Sir J. Reynolds that no picture could be satisfactory in which blue or any of the primaries was the prevailing tint, and without question he succeeded in doing so, but it required a perfect master of the art to do it. The works of Wilkie, Constable, Turner, Landseer, Rossetti, and the Pre-Raphaelites, and a host of others would prove most conclusively (if proof were wanting) the existence of a purely British school of modern art. Nearly all these artists' works can be studied in our own National

Gallery or at South Kensington. Having sketched the origin of the Royal Academy, Mr. Fisher added: It is not generally known that the so-called Royal Academy is practically a private society. Though looked upon by the public as the "head of the art world," its influence on modern art has not always been beneficial; the placing a limit on the number of R.A.'s or A.R.A.'s is an absurd rule, and originated in the desire to exclude certain artists on its formation. The institutions for the teaching of art at the present time are—(1) the Academy, chiefly for those intending to take up pictorial art professionally; (2) the South Kensington Schools and Classes, principally (but not solely) for training in design and industrial art; (3) artists' studios and private schools for those principally taking it up as an accomplishment only. These are not strictly limited to the sections named, and many schools combine all three sections in their teaching. It, however, gives the general character of the work in each institution or school. Admission to the Academy schools is free to those passing the required test, and from 200 to 300 students may be seen daily at work there. The student who wishes to enter the schools as a painter must submit, at a stated time of the year, a chalk drawing of an antique figure not less than 2ft. in height. For those who enter as sculptors, a model of some well-known statue must be submitted. If these works are considered satisfactory, the student is admitted as probationer for three months, during which time he must make a similar drawing or model from a different figure as proof that the work sent was really his, and, in addition, some anatomical studies. If these are passed the student is then admitted for three years. It often happens that a student has to try many times before admission is gained. The course of study there is well known, and is very thorough. The South Kensington system is taught under three heads—viz.: (1) in the elementary or Board schools for very young children; (2) in the art night classes for elementary work, though a little advance upon the Board schools; (3) in the schools of art, in which all the higher branches are taught. Little need be said here of the instruction as carried on in the first two of these sections; but "schools of art" are at the present time suffering from the rivalry of so-called "technical schools," which are supposed (but erroneously I think) to be more practical than schools of art. No doubt the latter have (and do still in some parts of the country) given cause for being considered merely as places where young ladies and gentlemen pass a number of hours daily, in learning fancy drawing or painting, sufficient to enable them to pose as artists before their admiring friends and relatives, but serving no useful purpose, nor giving any practical instruction. This has created a certain amount of distrust among many, who have looked upon these schools as being intended for the upper and not for the lower classes. But this has been remedied in most places. As a system for the training of art workmen, there is none better than the S.K. system now if properly carried out. On the other hand, the opposite charge is often made against it—i.e., "that it is too mechanical." Nothing could be further from the truth. These objections are generally made by people who are too indolent to inquire into the matter. Nevertheless, there are many reforms still necessary, and not the least is the extravagant cost of the administration—it has been calculated that out of every pound granted by Government for art education, 15s. is spent on its administration—and a few of the sinecures there ought to be abolished. Another drawback is the fact that the control of the "Art Section" is practically in the hands of those whose sympathies appear to be with science only, and for some years the teaching of art has been much discouraged, while on the other hand science has been much favoured in many ways by the Department. Having briefly reviewed our art as it was, and as it is, a few remarks may now be given on what it should be. It ought to be more a part of our national existence—it ought to penetrate into every branch of industry—to enter more into the decoration of our houses, churches, and public buildings. Training in art ought to be more thorough, and form a greater portion of our children's education, to the exclusion of other useless subjects. With respect to purely pictorial art, there is not so much a lack of earnest work, but there ought to be less of that



disposition among artists to represent modern subjects as if we lived in the Middle Ages. Modern subjects in strictly modern costumes ought to be more represented in our public buildings; and it should not be forgotten that we live in an age of steam and electricity. To make my meaning more clear, let me refer you to what has been rightly considered among the greatest works of recent times—viz., the two frescoes at South Kensington Museum, by Sir Frederic Leighton. "The Industrial Arts of War and Peace." From a purely art point of view, they are almost perfection. And would it not have been preferable to treat these subjects according to modern ideas of peace and war? Would not the representation of casting modern heavy guns and other implements of war, and also modern occupations of peace, have been far better for the information of future generations? Surely the genius of Leighton or other artists is equal to the task of rendering modern costumes in a manner suitable for pictorial representation? Why should modern dress be so much objected to? As a matter of personal convenience (the ridiculous top hat excepted) it is far in advance of the Middle Age costume. I am disposed to think that Raphael, Michael Angelo, and the earlier geniuses would have been able to deal with modern costume just as well as with that of their own times. This tendency to old ideas may be observed in many ways, and we are still a little touched with the weaknesses of the times previous to West's days. Sculpture ought to be more encouraged, especially in connection with our public buildings. It is notorious that this branch of art has been seriously neglected. As it is always better to be able to point to definite examples than simply giving vague generalities, I would refer to examples of a good application of this branch, such as are worthy of imitation. 1st. With respect to detached or independent groups of sculpture, the Jubilee Memorial at Winchester, by Mr. Gilbert, A.R.A., is among the best, and if all our Jubilee memorials were like this one, we should have less regret at the waste of money expended on this commemoration. 2nd. As part of and dependent entirely upon architecture. Model in low relief by one of our greatest rising men, Mr. Geo. Tinworth, employed by Messrs. Doulton and Son. This is the work of a man who boasts that his whole education (apart from his art education), only cost the small sum of 2s. He is a remarkable example of what may be done by earnest work and perseverance. 3rd. As a combination of these two requirements—viz., a work which may be said to be independent of architecture to some extent, but yet depending upon it for its proper effect, we may specify the Paris Exhibition Group of the Fountain of Progress. This example may not be in the best taste, but it is remarkable for its life and vigour. Considering that it was all designed and executed in the short space of eighteen months, there is ample allowance to be made for its minor defects. It would be impossible to find a British sculptor who would undertake a commission of this nature in so short a time. And now, in conclusion, you have seen that in early times we had a national style; that from various causes it became extinct in the Middle Ages: and that without considering water-colour art, we have certain modern features, which though not perhaps amounting to a distinct style, are certainly peculiar to ourselves, and which, if carefully developed, will make their mark in future ages. I would make an appeal for a more extensive application of art culture in our general education. It is still too much a common superstition that art power is an inborn faculty possessed only by a few. It cannot be too widely known that all ordinary intellects possess these powers more or less, and which can be developed by perseverance and training. Art is useful in every position of life, absolutely necessary in many occupations, it has a softening and refining influence on the mind and manners, and tends to elevate the character, necessitates accurate observation, and brings into life and activity those faculties which might otherwise have lain dormant for ever.

Mr. H. ROUMIEU GOUGH, Past President, proposed a vote of thanks, and said he wished the lecturer had dealt more largely with architecture. People were too much inclined to look upon painting and sculpture as including all "art," and did not sufficiently realise its relationship to everyday life. He was sorry to hear Mr. Fisher condemn the establishment of technical schools as a mistake, for he believed they would do

great good to the English workman. The lecturer had advocated the introduction of modern costume into pictures; but our dress was so hideous that artists rightly declined to reproduce it. Still, an improvement was being made in this respect if we compared Leech's Sketches in *Punch*, and even Frith's "Derby Day" and "Margate Sands," with the garments now worn both by men and women.

Mr. W. H. SETH-SMITH, Ex-president, seconded the motion, and observed that when travelling in Norway last summer he was impressed by the resemblance of Scandinavian art to our Runic crosses and Early manuscripts. He believed there might be some basis for Du Chaillu's recently propounded theory of our Viking origin. The subject was most useful to architects, for the more they studied the sister arts the better would their work become. It was desirable that the general public should be interested in what was good and what bad in architecture as in the intelligent appreciation of its principles lay the chief hope for the future improvement of the art.

Mr. H. D. HATFIELD defended the examination system as applied to schools of art, remarking that the prospect of a test tended to impel the student to strive to reach a certain standard; the evil was that he too often made this passing an examination the goal of his ambition, and not merely a means of ascertaining how far he had advanced.

The PRESIDENT said as architects they ought to provide spaces in houses for pictures and sculpture to fit into; the modern gold frames were most inartistic, and he often felt a desire when going through a gallery to prune them down with an adze. He fancied Mr. Gough had misunderstood Mr. Fisher's criticisms of technical schools; the lecturer did not object to technical teaching, but thought it was unwise and unfair to add to those schools an art branch which competed on the same lines with the older schools of art. The practical question was how were we to imbue the minds of the young with a love of and desire for art? It could only be done by beginning in the elementary schools. If we compared the costume of both sexes and the home surroundings of the people of the present day with those of a generation since, we must admit there had been a great improvement.

Mr. FISHER, in reply to the vote of thanks, said the President had accurately stated his views as to the art departments of technical schools, which he held competed unfairly with the art schools already established at a great cost. Modern dress was the most convenient yet worn, and was certainly an improvement upon that of the last generation, with the exception of the tall hat. Examinations were, as Mr. Hatfield said, an incentive to lazy students to work; but they did not need to make all the machinery to fit the lazy student's case. There was, however, no other way of testing qualification than examinations. He believed that we had made great strides in art of late years.

#### THE CASTELLATED AND DOMESTIC ARCHITECTURE OF SCOTLAND.\*

THE third volume of the interesting and exhaustive work by Mr. David MacGibbon and Mr. Thomas Ross is before the public, and fully bears out the programme which the authors laid before their readers. We reviewed the first volume in our issue of Dec. 24, 1886, and the second in the *Building News* for April 15, 1887, giving specimen illustrations in each instance. The volume now to hand contains a further description of the architecture of the castles and houses from the 12th to the 18th centuries, and enters into a general survey of the subject and its bearing on social, historical, and artistic questions. The simpler keeps and castles of the L type of plan, embracing a part of the fourth period, is entered upon. In the introduction the authors trace in the architecture a record of the national development of Scotland; the successive types of castles and domestic buildings illustrate the progress from primitive conditions of life to those of refinement, the state of various classes of society. The prehistoric fortresses or "brochs" are in themselves especially interesting features of the country north of the Tweed—a product of Celtic civilisation belonging to a period previous to the

\* The Castellated and Domestic Architecture of Scotland from the 12th to the 18th Centuries. By DAVID MACGIBBON and THOMAS ROSS, Architects. Vol. III. Edinburgh: David Douglass.

11th century. In the later 14th century keeps, we find features which were undoubtedly borrowed from those of the brochs, especially the narrow loop openings, the galleries in the thickness of the walls, and a central courtyard. The Norman keep was generally oblong and of three stories, but was chiefly erected in Normandy and England, scarcely any being found in Scotland. Here, indeed, we find the old wooden fort upon its "motte" surrounded by an earthen palisaded mound or wall, as the Pele on Deeside, where Macbeth was slain in 1057. But after the Norman Conquest the Southern refugees introduced the English or Norman castle into Scotland, and this kind of building rapidly spread in the 13th century, and regular stone masonry began to be substituted for the earthen and wooden structures. The establishment of monasteries encouraged better building, and during David's I. reign and his successor the monasteries and churches of Kelso, Dryburgh, Jedburgh, Melrose, Holyrood, Dumblane, Dunfermline, Elgin, &c., were founded. Castle building followed, and of examples Messrs. MacGibbon and Ross have given several in their first volume. A great wall of enceinte, with towers and a keep, were the main features of these fortresses; stone and mortar masonry characterise these castles. In the 14th century the Norman keep was introduced, and its main features were preserved, the vaulted basement for stores, a common hall where retainers and guests fed and slept, and a third story for the lord and family. There were no bedrooms and no kitchen, the cooking being done at the hall fire. Ornamental features were absent on the 14th-century keeps, the corbeling being of the plainest kind, and angle bartizans corbelled out are the main points of interest. The masses were severe and rectangular, and the castles of this second period compare badly with the grander buildings of the first period, and indicate the influence of the wars of secession and independence. These protracted wars and internal strife impoverished the country, while in England large castles were being built, and considerable progress had been made in the plan and conveniences of habitations. In both France and England the decorative features were developed, and the castle became not only a fortress, but a palace. The 15th century saw an improvement: the Scotch plan was enlarged by the addition of a wing or tower at one end, and we have thence the L-shaped plan; the courtyard was introduced, and several illustrations show the result of this gradual accretion necessitated by the want of sleeping-rooms and kitchens, the latter often added to the wing, as at Borthwick and Elphinstone, and the corbellings were made ornamental; mouldings surrounded the doorways, which were placed on the ground level. The 15th century saw a further development of plan. Several halls and apartments were clustered round a central court, which thus became a feature, as at Tanbhallon and Dirleton, at Linlithgow and Stirling. The third period architecture (1400–1542) coincides with the Jameses, and several interesting plans and sketches are given. The first is Castle Stalcaire, Argyllshire, standing on a sea-girt rock. The keep is rectangular, 50ft. by 40ft., and four stories high, entered on the first-floor level. Kinlochaline, Craignish, Fairlie Skelmorlie are castles of this type. Carrick Kames, Saddell, Sorn, Mains, and Ackergill castles are among other structures described and illustrated. The L-shaped plan is well shown by Lethington Castle, Haddingtonshire, of which the plans of each floor is given; it is of the 15th century. The keep of Hatton House, Midlothian, is also L-shaped, the mansion being built round it. Other examples are Bridge Castle, Linlithgowshire, Stanely, Renfrewshire; Dalzell Castle, Lanarkshire; Craige Castle, Ayrshire; though some of these are of a mixed character, are of three periods, and illustrate the courtyard arrangement. Various special plans are shown, including the fine castle of Dalquharran, Ayrshire. In the fourth period (1542–1700), the latest development of castellated architecture, the plans became more elaborate, and partook the shapes of the letters Z, T, and E, though the L-form and the simple keep are noticed still. Of this period mention is made of Busbie—a simple keep; Newark, Hills, Oakwood Tower, Sellarkshire; Minto Tower, Roxburghshire; Invermark Castle, Forfarshire; Castle Craig, Ross-shire; Bedlay House, Lanarkshire; Monkland House; Higgs Castle, Renfrewshire, having some good details and corbeling; Dundarave Castle, May-



bole Castle, Ayrshire, amongst others, in all of which the progress towards refinement and domestic conveniences is evident. Messrs. MacGibbon and Ross's new volume is an important addition, and forms, with the previous volumes, a valuable contribution to the history and progress of Scottish architecture. A fourth volume will contain the remaining edifices of this period, and will include illustrations of houses and mansions from several towns.

#### SECULAR ARCHITECTURE.

THE first of a series of three lectures, arranged by the Free Libraries Committee of the Manchester Corporation, was delivered by Mr. Alfred Darbyshire, F.R.I.B.A., in the Free Reference Library, King-street, Manchester, the subject being "Secular Architecture." Having described the civic and domestic architecture of the ancients, the lecturer turned to the consideration of modern secular architecture, asking what were the aims and objects of architectural art? There was a wide difference between architecture and building. The latter was a mere piling up of material to secure a shelter or to inclose a space, and comprised constructive device or engineering skill, while the former was an art which made the construction beautiful and rendered artistic what would otherwise be only utilitarian and prosaic. He claimed for architecture that it was the groundwork on which the sister arts of painting and sculpture were displayed, and on which they found a fitting medium of expression. If this was a true position for architecture to assume, it was evident that the art had a high responsibility, and unless we had good architecture it was useless to expect a perfect work of art. In considering modern secular architecture it would not be necessary to notice buildings which were of a purely utilitarian character, such as cotton mills, &c., or houses which had merely openings for doorways or square holes left for light to enter. He was sorry to have to confess that English towns had been planned without any regard to a grand architectural result, and in this respect we were far behind our Continental neighbours. As the buildings in which merchandise was produced were as a rule only utilitarian in character, and had little or no expression architecturally in brick and mortar, he would consider the warehouses or buildings in which the manufactured article was exposed for sale, or from whence it was shipped. If there was one thing in Manchester which had rendered the city famous in modern history, it was the palatial warehouse architecture of its streets. There was no city in the kingdom which could show such a complete architectural epoch in commercial architecture, and although the great genius which brought it into being had passed away, Edward Walters had left his mark upon his day and generation in the warehouse architecture of Manchester. Railway stations, next to shops, were surely the most unfortunate media of architectural expression. There was certainly some true architectural pretension at London-road Station in Manchester, but taking the three commanding sites of London-road, the Midland, and the Exchange Stations into consideration, was there ever such a grand opportunity lost for the massing of architectural form and for the realisation of a grand skyline? The town halls of the Mediaeval and Renaissance ages might be ranked amongst the finest buildings which the art of architecture had given to the world. During the last half-century the towns and cities of this country had vied with each other in the erection of municipal monuments of architecture, and he need only remind them of the grand examples which might be found in Birmingham, Leeds, Liverpool, Bradford, Bolton, and Manchester. Some of the examples of town halls were conceived in the spirit of our national Gothic architecture, and their own city hall might be taken as one of the latest expositions of its adaptability; but we were yet wanting a style of architecture which should fully reflect the light of 19th-century civilisation and advancement. In the theatres of the future the initial condition should be that such buildings should stand completely isolated from other property. The stage should be capable of being instantly isolated from the auditorium by the closing of the proscenium opening, and the highest point accessible by an audience should be as near to the streets as possible, while no seat should be higher than the proscenium open-

ing. Every part of the house should also be provided with two exits; the stage should have a fireproof roof with a smoke-shaft glazed and louvered, and every space upon which the human foot was planted in the auditorium and escape staircases should be absolutely fireproof and unburnable. He had been told that it was impossible to carry out these conditions; but to that he replied that they had now become actual facts. In the great theatre now being erected in Manchester the promoters had determined that it should be a safe theatre and a faithful realisation of the principles of theatre architecture. In a few concluding words on the present position of secular architecture, Mr. Darbyshire said our own time had produced some curious changes in architectural style and construction. In a state of civilisation such as this it was almost useless to speculate on the future of English architecture. The age must have time to cool down; men must pause, and, like the grand old Greeks, must begin to love the beautiful as well as the useful. The filth and dirt of manufacture must be reduced and regulated rigidly by the State, so that we might give life and beauty to our secular architecture by the charm of colour under the clear light of heaven. Men must learn that the beautiful could be made as cheap as the useful, and ugliness must be banished from our streets; then, and then only, could we hope to reach a "Golden Age," in which our national architecture should develop new forms and fresh beauties, and when our architects should have honour and respect, and leave behind them "footprints on the sands of time."

#### INSERTION OF BEAMS IN WALLS AND OTHER CONNECTIONS.

IN the instances of disastrous fires, both in this country and America, we have abundant proof of the danger attending the fall of outer and internal walls. Mr. Harry A. Goetz, in a paper read before the National Association of Fire Engineers at Kansas City, calls attention to the value of a brick wall as the most formidable barrier to the spread of flames, which no one can dispute who is aware of the danger of walls collapsing during a fire. He alludes especially to the causes of the failure of walls during fires, one of which is the imperfect methods of anchoring, or the methods by which beams are secured to the walls of a building. Mr. Goetz says architects, builders, and inspectors neglect this important security. Generally the joists are cut on a splay of about 3in. to the foot at the ends, this splaying being done to permit the joists to fall out without damage to the wall. This advantage is generally counteracted by the mode of fastening the tie to the joist and wall, so that when the joist drops, its weight acts as a lever to tear the wall or cause it to topple over, through the tie being passed through the wall and screwed up on the outside. Sometimes the tie does not go right through the wall, but only reaches to the back of facing, so that when the joist falls out the tie drags away the inside bricks which secure the end of the tie to the wall, and which will have a tendency to fall inwards in consequence. After showing a number of the forms of tie used, which consist merely of a bar or strap of iron fixed and bolted to the top or side of joist, and projecting so as to go through the wall with turn-up-and-down ends or cross pieces of iron, the author draws attention to a method of anchoring which obviates the objection to this system of fastening, which consists of a cast-iron box of dovetail shape, whereby it is locked into the wall into which it is built, and on the seat of the box is a projecting lug, over which the joist is notched. This socket or box may be plain, consisting of an oblong box, but without one side, and a top into which the end of joist is inserted, cast dovetail shape on plan, with a lug as described at the bottom. Another form shows side guides with perforations or slots, which allow a circulation of air round the end of joist. The falling joist frees its anchorage, but without pulling the wall, while the weight on joist, when in the wall, increases its stability. The box is fire-proof, and can be inserted near fire flues without danger of ignition of the joist. For heavy beams the bottom of the box is made to extend and form flange-like projections, giving a wide bed-plate, which flanges, having the weight of brickwork on them, secure the box or socket. The same method can be applied to a party or partition wall, the boxes being built in

on each side of wall to take the opposite joists. If one floor is destroyed, that on the other side of wall is unimpaired, and there is no risk of the burnt out ends causing wall to topple over, as the iron boxes still remain embedded in the wall. By this plan the ends of opposite joists cannot touch and cause the fire to pass through the wall as it often does.

Another cause of speedy destruction during a fire is the manner wooden posts or pillars are made to carry others above them, when one of the horizontal beams, which are generally introduced between the head of one post and the bottom of the other, falls and destroys the footing of the upper post. Several methods of connection are shown; the author's improvement consists of fitting a cast-iron cap on the lower post with extended flanges or brackets to carry the side horizontal beams which are notched on lugs cast on the extending cap; there is also a socket formed to let the foot of the upper post into. The posts rest end to end with no shrinking or crushing timber intervening. The cap and posts are securely bolted together, while the horizontal timbers can fall away without pulling or injuring the remaining parts. The casting is bolted to the bottom of upper column, which holds the whole up if the lower post should be burned away. Mr. Goetz's method is certainly a good one, and deserves the attention of architects.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

#### PLANT FOR PREPARING CLAY FOR THE PLASTIC PROCESS.

ALTHOUGH the effect of "weathering" the clay before it is made into bricks varies largely with the nature of the clay, it is a process very generally pursued. The clay is dug in the autumn, and left in heaps near the machines—such as pug or wash mills—that are afterwards used in preparing it for moulding. The object, of course, is that the clay may be mellowed and softened as much as possible by the atmosphere and frost of winter, so as to render it more readily dealt with when brickmaking commences in the spring. The clay should, therefore, be left exposed as much as possible to the weather, and some makers go to the expense of having it watered and turned during the winter. In the London district, where it is necessary to mix breeze, chalk, &c., with the clay, and in many cases to wash it for clamp burning, it is dug and mixed with the sifted breeze or coal ashes in proportion to the nature of the clay, chalk being usually added to improve the colour and assist in binding the bricks. We have also seen clay prepared and covered with breeze in layers in the proportion of about 2in. of breeze to 1ft. of clay, the breeze and clay being afterwards thoroughly mixed. In the manufacture of London stocks of superior quality wash and chalk mixing mills are largely employed; the clay in the first instance is washed in the wash mill to remove stones and impurities, till it is reduced to "slurry"—a thin paste. Chalk in a similar condition is then mixed with it, either in the wash mill or in a mixing mill especially designed for the purpose. The slurry is then either pumped or run by gravity into pits or "washbacks," where the excess of water is drawn off and evaporates, leaving the clay sufficiently dry to be used for brickmaking in the spring. With the ordinary clay found in the Midlands and North of England, the best plan for weathering, and the one usually pursued, is to cut the clay in as thin layers as possible—say about 1in. thick—and forming heaps as lightly as may be, water being thrown on the clay about every 2ft. of thickness, the quantity of water used, of course, being regulated by the nature of the clay. This method of watering will render the clay of more even consistency than if the water is thrown on the top of the heap only. To prevent the clay becoming too much dried up, its surface should be covered with a layer of sand. It need hardly be said that the thorough mellowing of the clay by weathering expedites the after processes, and improves considerably the quality and quantity of the output. In the case of strong clays, street sweepings or sand are often added, the whole being covered with a layer of fine ashes.



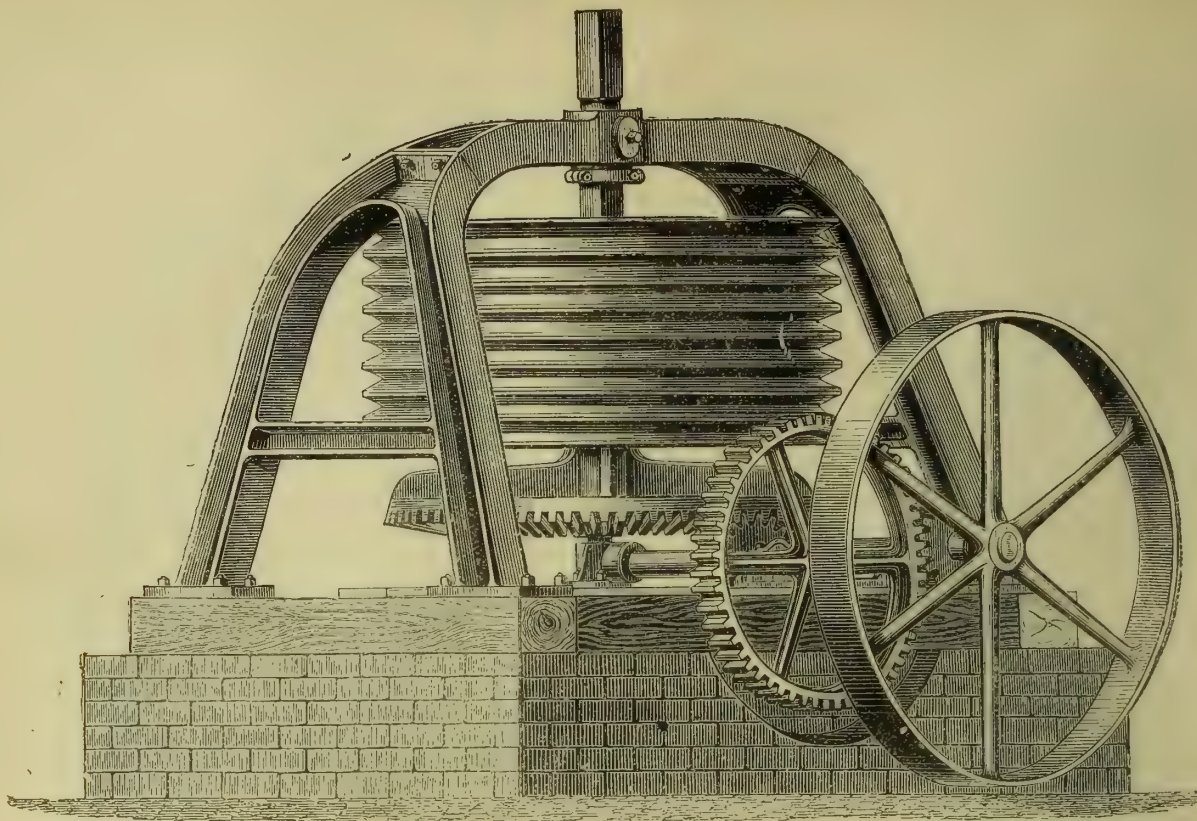


Fig. 3.

## CHAIN GEAR WINDLASSES, HOISTING GEAR, AND ELEVATORS.

Although shafting and belt pulleys have been introduced into a few London fields, windlass chain gearing is still chiefly employed for driving pug mills, wash mills, &c. An additional advantage arises from the use of this gear in cases where the beds of clay are thin, as the pug mills can be moved from place to place as required, the driving chains being lengthened to suit.

As will be seen from our illustration, Fig. 3, which is from the designs of Messrs. Bastin and Lawson, London, the windlass consists briefly of grooved wheels or drums mounted on a shaft running in bearings in a suitable frame, and actuated by a crown wheel and pinion. It is fitted with a second motive shaft for driving washing or pug mills, as may be required, the former being used in winter in preparing the clay, and the latter in the brickmaking season.

As this machine is subject to very considerable strain, it should be of massive construction, and mounted on a good foundation. The bearings should be of ample area, and capable of adjustment for wear. It is a good plan to pass the foundation bolts entirely through the brickwork.

As in many brickfields clay has often to be raised a considerable depth from the clay-holes, &c., to the crushing rolls or pug mills, various kinds of hoists and elevators have come into use. For hoisting the clay from the clay-pit a chain-winding gear, either separate or combined with the crushing rolls, is usually employed in conjunction with a clay truck running on rails down an incline into the pit. This hoist should in all cases be powerfully geared and fitted with a brake to regulate the speed and clutch or other arrangement to instantly throw the hoist in and out of gear. In the London district, for raising the washed earth or chalk, belt or chain elevators and conveyors are chiefly employed; but in some cases a wheel elevator is to be preferred. The belt elevators consist briefly of a series of hoppers or buckets mounted on an endless belt or chain arranged to run round the pulleys or drums placed at the top and bottom of the elevators. These pulleys are mounted on spindles running in gun-metal bearings, and are put in motion through the medium of belt, spur, or chain gearing.

## WASH AND CHALK MILLS.

As we have elsewhere remarked, the only really effectual way to get rid of the small lime-stones, &c., found in most samples of the London clay is to wash it. Wash and chalk mills consist

briefly of circular pits or walls with brickwork or wrought-iron sides. In the centre of this is mounted a vertical shaft, driven by suitable gearing, and carrying a series of six to eight radiating iron arms, to which is given a rotary motion. From the arms are suspended by chains iron or steel tined harrows of considerable weight, with long tines; these just clear the bottom of the mill when empty. The mills can be driven by belts or chain, as may be most convenient. The clay is tipped into the mill and thoroughly washed, the stones sinking to the bottom of the mill, from which they are afterwards removed. The pump supplying the water is often driven by a crank from the bevel gear shaft working the mill. The chalk mills are usually made considerably smaller than the clay washing mills, and are placed near them, but on a little higher level, so that the prepared chalk will readily run into the clay mill. By the aid of the wash mill and a suitable admixture of chalk, breeze, &c., it has been proved possible to make almost any kind of clay into fairly serviceable bricks. It is important to successful working that the footstep bearing carrying the vertical shaft of these mills is carefully arranged, and especial means taken for lubrication, and some remarks will be found on these points elsewhere.

## CRUSHING ROLLS.

We may mention that in dealing with plastic or shaly and stony clays, marls, &c., to reduce them to a uniform condition, enabling them to be dealt with in the pug mill, it is often necessary to use crushing rollers. These consist briefly of one or two pairs of chilled iron rollers, strongly geared together by toothed gearing, mounted in a massive cast-iron frame, braced together, and driven usually by a belt. The rolls are fitted with scrapers, and generally thrown in and out of gear by means of a friction pinion and clutch, and the gearing, which is often severely strained, is fitted with self-acting friction belt to prevent breakage. The rollers are driven at different rates of speed, thus producing on the clay a rubbing as well as a crushing action. The four roller mills are used for any hard or difficult clays, the lower rollers being set closer together than the top, the clay being thus gradually reduced to the desired consistency. Occasionally, when very hard clays have to be reduced, the top rollers are "hedgehogged"—i.e., are cast with teeth or projections, which break the clay up before it passes downwards to the smooth rollers, which complete the process. The machine is fitted with a suitable hopper, and the clay is

usually well watered or soaked before being passed into the machine, but some marls are passed through dry.

Clay-crushing rollers are also made in segments and fitted, a square shaft thus enabling the centre parts of the roller to be moved to the ends as they become worn. It is claimed for this arrangement that it combines the advantages of "hedgehog" and smooth rollers, and will readily grip any class of clay with the minimum amount of labour in feeding.

We have seen doing very excellent work a combination of smooth, tapering crushing rollers running at different speeds in conjunction with an adjustable transverse roll of irregular form fitted with long teeth, which break up the clay and separate the large stones. In clays containing stones, to make satisfactory material it will be necessary to screen all the large stones, and the small ones should be crushed so fine as to not show in or damage the brick when burnt. In America some machines are made with the crushing rollers placed inside a pug mill. We fail to see, however, what advantages can be claimed for this arrangement, as it certainly complicates matters, and renders adjustments and repairs more difficult.

## PUG MILLS.

A very important operation in the preparation of the clay before being dealt with by the moulding machine is pugging—that is, the thorough mixing of the clay, so as to render it perfectly homogeneous and uniform in its nature. If this is not properly and thoroughly done, the result is unsatisfactory, whether the manufacture be bricks, tiles, or pottery. Pugging, or tempering, was formerly done to a considerable extent by hand labour, but has now—except in very small fields—given place to the pug mill. This consists briefly of a large iron or wooden vertical or horizontal cylinder, in which is mounted a shaft or shafts carrying a series of knives or blades, mounted after the fashion of a screw. The clay being thrown into the top is cut and mixed by the knives, and passes out through a shoot in the bottom of the cylinder, and is then conveyed to the moulding machine. The mills can be driven by belt, rope, chain, or other gearing, or horse-power. Pug mills, both vertical and horizontal, are often combined with the moulding machine as one machine. For separate use, vertical iron mills are generally to be preferred, and care should be taken that the footstep bearing occupying the vertical shaft can be readily lubricated, and is adjustable for



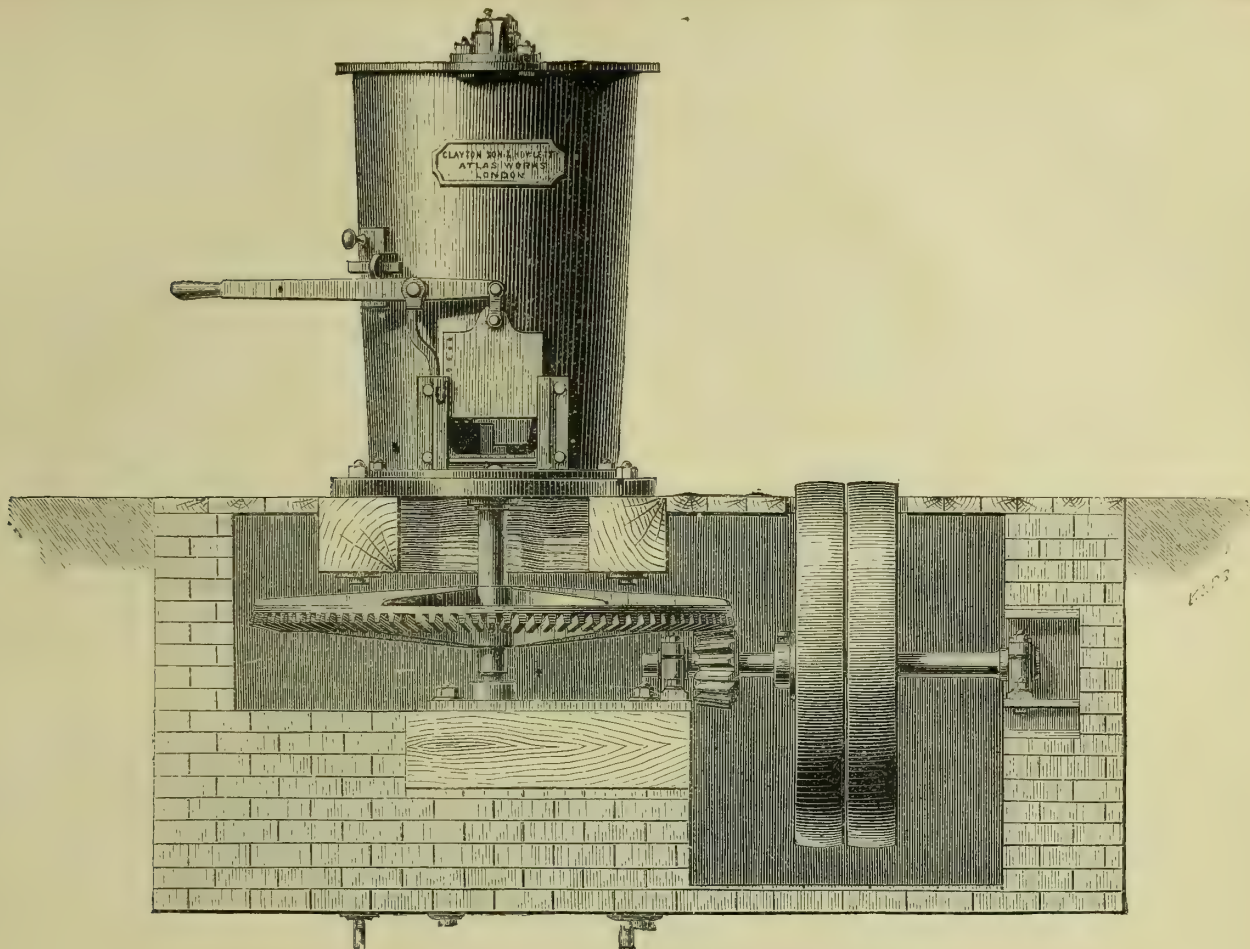


FIG. 4.

wear, or it may give considerable trouble and consume unnecessary power in driving. The mill should be mounted on an extended bed-plate to secure strength and rigidity in working; it can be driven either from above or below. For large mills the latter arrangement is perhaps to be preferred, as being steadier in work. The details should be so arranged that the knives can be readily adjusted or the shaft drawn if required. Some manufacturers make the top of the cylinder bell-mouthed, so as to facilitate the feeding of the clay. Scrapers for keeping the surface of the mill clear and preventing the clogging of the clay should be fitted, as it is amalgamated better, and the driving power reduced. The knives may be of steel, wrought or hard cast iron, the first for preference. In the case of uneven and refractory clays, a mixing-pan is sometimes combined with the pug mill; this is usually placed in the top of the mill, and consists briefly of a cast-iron pan, in which four adjustable arms are made to rotate horizontally. The clay, mixed with water, is placed in the pan, and after being well mixed is passed on into the pug mill.

Our illustration, Fig. 4, represents a pug mill, from the designs of Messrs. Clayton, Howlett, and Venables, of Harrow-road, London. As will be seen from the illustration, it is mounted on a timber and brick foundation, and driven from below by a belt. The cylinder is made with two outlets for the clay, and with a door to admit of cleaning the knives. Sluices can also be fitted for regulating the delivery and consistency of the clay, if desired. The knives are arranged on the principle of the Archimedean screw, so as to both cut and turn the clay over at each revolution. Scrapers for cleaning the sides of the mill and preventing the clay clogging are also fitted. The mill can be arranged to drive from above by means of chain gearing, if desired. The horizontal form of pug mill can be readily mounted on wheels when it has to be conveyed from place to place for temporary contract work. For transport in difficult countries on mule back, &c., pug mills can be readily made in sections, and put together at the place of destination. A convenient way is to make them of boiler plates, with strong angle-iron framing. Amongst hand moulders there is, however, a prejudice in favour

of vertical pug mills, in preference to horizontals. Tempering wheels are sometimes used instead of pug mills. These consist briefly of a large skeleton wheel, which is made to travel round a mud "race" or pit by the aid of suitable gearing. Pug mills fitted with two shafts and mixing screws running at different speeds have been introduced with success, and it is claimed for this arrangement that it will turn out a larger amount of clay, and that it is more thoroughly homogeneous than is the case with a single screw, and when it is combined with a brick-moulding machine the pug mill can be reduced in length.

#### PUMPS FOR BRICKFIELDS.

Single, double, or treble-barrel pumps mounted on frame, with crankshaft, and fast-and-loose pulleys or toothed gearing—or in lieu of gearing, chain-wheels—are largely employed for pumping slurry, &c., in the London fields. A large single-barrel pump is to be preferred to a smaller double, as there is less liability to stoppage from the valves becoming choked. Whether a single, double, or treble pump be used, a door should in all cases be fitted to each valve to allow of the ready removal of any obstruction. A long-stroke pump is to be preferred for this duty, as it is important the liquid should have as few reversals of its flow as possible, and there should be no complications in the passages or corners where the mud can readily accumulate. The valves should be as large and free as possible—gunmetal clack valves are suitable. Occasionally it has been found convenient to pump the slurry a mile or more through pipes; in this case the strength of the pump must be increased. Centrifugal, rotary, and chain pumps are often found very useful for brickyard purposes where the lifts are low, and they all possess the additional advantage of being without valves and packing, and cannot well be damaged by frost.

A requisition signed by the Mayor of Plymouth and a number of leading citizens and plumbers has just been received by the Plumbers' Company, desiring that a centre should be established at Plymouth to carry out in South Devon the Company's system for the technical education and registration of qualified plumbers.

#### COMPETITIONS.

**ISLE OF MAN.**—At the last meeting of the Braddon School Board, plans submitted in open competition by Mr. Thomas W. Cubbon, architect, of Birkenhead, were unanimously adopted for new school buildings about to be erected at Kemaigine.

**LEEDS.**—As the result of a competition, designs submitted by Mr. William H. Thorp, architect, of 61, Albion-street, Leeds, have been selected for a new synagogue, to be erected on a site having frontages to Merriion-street and St. John's-place, in that town. The new building, which will supersede the existing premises, now inadequate for their purpose, is designed to accommodate 1,000 worshippers. The synagogue will be a large rectangular-shaped room, 67ft. 6in. by 55ft., having on three sides galleries reserved for the women; accommodation for the men being provided on the ground floor. In the centre will be a raised platform, for the use of the reader and choir; and at the eastern end, situated on a raised dais, will be the "Holy Ark," placed within an arched recess. In the basement there will be a schoolroom, and rooms for the use of the caretaker. The building is designed in an Oriental style of a Saracenic type, and will be in brickwork, relieved with stone dressings.

**NEW CONSERVATIVE CLUB FOR OSWALDTWISTLE.**—The present premises of the Oswaldtwistle Conservative Club have been found totally inadequate to accommodate the members, and it has been decided to build a new club. At a meeting last week, out of a number of plans that of Mr. Shorrocks, of Simmons-street, Blackburn, was selected. On the ground-floor of the adopted plan there is an assembly room, 50ft. by 26ft., provided for, capable of holding about 300 people; a reading-room, 17ft. by 25ft.; a committee room, and secretary's room. There is also the hallkeeper's dwelling, consisting of house and scullery. On the second floor there is a billiard-room, 50ft. by 27ft.; card and smoke rooms, a bar, and accommodation for the hallkeeper. There is nothing ornate about it; but it appears a good, substantial building, and the internal arrangements are well adapted for club purposes. The proposed cost is £1,000.



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## ILLUSTRATIONS.

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## OUR LITHOGRAPHIC ILLUSTRATIONS.

## CONTEMPORARY BRITISH ARCHITECTS.

For description see p. 115.

CHURCH OF ST. MARY MAGDALENE, WORCESTER.—NEW TOWER AND SPIRE.

The church was erected in 1876, under the superintendence of Mr. Preedy, from designs prepared with the assistance of Mr. J. S. Alder, of Palmers-ton-buildings, Old Broad-street, London, E.C., the architect of the tower and spire now completed. The tower measures 21ft. square at the ground, with double buttresses at each angle in addition, and rises to a height of 80ft. The spire is 20ft. in diameter at the bases, and rises to a height of 110ft. 3in., thus making a total height of 190ft. 3in. from the ground. Provision has been made for a peal of eight bells. The upper portion of the tower, as well as the whole of spire and pinnacles, is built in best Portland cement. The tower facing is of Bromsgrove sandstone, and the dressings of windows, entrances, buttresses, &c., and the spire walls and pinnacles are of selected Westwood Ground Bath stone. About 12,000 cubic feet of stone have been used. The builder is Mr. Albert Estcourt, of Gloucester. The carving was done by Mr. Martyn, of Cheltenham. The dedication services were held on Sunday, the 22nd Sept. last, by the Bishop of Worcester. The five-light east window of chancel has just been filled with stained glass. The tower and spire and the new window are intended as a memorial to the late Colonel Johnstone, who contributed generously to the funds for the erection of the church.

## THE HOTEL METROPOLE, MONTE CARLO.

COMMENCED so recently as December, 1888, covering an area of ten thousand metres, and capable of entertaining at once some four hundred guests, this latest addition to the hotel accommodation of the Riviera was opened to visitors on November 26th last. The Hôtel Métropole, rising terrace by terrace from the main road, occupies a superb position—perhaps the finest in the Riviera—on the eminence between the Monte Carlo railway station and the Casino, and fortunately, by the company's acquisition of adjacent land, can never be overlooked, the east, south, and west sides commanding splendid views of the Mediterranean and its coast scenery. This is especially the case with the restaurant, a magnificent *salon*, in three divisions, about 140ft. in length, and also with the *table d'hôte* room beneath. On a level with the former, on the south side, there is an open arcade, forming an extension of the well-known Galerie Charles III., which will furnish the hotel guests with a delightful promenade, bringing into view the prominent Cap Martin, the romantic Roquebrun, and other picturesque objects, and almost immediately overlooking the Mediterranean. The architects have been Messrs. Giles, Gough, and Trollope, of London; M. Terslin, of Mentone, acting as assistant resident architect. M. Viu has been the contractor, executing his task with

exemplary rapidity; Mr. George Jennings has had charge of the sanitary arrangements, and the laying out of the gardens and grounds, which are divided from those of the Casino by some 20ft. only, has been intrusted to M. Keller, the Paxton of the Riviera. The building is constructed entirely of granite, iron, and concrete. The walling is wholly of granite, carried over openings on iron girders. The floors are throughout of concrete and iron, and the roof is a concrete flat. The floors in the rooms are covered with parquet, and in the passages with mosaic. The whole of the exterior is worked in cement stucco. When the method of construction is considered, it is more surprising that the building could have been completed in so short a space of time. Cranes and hoists are unknown, and each stone for the walling is carried up "on the back" into position, sometimes two or four men carrying one stone between them on a pole. Beyond the furniture, most of the internal fittings have been sent from England, Mr. James Hill, of 100a, Queen Victoria-street, having supplied all the locks, door, and window furniture, and fanlight openers—the locks being of a special pattern, with master-key and grand master-key arrangements throughout. Messrs. Waygood and Co. made all the lifts.

## ROYAL VICTORIA HOSPITAL, BOURNEMOUTH.

YESTERDAY, the 16th inst., this hospital, which was built to commemorate the Jubilee year of Queen Victoria's reign, was formally opened by H.R.H. the Prince of Wales. The hospital is divided into different wards, with accommodation for 25 beds; but the central administrative block is large enough to allow for the ultimate extension of the building for 50 beds. The basement has cellars and heating chamber. The plans illustrate how the accommodation on the ground and first floors, and the central block is carried up another story, containing kitchen, offices, and bedrooms for the hospital staff. The west wing of the ground floor is entirely occupied by an outside dispensing department. The walls are faced externally with Purbeck stone, Portland stone being used for the moulded work, quoins, and other dressings. The architects were Messrs. Creeke and Gifford, and the builders Messrs. George and Harding, both of Bournemouth. Mr. J. Halcrow was the clerk of the works.

## DETAILS OF OLD HOUSE, SOUTH QUAY, GREAT YARMOUTH.

WE have on former occasions given some of Mr. Charles J. Brooke's drawings of this house, showing other parts than those illustrated by the accompanying double-page plate to-day. We may refer to the previous illustrations, when particulars of this house and the Star Hotel were given—viz., BUILDING NEWS, April 30th and May 28th, 1886, for drawings of the Nelson Room at the "Star," and December 30th, 1887, for ceiling at South Quay, and March 30th, 1888, for sides of Great Room. The Queen's prize was awarded to Mr. Brooke for his set of plans, which comprised a complete monograph of this most interesting piece of work.

An action to recover £200 under the Employers' Liability Act was brought at the Wellington County Court, on Friday, by a labourer named Machin against Mr. C. R. Clark, contractor, of Stoke-on-Trent. Machin was at work upon a shed at the West Midland and Shropshire Agricultural Show when it collapsed, and he was thrown to the ground sustaining serious injuries. Machin stated that the ladder was too short, and that he called the foreman's attention to this, but was told to ascend. Had the ladder been of sufficient length there would not, he said, have been any necessity for him to get on the roof of the shed. The foreman and others denied that plaintiff made any complaint about the ladder. His Honour gave a verdict for the amount claimed.

The Godefroid de Bouillon Preceptory of Masonic Knights Templars, Stoke-on-Trent, having placed a statue of Godefroid de Bouillon in one of the niches on the south side of the Consistory Court of Lichfield Cathedral, a party of Knights, accompanied by their Provincial Prior, went to Lichfield on Wednesday week to formally make the presentation. The figure was executed by Mr. J. J. Millson, of Manchester, and represents the leader of the First Crusade in the act of starting forward and drawing his sword.

Mr. P. J. Sheldon, borough surveyor, of Burslem, has been appointed chief surveyor of main roads to the Essex County Council. There were 61 candidates for the post.

## THREE MEMORIAL CROSSES.

CHURCHYARD CROSS AND LICH GATE AT OGLE PYCHARD.

THE Cross and the octagonal steps upon which it stands are of Forest of Dean stone; the Lych-gate is of oak, roofed with oak shingles, the walls being of red and white stone from the Grinshill Quarries, near Shrewsbury. The work has been carried out by Mr. Robert Clarke, of Hereford. Mr. Bertram Heywood, B.A., is the architect.

## MEMORIAL CROSS AT PENARTH.

This monument was erected a short time since in memory of a well-known Cardiff architect, the late Mr. H. C. Harris, A.R.I.B.A. In accordance with his special wish, the cross was designed by Mr. Maurice B. Adams, F.R.I.B.A., and a Celtic treatment was adopted in obedience with instructions. The work was thoroughly well carved out in marble and stone. The carving was done by a local firm, from the architect's full sizes. An attempt was made on the part of the designer to give a contemporary character to the cross, and while adopting an early type of work, mere archaic details were avoided in the ornamentation. The main stem of the structure tapers in thickness, and the square bosses on the cross are cubes, with raised centres on the edge faces. The returns or edges are enriched to correspond with the front and back of the monument, both sides being ornamented. A curb incloses the grave.

## MONUMENT AT EXETER.

This Cross, of good proportions and simple design, was erected to the memory of more than 160 persons who perished in the disastrous fire at the Exeter Theatre—a catastrophe which is still fresh in the minds of most of us. The cross is in stone, the base being of granite. Mr. Harry Hems, of Exeter, was the sculptor.

## CHIPS.

A richly-carved Runic cross, executed in grey mountain limestone by Messrs. Farmer and Brindley, of Westminster, has been placed over the grave of the Rev. G. R. Portal, hon. canon of Winchester, in the churchyard at Burghclere.

New banking premises are about to be erected in Boscawen-street, Truro, on a site now occupied by a draper's, from plans by Mr. Silvanus Trevail, M.S.A., of that city.

The museum of Egyptian antiquities has been removed from Boulak to Ghizeh. The new building was opened by the Khedive on Sunday.

Mr. John Farnworth, timber merchant, of Liverpool, has bequeathed to charities in that city connected with the Wesleyan denomination £22,500.

The contract for the construction of the Glasgow Harbour tunnel at Finnieston, to provide for passenger and vehicular traffic between the opposite sides of the river at that point, has been given to Messrs. Hugh Kennedy and Sons, Partick, Glasgow. The undertaking will consist of three tunnels, two of which will be for vehicles and the third for passengers. Messrs. Wilson and Simpson, C.E., are the engineers of the tunnel.

At a general assembly of the Royal Institute of British Architects, held on Monday evening, the following were elected members:—A. E. Brockbank, Gordon Browne, Val. Davis, Charles H. M. Kerr, Davidson Knowles, F. H. A. Parker, J. L. Pickering, S. Sidley, and Arch. Webb.

At the meeting of the Bradford town council held on Tuesday a resolution was adopted authorising the expenditure of a sum not exceeding £10,000 required for electricity works; also another appointing Mr. Sydney Baynes as managing engineer of the electricity works at a salary of £250 per annum.

Mr. J. Dyer Edwards, formerly of Victoria, Australia, but now resident in England, has presented to the trustees of the Anglican Cathedral at Melbourne a very fine peal of bells. They have just been cast at the foundry of Mears and Stainbank, Whitechapel, London. The peal consists of 13 bells, a semi-tone being added to the proper peal of 12. The tenor bell, which is the largest, weighs 31½ cwt., and is 4ft. 8in. in diameter. The smallest bell of the peal weighs 5½ cwt.

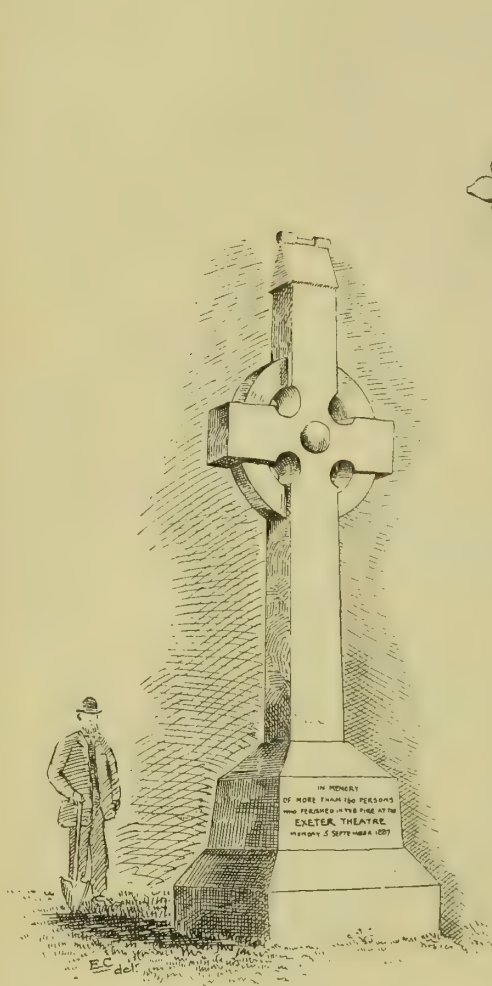
Mr. Lees Knowles, M.P., secretary of the Guinness Trust, has invited the co-operation of the Dublin Corporation in selecting sites for building dwellings for the poor. Mr. Knowles also appeals to owners of ground in Dublin and others to aid the trustees, who are anxious to begin work in Dublin at once.



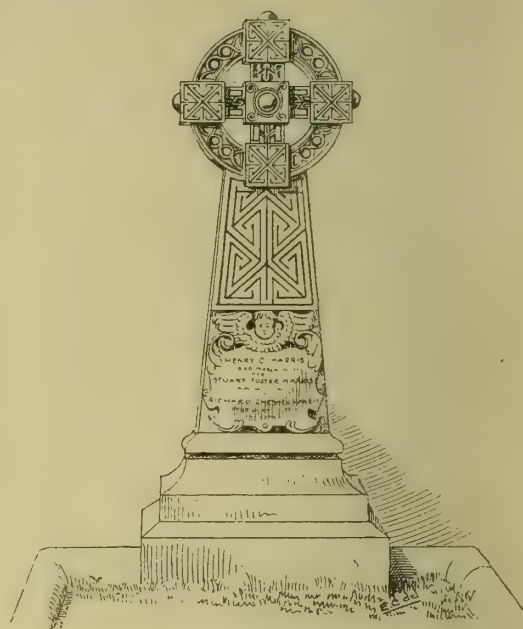




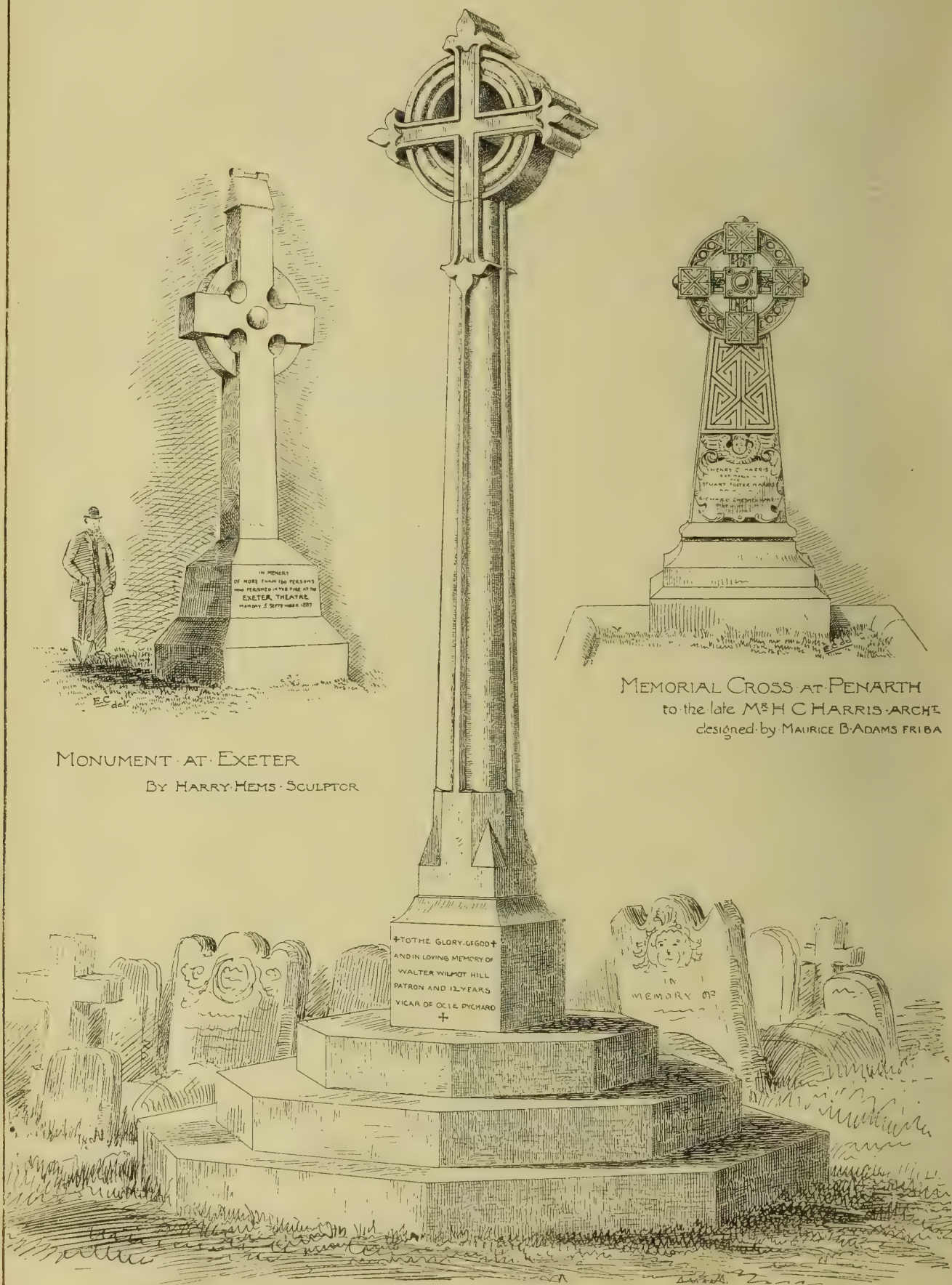
# — THREE MEMORIAL CROSSES —



MONUMENT AT EXETER  
BY HARRY HEMS · SCULPTOR

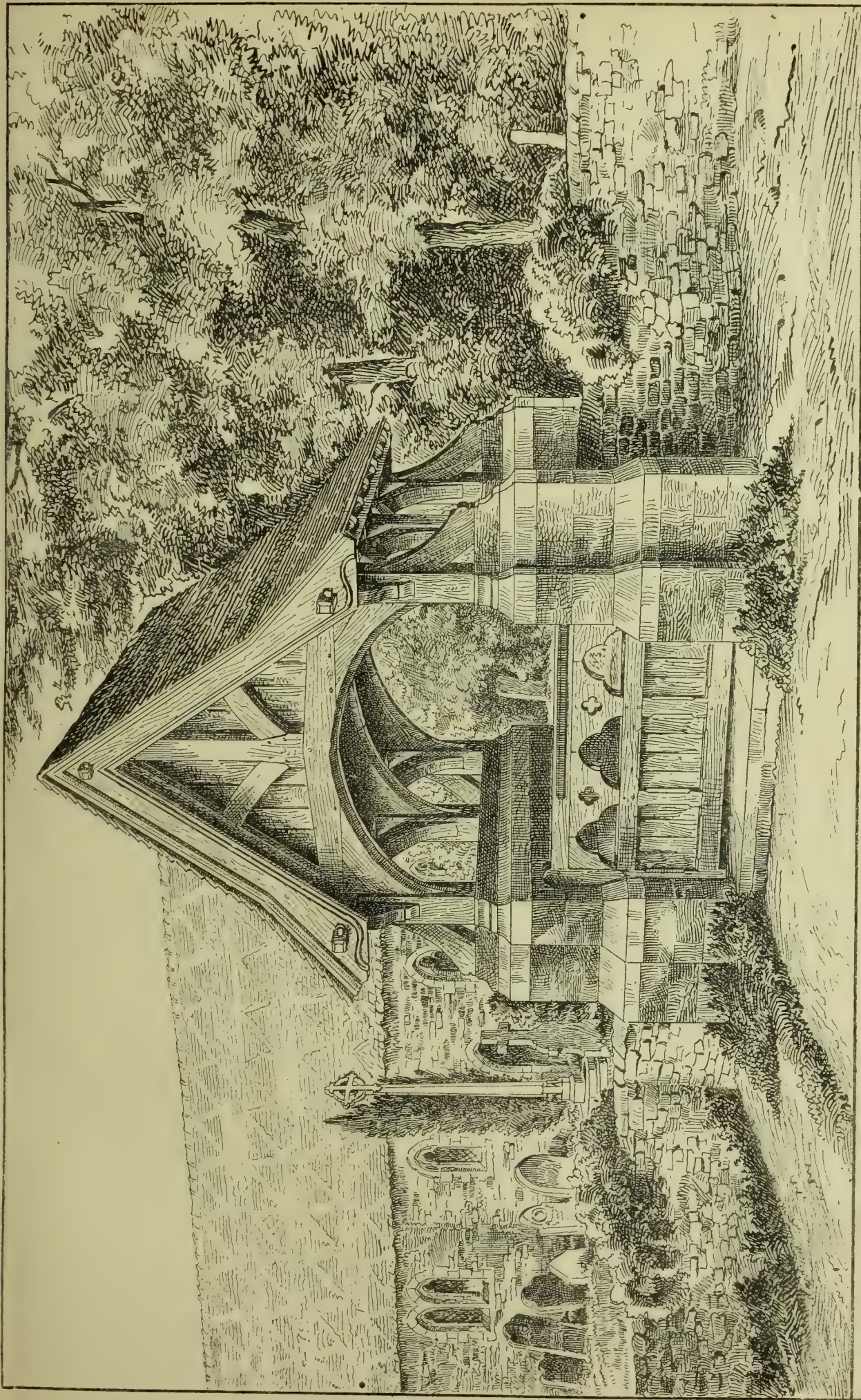


MEMORIAL CROSS AT PENARTH  
to the late M<sup>RS</sup> H C HARRIS · ARCHT  
designed by MAURICE B ADAMS FRIBA



CHURCHYARD · CROSS AT OCLE · PYCHARD · NEAR HEREFORD  
· BERTRAM HEYWOOD · B A ARCHITECT





LYCH GATE AND CHURCH YARD CROSS AT OCLE PYCHARD NEAR . HEREFORD. 6220 .  
BERTRAM HEYWOOD B.A. ARCHT



## WAYSIDE NOTES.

**TOWARDS** the close of last week I observed a statement in an evening paper to the effect that a very large number of competitors—somewhere about two hundred, if I remember rightly—are engaged in preparing designs for the proposed Watkin monstrosity or “Eiffel” tower. Considering the nature of the competition, it is a little surprising that so many are in the field. Had one-fourth of the individuals been at work on this mad scheme, it would have been a large number. What is scarcely less surprising is to learn that many of these competitors are of “great eminence.” One would have thought that these eminent gentlemen could have better employed their time. Unless something be produced so as altogether to out-Eiffel M. Eiffel himself, the author of any design that may be selected need hardly expect his name to become such a universally household word as that of the Parisian engineer. I don’t want to discourage, however; so those on the job please peg away. It is my hope that *all may win*.

The poor little King of Spain has been unwell, and it was urged by the Queen-Regent as a sign that His Majesty was progressing favourably, that “he asked for his box of building bricks, and commenced building an Eiffel tower.” When His Majesty is old enough to take the reins of the country in his own hands, there should be great attention paid to the development of architecture and engineering in the Peninsula, seeing that, at such a tender age, the king essayed to construct an Eiffel tower.

The Sheffield people are on the right track. They deserve the respect and regard of the architectural profession for the pains they are taking to render the competition a success. In dual competitions the essence of the thing is to keep it dark throughout, so that sweetness and light may be the ultimate result. The names of the successful competitors should be rigidly preserved; their several exhibits kept from the eyes of Paul Pry and his fellows; and no exhibition of unsuccessful drawings should be made until the premiated competitors have sent in their perfected schemes. There would appear to be some danger that this latter point may not be observed at Sheffield. An exhibition is proposed, and may be shortly holden. If so, it is a pity. Better by far wait till such time as the sketch designs of the successful men can be shown alongside. Otherwise the interest of the exhibition is marred: one cannot compare successful with unsuccessful, and young architects, who have tried their hands, have not such a chance of gaining experience from the process of comparing and examining.

I am not politician enough to say, off-hand, of what shade of politics is the town of Gainsborough, but it is not *liberal* in its attitude to architects. In the face of a decided improvement in competition inauguration, one might well afford to accost the Corporation of Gainsborough with, “Take it home!” and other derisive expletives of a kind generally employed by architects in polite society. The £5 premium is little better than an insult.

Of the many outward signs of the spirit of utilitarianism that is abroad at this day, perhaps none are more expressive than the fact of the frequent desire, on the part of those having authority, to make some practical use of ancient buildings other than show, and the entertainment of the eye of the ordinary sight-seer, as of the artist, architect, and archaeologist. The latest instance of this economical spirit is to be noticed in last week’s list of tenders, wherein it will be seen the Nottingham Corporation are about to convert a further portion of the so-called “Castle” buildings into an art gallery; as we all know, the main portion of this Italian mansion, erstwhile the seat of the head of the Pelham-Clintons, has for some years been restored to serve as a museum, and admirably does it serve its new purpose. This useful method of employing an old castle has been practised before, and in many instances the utilisation of an ancient building for some latter-day purpose means the salvation of its architectural features by timely repairs. Still, the conversion is to be taken as a true index of the utilitarian spirit of our own times. “The castle must not be a mere vanity,” thinks the town, “but must serve some practical purpose.” At Norwich the old keep has been con-

verted into a museum, or will be some day; for, in spite of a general belief to the contrary, the museum is not yet arranged, and will not, I believe, be ready for the public for some time. When at the keep last Easter I found a mere rough shell, and was told that the museum would not be ready for a couple of years or so.

Much hardship—scarcely *injustice*—must be caused to contractors by fluctuations—one way—in prices of materials; and if the fraternity could see their way to insure their own protection, no one could object. The difficulty is the bother and complication that would arise through any arrangement like that suggested by your correspondent at Birmingham. It is impracticable. Still, the question merits the attention of builders and contractors. Within a few weeks iron has risen so greatly in price that, should prices hold, any contractor requiring a large amount of constructional ironwork must be a great loser. So heavy is the rise all round, that it means ruin to some men.

In your Query columns I noticed an inquiry respecting spring ball-room floors, a subject on which information was requested, some little time back, but no information was forthcoming. Although not having had the experience of constructing a floor of this description, I recently examined an excellent spring floor in a large boarding establishment in the provinces, and carried away some idea of its construction. The whole floor was poised on a number of steel cork-screw springs, the material out of which the springs were formed being best Sheffield steel, round in section, and  $\frac{1}{2}$  in. thick; the springs, perhaps, about 6 in. high and 4 in. or 5 in. wide. The springs rested on wood plates on brick piers in the basement, and carried strong rolled iron joists, acting as binders, carrying the wood joists. The springs about 4 ft. apart. Blocks of wood prevented more than a certain amount of “play,” of which I was told there was a good deal whenever an aldermanic gentleman with a partner “inclined to *embonpoint*” passed over a spring. I have the word of reputed dancers that this floor is “delightful.”

Whether the architect be busy or not, it would upon the face of things appear that his assistant is not—decidedly not. “Linda” advertised in the professional journals at the beginning of the year for half-a-dozen assistants—a large order, as things go—and I see by his advt. in your last week’s issue, that he has received some 200 applications. This looks bad; but, possibly, like many other things, not so frightful when one inquires into matters. Doubtless many assistants already engaged, but dissatisfied, as assistants are wont to be—and I don’t blame ’em at times—applied for the berths, in the hope of bettering their position. A more likely explanation of the rush, however, and a more encouraging one would be that the list is swelled to its proportions by the large number of “improvers” applying for the two junior berths. The name of these gentlemen is legion, whatever the state of the architectural labour market, the height of the tide at London Bridge, or the price of steam-coal at the pit’s mouth. These “improvers” are gentlemen with claims on our sympathy, if getting on life; but if, as they should have done, they entered the profession sufficiently young, they are mostly of an age when a knocking-about in the world is the best possible prelude to earning one’s own living. This rough handling they, many of them—happily, I say—experience on leaving the old master’s nest. If they take the cuffs kindly, the ha’pence will seem more welcome afterwards; and the first thirty shillings for a week’s service will be handled with more pride than if they had stepped into the berth without delay and anxiety. So, as 200 into 6 won’t go, I trust that those in whose heart “Linda” has raised false hopes will not be discouraged, but at it again.

I see, notwithstanding “Linda’s” two hundred applicants, that the Salvation Army still requires more architectural assistance, their chief having advertised in your columns for two good seniors—*total abstainers*. Your advertiser has evidently never been button-holed by the ancient “Goth” with respect to a favourable reminiscence, touching a certain draughtsman—the proud possession of a poor old friend of the “A. G.’s”—who could only design in a telling manner when he was a little “on.” The effect of alcoholic liquor upon this gentleman’s powers of design

was marvellous, and his fame was great among the body of assistants, &c., to the practitioners throughout the town. It is even said that on a fine summer’s afternoon, when the sun was low over the distant ocean-horizon, knots of pupils and others would gather beneath the open window where Mr. — was at work, and listen with breathless excitement to the crisp ring of his fleet pencil, and the accompaniment of chinking glasses and loudly-popping bottles of Bass. “— is now well ‘on’!” they would whisper in awestruck tones; and could they have seen the renowned draughtsman at the moment they would have known they had not spoken in vain.

It was never my good fortune to see Mr. Blank at work, but they do say it was a sight. When thoroughly mellow, the supply of forms and features, both Classic and Gothic, was never-ending, and as he got “for’ard” the quality improved. Each different drink, moreover, produced a different design. A special tap here resulted in grand composition and outline, and one brand of “Old Tom” was noted to produce Queen Anne façades of marvellous beauty. But so long as Mr. — was well “on,” the peculiar class of refreshment mattered little. Designs of all sorts—cathedrals, churches, town-halls, public buildings—especially *publichouses*—poured forth in never-ending stream. Indeed, Blank was more than a nine days’ wonder among the pros. at Chalkton-on-Sea.

Had anyone else been able to boast of the possession of so remarkable a draughtsman, he would doubtless have been tempted to lay a special cellar, and let Mr. Blank roam therein at will. Not so my old friend. His chief complaint against his assistant was that he helped himself liberally to his master’s wines. He would tell me how his cases of wine would grow smaller by degrees and beautifully less, and how when he charged Mr. — with the spoilation, that worthy attempted not to deny the accusation. Now, recalling for the benefit of my readers generally, and the Salvation Army in particular, these historical facts about the illustrious non-total-abstainer draughtsman, it has just occurred to me that my poor friend must have kept his wine in a very peculiar place, to be accessible at all times by his assistant; and I venture, without disrespect to his memory, to suggest that his complaints were all put on, and that knowing his assistant could only design when a little “on,” he left a case of wine within easy reach. The more I think of it the more certain I become, for history assigns the position of the wine-case to the drawing-office, and who ever heard of an architect leaving wine in his drawing-office without some ulterior motive? **GOTH.**

## CHIPS.

Two stained-glass windows have just been placed in Paisley Abbey, one in memory of Robert and Thomas Speir, and the other to the memory of the late Lieutenant-Colonel Millar.

It was reported at the meeting of the promoters of the New London Tower Company, held on the 9th inst., that 248 architects and engineers are preparing designs for the Watkin tower, of whom 16 are American and Canadian and 16 French and German engineers.

A stained-glass memorial window in St. Thomas’s Church, Exeter, was unveiled on Friday. It is of three lights, Perpendicular in style, and is placed in the south aisle. The subject is Our Lord Blessing Little Children. Mr. Frederick Drake, of the Close, Exeter, was the artist.

St. John’s (Roman Catholic) Cathedral schools in York-place, Edinburgh, were solemnly blessed last week. They are an extension of existing schools and have been built at a cost of £1,500, from plans by Mr. John Biggar, architect, of Edinburgh.

A commencement has been made this week with the sewerage of the local board district of Consett. Mr. R. Robinson, of Darlington, is the engineer; and Messrs. Waddle, of Birtley, are the contractors.

On Monday the Bishop of Lichfield dedicated a new reredos at Edgmond Church. The reredos, which is of stone, depicts in the centre the Crucifixion, and at the sides are figures of SS. Peter and Paul, under crocketed canopies. The reredos is a memorial to the late Prebendary Pigott, late vicar of Edgmond, and has cost about £350. It is further proposed to complete the reredos by continuing it on each side to the chancel walls. Messrs. G. F. Bodley, A.R.A., and T. Garner are the architects, and the work was carried out by Mr. Bridgeman, of Lichfield.



## CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

CONTINUING our series of portraits of living architects which we commenced on the 3rd inst., we give our third sheet to-day. Taking the order followed by the arrangement of the grouping, we give a few particulars in each case before.

Mr. Wm. A. Royle, F.R.I.B.A., President for the past two years of the Manchester Society of Architects, has, in conjunction with Mr. Robt. J. Bennett, erected a great number of buildings in different parts of the country, but chiefly in Manchester and Salford, amongst which may be mentioned several schools (some of considerable magnitude) for the City of Manchester School Board; also the new offices for that Board in Deansgate, Church of England schools in Ardwick, Congregational church and school at Rooden Lane (near Manchester), Wesleyan schools in Salford, several police-stations and a branch free library for the Salford Corporation, Smedley's Hydropathic Establishment and Turkish baths at Birkdale, Southport, Turkish and Smedley baths at Harrogate, and has now in course of erection Turkish baths in South Parade, Manchester. In addition to the above he has built a large number of extensive warehouses, shops, and offices in some of the most important streets in Manchester, together with several residences in other places. The portrait here given is by Mr. Warwick Brooks, of Manchester.

Mr. John Pollard Seddon, Fellow of the Royal Institute of British Architects, born in the year 1827, was pupil to the late Professor Donaldson from 1847 to 1851, and commenced practice in London as an architect after a professional tour of some months on the Continent on the conclusion of his pupilage. In 1853, being commissioned to build an hotel at Southerndown, in Glamorgan, he became introduced to the late Mr. John Prichard, cathedral and diocesan architect for Llandaff, and accepted his invitation to join him in partnership. By degrees their joint practice became an extensive one, and continued for about ten years, during which the greater part of the restoration of Llandaff Cathedral was carried out by them, and the building or restoration of about seventy churches, forty parsonages, and seventy or eighty parochial schools and other public or private buildings in the counties of Glamorgan, Pembroke, Monmouthshire, and elsewhere. They jointly obtained a premium for £200 for the design they submitted in the competition for the Foreign and War Offices in 1857. After this they opened a branch office in London at No. 6, Whitehall, of which Mr. Seddon took charge, Mr. Prichard remaining at Llandaff. Among the more important works conducted by the firm were Eaton Park, Warwickshire, the seat of Mr. E. P. Shirley; additions to Beckford Hall, Gloucestershire; and the erection of Christchurch College, Brecon. In 1863 the partnership was dissolved; Mr. Seddon soon afterwards married, and removed to 1, Queen Anne's Gate, Westminster, which, known at that time as No. 12, Park-street, remained as both his office and residence until the year 1888. The principal works upon which Mr. Seddon has been engaged since 1863 comprise the restoration of the church of St. Nicholas, Great Yarmouth; the erection of the new church of St. James, in the same town; the orphanage and sanatorium of St. Peter's, Thanet, for Archbishop and Mrs. Tait. He was also employed by the Dean and Chapter of Norwich to report on the west front of Norwich Cathedral, and is now commissioned by the present Dean and Chapter to advise them as to the general arrangements of that cathedral, for which he is also carrying out the choir pulpit in honour of Dean Goulbourne. For Rochester Cathedral he designed the stall work in the nave, presented by Canon Cazenove in memory of his father. He built, and rebuilt after its partial destruction by fire, the University College of Wales at Aberystwith. Among his other works are new churches at Ayot St. Peter's, Herts; Chigwell Row, Essex; Redruth, Cornwall; Ullenhall, Warwickshire; Hoarwithy and Adfertton, Herefordshire; Redbrook, Wyesham, and Llandogo, on the banks of the Wye; the chancels of Fishponds, Bristol, and Lacey Green, Bucks; Gorse Hill Church, Swindon. He has restored the churches of Llanbadern, near Aberystwith; Sunningwell, near Oxford; Convil, near Carmarthen; Ingham and Arminghall, Norfolk;

Great Kimble, Bucks; Upavon, Wilts; Eythorne and Barfreton, Kent; St. Peter's, Thanet; Camrose, Pembroke, &c. Among his private mansions are Abermaide, near Aberystwith; Rosdohan, County Kerry; Broncroft Castle, Shropshire; Grove, Narbeth; Oxted, Surrey; Roughwood, Chalfont St. Giles, Bucks; besides numerous parsonages, including that of Christ Church, Westminster. The Birkenhead branch premises of the North and South Wales Bank is another important and characteristic work of his. Mr. Seddon, as is well known, was one of the twelve architects appointed by Government as competitors for the National Law Courts. He obtained the bronze medal for architecture at the Paris International Exhibition, 1878. In the year 1884 he took into partnership for all works in Wales and Monmouthshire Mr. John Coates Carter, and was, at the death of Mr. Prichard, appointed diocesan and cathedral architect for Llandaff. The firm is now conducting the important works of the complete remodelling of Chepstow Church, Caerleon Church, new churches at Grangetown, Cardiff, and Penarth (near Cardiff); alterations to St. Fagan's, and works in numerous other towns and villages in the diocese. Mr. Seddon has for several years not only designed, but superintended closely, the execution of stained-glass windows at Messrs. Belham's, 155, Buckingham Palace-road. As an author he has published "Progress in Art and Architecture" (D. Bogue, 1852), illustrated by lithographs drawn on stone by himself; in 1857 he published "Memoirs and Letters of the Late Thomas Seddon, Artist" (Nisbet and Co.); and in 1868 "Rambles in the Rhine Provinces" (John Murray); with other smaller works and contributions to professional journals, and the *Transactions of the Royal Institute of Architects*, of which institution he held for nine successive years the position of honorary secretary. Since and including the year 1887 he has been the art editor of the only monthly architectural English journal, the *Building World*. Mr. Seddon's photograph is by the Vander Weyde Light Co., Regent-street, W.

Mr. George T. Hine, F.R.I.B.A., President of the Nottingham Architectural Society, is the architect of the Claybury Asylum at Woodford, Essex, now being built for the London County Council. The contract for the superstructure was £337,945, without foundations, subways, &c., which were the subject of another contract. These works, and the lodges and boundary walls, cost £50,000 more. Besides the Claybury Asylum, which is the largest building of the kind ever erected at one time, Mr. Hine built the new Borough Asylum at Nottingham, and has just added a wing to it at a cost of £40,000. He has likewise enlarged the Coppice Lunatic Hospital, which was built thirty years ago by Mr. T. C. Hine, F.S.A. In conjunction with his father, Mr. G. T. Hine has erected, among other works, the Notts Shire Hall and Assize Courts; restored Nottingham Castle, and converted the building into a museum of arts; he has laid out the Duke of Newcastle's Nottingham Park estate, and erected thereon between 100 and 200 private villas and mansions, costing each from £1,000 to £10,000; four large board schools for the Nottingham School Board, and some more for the Newark School Board; Norbury Hall, Derbyshire; restorations of numerous churches, and two new ones in the neighbourhood of Nottingham; also the erection of several vicarages; Cranfield Court, Beds.; and several warehouses, factories, and shops, &c., including a large block of shops and offices near London Bridge. This likeness was taken by Messrs. Alfred Cox and Co., Nottingham.

Mr. R. Herbert Carpenter, F.S.A., Vice-Chairman of the Standing Committee for Art at the R.I.B.A., was articulated to the late W. Slater, and was with him in partnership until his death, December, 1872. He subsequently took a partner, Mr. B. Ingelow. The following is a list of his works:—A. Colleges and school buildings:—Jesus Coll., Camb., new students' buildings, fellows' houses, and restorations of old buildings; Lancing College, chapel, school room, and other buildings; Denstone College, chapel hall and complete buildings; Ardingley College, chapel, hall, and complete buildings; Hurstpierrepont, chapel and head master's house; Ellesmere Coll., hall and quadrangles; Dewsbury School, schoolroom; Abbot's Bromley (Girl's Middle Class), chapel and other buildings; King's School, Sherborne, schoolroom, chapel, and other buildings; King's School, Ely, Hereward's

hall, hostel, &c.; King's School, Bruton, classrooms, dormitories, &c.; Worktop College, designs for execution; St. Mary Abbot's, Bromley, designs for execution; Cheam School, chapel, dormitories, and other works; St. Kath. Coll., Tottenham (S.P.C.K.), chapel. B. Houses:—20, Arlington-street, for Lord Salisbury; Seacox Heath, for the Right Hon. G. J. Goschen, M.P.; Simonstone, for the Earl of Wharfedale; Stoughton Grange, for Mr. H. L. Powys-Keck; Hawkwell-place, for Rev. R. S. Tabor; Stanhill Court, for Mr. W. Young; Knoyle House, additions, for late Mr. K. Seymour; Trent Manor House, additions, for late Mr. K. Seymour; Brigstock Manor House, restorations, for the late Duke of Buccleuch; Sexey's Hospital, Bruton, enlargements; Yeatman Hospital, Sherborne; Digby Hotel, Sherborne; London Female Penitentiary, new buildings; and many parsonages, houses, schools, &c. C. Churches:—Armagh Cathedral, restorations; Sherborne Abbey Tower, restorations; Honolulu Cathedral; Manchester Cathedral, designs for the late Bishop Fraser (1873); Chichester Cathedral, Lady-chapel, reredos, &c.; Worktop Abbey Church, designs for its restoration, for Duke of Newcastle; Newmarket Memorial Church, for the Duchess of Montrose; Felham; Brighton, Church of the Resurrection, and spire to St. Paul's, in West-street; Enfield, St. Michael's; Dunston, for the Earl of Ripon; Hardrow, for the Earl of Wharfedale; Long Marston; Outrington; Bootle; Belfast; St. Martha, Paddington Church, Lawford; Sutton. Churches restored:—Market Drayton; St. Leonard, Bridgworth; Earl's Barton, Brigstock, Blankney, Henfield, Bruton, Cranbrook, Sandhurst, Strixton, Middleton, Child's Ercall, Aldrington, Tring, Southover, Gem Magna, Thurnby, Stapleton, Barton Latimer; many churches for the late Duke of Buccleuch and for the late Mr. G. D. W. Digby; restorations of gate tower and fittings at St. Augustine's Coll., Canterbury; and many works for the late Right Hon. A. J. B. Beresford Hope, including his memorial. The portrait herewith reproduced was executed by Messrs. Dickinson and Foster, New Bond-street, W.

Mr. W. Henry Lynn, R.H.A., President of the Royal Institute of Architects of Ireland, 1886-9, was the architect of the Town Hall at Chester, with the market front adjoining; the Geo. A. Clark Halls, with the bridge adjoining them at Paisley, the new municipal buildings at Barrow-in-Furness, and the public library buildings at Belfast. The commissions for these works, as well as for others of a less important character, were the result of successful competition. His design was awarded the first prize in the International competition (1861) for proposed Houses of Parliament and Government offices at Sydney, N. S. Wales. In the Plymouth Guildhall Competition he received a second premium, and in the competition for the Glasgow Municipal Buildings, his design was placed third in order of merit. In the Birmingham Municipal Buildings and Assize Court Competition (1871), Mr. Lynn, by proposing to connect the new buildings with the existing town hall, was considered to have taken a too liberal view of the margin of deviation allowed by the instructions; hence his design, which otherwise was regarded as the best, was disqualified. As partner of the late Sir Charles Lanyon up to the year 1872, and individually since then, Mr. Lynn has enjoyed a large general practice in Ireland. In 1875 he was invited by Lord Dufferin, then Governor General of Canada, to visit Quebec to advise on contemplated improvements there, amongst others a viceregal residence (a new Chateau St. Louis) to be erected in the citadel, for which he prepared designs. For many years Mr. Lynn was a Fellow of the R.I.B.A., but with other Irish architects he withdrew when the old arrangement of differential subscriptions for town and country members was set aside, the change being regarded by them as unjust to practitioners so far removed from the advantages of London membership. The photograph of Mr. Lynn is by Mr. Magill, of Belfast.

Mr. Henry Crisp, F.R.I.B.A., the President of the Bristol Society of Architects, was years ago in partnership with the late E. W. Godwin, F.S.A., and is now working in his practice with Mr. Oatley, of Bristol. Among his works are the following:—Extension of Bristol Royal Infirmary; extension of Bristol General Hospital; nurses' home at Bristol General Hospital; large extension at the Bristol Lunatic Asylum, now in progress; large Police-station, Bedminster,



Bristol; large showrooms, offices, and extensive manufacturing premises for the Bristol Waggon Works Co.; large printing works at Bedminster, Bristol, for Messrs. Robinson and Co., lithographers; block of offices, Clare-street, Bristol, for the Western Wagon and Property Company; mansion at Henbury; extension of the Bristol Eye Hospital; sundry church works, schools, vicarages and other residences, banks, business premises and warehouses, &c. During Mr. Crisp's partnership with the late Mr. E. W. Godwin, the firm carried out Dromore Castle for the Earl of Limerick (*BUILDING NEWS*, Vol. XIV., pp. 224 and 758); Glenbeigh Towers in Co. Kerry, and some lodges and buildings at Castle Ashby, for the Marquis of Northampton. The award of the Bristol Assize Courts competition by Mr. Alfred Waterhouse, R.A., was extraordinary in the history of such matters, as Messrs. Godwin and Crisp won all three premiums—viz., £100, £50, and £30—with three designs, which were placed first, second, and third by the referee. The site for the building was subsequently increased, and although Mr. Waterhouse advised the authorities that either one of the prize designs could be adapted to the enlarged site, his report was ignored, and another competition was held. Messrs. Godwin and Crisp were awarded the second premium, but Mr. Waterhouse did not act as referee. Mr. Crisp's portrait was taken by Mr. Protheroe, of Bristol.

#### CARPENTRY AND JOINERY.—XXVI.

##### CASEMENT FRAMES AND SASHES.

THESE are used for lodges, cottages, villas, clubs, and many kinds of public buildings, as well as in other situations; and as the above uses which they are put to will indicate, there are many varieties.

It cannot be expected that more than an outline of the leading kinds will be given. To take

Fig 178



2" Scale

an example of one used for dormers in a country mansion, Fig. 178 gives a section through the sill of the frame, and also the sash sill. These dormers were executed in oak, being framed square, and the frame being double-tenoned; the sash had two tenons in the sill through the stiles, and the junction of head and stile was made with two dovetails.

Fig. 179 is a section through the stiles and head, of which Fig. 178 is the sill; the grooves in the inner edges of stiles, head, and sill are for the internal finishing, or may be used for a key to the plaster if a plainer finish is required. The rebate in the front or outer edges of the stiles and head was for the finishing of the outside, which consisted of a flat plate 1½ in. thick fitted into the rebate of each stile, the top or head being tenoned into the stile pieces; another piece was returned from these two stile pieces at right angles or parallel with the stiles of the frame, and the angle formed by the union of these pieces was moulded, the moulding being stopped on a level with the daylight of the glass in the sash.

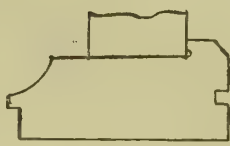
Fig. 180 gives a section through the stile and head of the sash, the arrangement for the plate-glass is seen, as also the moulding by which it was kept in position, and which is omitted in the section of the sill. It will be readily understood on account of the outline of Fig. 180 that it required careful and accurate workmanship in fitting the sash together, the sill was dowelled, but the head was not; no place fitting for that occurring.

The sides of the dormer were sheeted with

2½ in. sheeting, the roof being hipped. Inside the sheeting were nailed *brandering laths*, to which were nailed the plaster laths.

Sometimes dormer-windows are semicircular on the top, in which case either there are two sashes in width, or else the semicircular portion, or segmental, should that occur, is as a sash made a fixture, and the under rail rebated and throated on its under edge for the other portion or portions to strike against, and often to have part of the fastenings fixed upon it. It will be found in

Fig 179



2" Scale

Fig 180

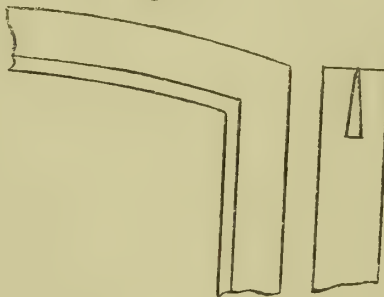


3" Scale

the making of a segment-headed sash, when the head is of the same section as the stiles, that a peculiar construction is required.

Fig. 181 shows how the connection is made. It will be seen by the edge and end view that a dovetail is worked on the head, and provision made for it in the stile; in wedging-up a dowel is put through. Some workmen

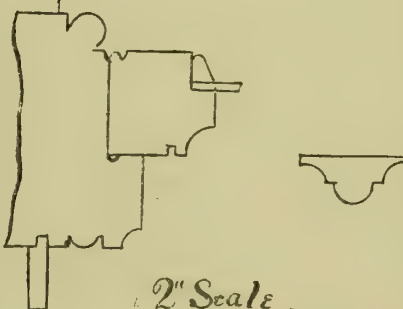
Fig 181



2" Scale

attempt this junction with a bevel mortise through the stile and the tenon parallel with the run of the edge; but it is almost, if not quite, impossible to wedge it up satisfactorily, and the space is generally too contracted for a square mortise. Some make this same connection in a similar way to that described in connection with, and shown in,

Fig 182

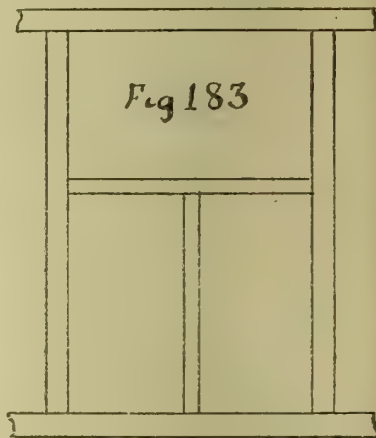


2" Scale

Fig. 177, with the difference that the mortise is bevelled as described in the previous sentence, and no attempt is made at wedging but simply dowelled when *cramped up*. The example of casements given at the beginning of this article is one in which the sash opens outwards, and this is very easily kept water-tight, as the rebating and throating are usually sufficient; the rebating may be deepened, as also the throating, in very exposed situations. Provision may be made for condensed water by a gutter hollowed out in the sill of the frame, and a hole may be bored con-

necting this gutter with the outside of the building, and a pipe or tube inserted into this will carry off the condensed water. This tube will require to be cleared occasionally, as it will get filled with dust or dirt.

It will be readily understood that in the case of sashes in casement-frames, and which are hinged, they will require to be of such width as that when open they will not project so far as to be in the way, nor offer too much surface to the wind, thereby risking the glass, and in case of a very violent storm coming on hastily and the casement being open, even risking that the sash may be torn from its hinges. These conditions are usually observed, either because mullions are



2" Scale

introduced into the frames, or the sashes are made to hang folding when a wide casement-frame is needed. One little matter to be attended to in casements is the fastening; a common method in inferior or common work is by means of a quadrant; a small tower or flush bolt may also be used. The tower bolt can be had with a *crank*, if more suitable. As suggested, sometimes the sash of the upper part of the casement is either made fast or otherwise hinged; in such case the "Silens," as advertised in this journal, may be used, or other of the several appliances for the purpose in the market.

Fig. 182 gives a section through a casement frame and sash suitable, say, for a lodge. The drawing is self-explanatory; but the section of the moulding on the right is introduced to show what may be used as a kind of mullion. It forms a striking surface for the sashes where they meet

Fig 184



2" Scale

in the middle, and, given an outline of casement such as Fig. 183 to provide for, it serves for carrying across the horizontal line, forming a kind of transom.

Fig. 183 shows by dotted lines a tenon, and this is how the connection is made in this moulding. The members of the moulding can be either mitred or scribed, and a dowel could be put in from the plain side through the tenon, but not coming through, as that would generally disfigure the moulding; a screw could be inserted instead, if preferred. The factory light may almost be styled a kind of casement, as in most cases it has a fanlight which opens for the purpose of ventilation, and sometimes sashes are introduced into it. Again, it may be divided into small squares for the purpose of cheapening the glazing, and so that should a square of glass be broken by a stone or other missile it will cost little to replace it.]

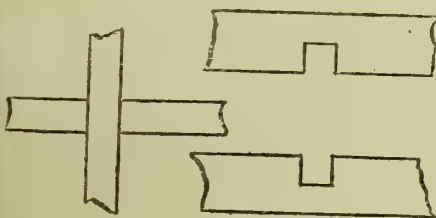


Fig. 184 gives a section of an outer stile and centre bar, common enough for a factory or workshop. If the timber is of sufficient dimensions, this frame can be tenoned together at the angles; but, if not, it can be dovetailed and doweled. The inner bars will be tenoned into the stiles head and sill, supposing it to be divided, say, into four squares. The ventilating fanlight will be dealt with immediately.

Fig. 185 gives two illustrations to show how the inner bars in the above light can be joined. It supposes, as a first case, that it is only square, a gap or check is cut out of each half way through, and exactly the thickness of the piece the other way, then they are driven together at right angles.

Fig. 186 is intended to represent that, in addition to the halving, a scribing is also made—that is, as much is cut away as just to allow the bar to fit in, according to the section shown of the centre bar in Fig. 184. In this way we have a halving and scribing, which has the advantage of allowing the bars both to be continuous, and being tenoned into the head and sill and stiles respectively, close joints are obtained at the junction of the dividing bars, which is almost impossible unless the outer stuff is very heavy. When mortising, tenoning and scribing is resorted to at the joining of the centre-bars, instead of halving and scribing. When the casement is divided into many small squares, this method of halving and scribing is resorted to,

Fig 185



1" Scale

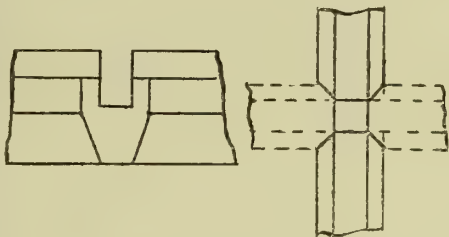
and even when the bar is bevelled from the rebate for the glass without any square, this method will serve. It can also be adopted with certain kinds of moulded bars.

Fig. 187 gives the illustrations in connection with the ventilating fanlight of these lights, that on the right being the section of the stile to show (which is done by a double line) that the stile at the part is just split or divided, half of it continuing unbroken to the head, and the other forming the stile of the fanlight. On the left is shown the transome (may we call it?) formed by the bottom rail of the fanlight and the cross rail of the casement. The illustration is self-explanatory. The head is similar, only the top rail of the fanlight is of the same section as the cross rail of the casement shown here, and the head of the casement is rebated to match. This will be clear when it is remembered that the fanlight is hung on pivots, and the pivots are usually placed a little higher than the centre, so that the fanlight will shut of its own weight, a cord being attached to an eye or ring in the fanlight to pull it open, and a *belaying-pin* being screwed to the stile of the casement for fastening a cord to when the fanlight is open at the required angle. The joiner will have no difficulty in putting on the pivots; they are, of course, placed centrally in the width of the stile of the casement. The simplest kind of pivot is that of which there are *rights and lefts* (pairs) of the same form; in these the plate screwed on the frame has an inclined cut, leading down to the hole in which the axis of the pivot works. With these the fanlight can be put right in, whereas in the kind that requires to have the fanlight put in at one side first, there must be more space allowed for *freedom*, which anyone will know is objectionable, as it will allow of the freer entry of rain and wind. Now, as all casement sashes do not open outwards, those which open inwards (and they are numerous) have to be differently arranged in their details.

Fig. 188 gives an illustration of that which is adopted sometimes under such circumstances—

viz., a circular groove is wrought in the frame-stile, and a corresponding round is left on the stile of the sash. The sash is hinged to open inwards; hinge is not shown, but the bead, which is seen on the sash-stile, would correspond with the *knuckle*, or round of the hinge. It will be seen that the circular groove wrought in the stile of the frame serves, as it were, to give an additional depth to the rebate, thus affording additional resistance to the weather, and the

Fig 186

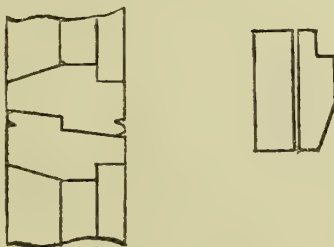


2" Scale

groove itself acts as a conductor, or waterway, for any water which may be driven in, and by means of which it flows down into a similar but larger groove in the sill.

Fig. 189 shows the arrangement of the sill, as also how the sill of the casement-sash occurs. It is seen that the sash-sill is furnished to the outside with a throated water-bar in the form of a

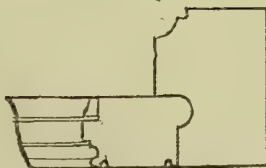
Fig 187



2" Scale

moulding by which the water which flows down the sash is thrown into the weathering of the sill of the frame, the throating breaking the passage of the water which might flow in along the joint between the two sills, and any which might pass along falls into the groove in the sill of the frame and is conducted out by the pipe which

Fig 188



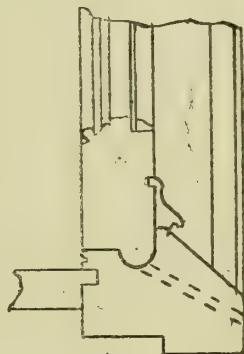
2" Scale

leads from this, and shown by dotted lines in the figure. This groove and pipe serve also to carry off the water which flows down the grooves in the stiles. Fig. 189 shows also the flooring, and this is a little lower than the top of the sill, in order that the sash in opening may swing clear of the carpet. The transom or the head of the frame, as the case may be, need only be rebated or cheeked square, as the water is not likely to find its way in at that place; but as an additional

preventive a throating can be introduced. There are other modifications which can be and are adopted. The fertile mind can readily produce other details to obtain similar results to those intended by the above illustrations. Patent water-bars and the provision made for them in French and other casements have not been discussed, and this is considered unnecessary, as the readers of the *BUILDING NEWS* must be familiar with the advertisements setting forth the merits of these and the drawings or illustrations accompanying the announcements are self-explanatory.

There are several of these "patent water-bars" in the market, and the workman can readily find the merits and demerits of each, and

Fig 189



2" Scale

decide which to adopt in case the choice is left to him; but the particular kind is usually specified by the architect.

Some building firms have models of "patent water-bars," so that the workman can obtain from the foreman's office the necessary information to enable him to work out the difficulty if he has any in this direction.

#### UNITING BUILDINGS.

THE frequent opportunity that occurs in London and other large towns to acquire a row of private houses for the purpose of conversion into business premises is fraught with mischief which our present legislation is scarcely equal to grapple with. The process is easy and comparatively inexpensive. A new firm of, say, drapers take one or two houses in a good thoroughfare; they open a business which proves a success, and then extend their operations by acquiring the houses on one or both sides of them. Less expense is involved in this transaction than purchasing a site and building new premises for their express wants. The houses can be acquired probably at a moderate rental, and their alteration does not entail a very heavy expenditure to fit them for business. The old shops side by side are made into one large shop by making openings through the party-walls, and the same plan can be adopted in turning the first floor rooms into show-rooms. To economise space, the staircases are reduced; instead of five or six, one to each house, only two are allowed to remain. The upper stories can be sublet, or turned into dormitories, at a trifling cost. The Building Acts do not impose any serious difficulties in the way of converting private into business premises. The Acts only say that buildings so united shall be wholly in the same occupation, and that when united they shall not be in contravention of any of the provisions of the Acts. Referring to openings in party-walls, the clause states: "No opening shall be made in any party-wall dividing buildings which, if taken together, would contain more than 216,000c.ft., except under the conditions that such openings shall not exceed in width 7ft. or in height 8ft., and the floor jambs and heads of such openings formed of brick, stone, or iron, and be closed by two wrought-iron doors, each  $\frac{1}{2}$ in. thick in the panel, at a distance from each other of the full thickness of the wall, fitted to rebated iron frames." So that



the gist of the rule is that provided the openings do not exceed the area stated, and are made with fireproof materials, any number of houses can be united. With regard to the iron doors, who is to see whether they are ever used or closed at night? And we have in evidence the fact of such doors having not even been fitted. The best proof of the manner these provision have been carried out is to be found in the records of fires such as those in the Edgware-road, where the alterations appear to have been made without any provision for the egress of those using the dormitories. In this instance a number of shops had been acquired one after the other, the party-walls had been cut through indiscriminately to make show-rooms, and the only means of exit for the unfortunate victims were the windows of one house, the staircases having been removed.

The craze there is for building enormous shops and stores has quite rendered the provisions of the Metropolitan Building Act powerless to deal with the evil. Even experienced surveyors state that it is very doubtful if the restrictions of the Act can be legally enforced in the case of large retail shops and stores. We do not think they can, as the Building Act clauses, under the 28th section, are intended to prevent the uniting of several buildings for warehouses of greater cubical capacity than 216,000ft., and had no reference to the adding of shop to shop. Houses or shops acquired one after the other for extensions of business may take some years; the alterations are generally effected in a piecemeal way—a doorway may be made through one party-wall, then enlarged; partitions may be taken down by degrees, without the knowledge of the district surveyor. In this manner a number of large business premises are formed—certainly never built. The district surveyors often try to make builders conform with the rules for warehouses, but without effect. A very common practice is to enlarge the openings allowed by statute in party-walls, till they gradually disappear or are practically of no account in case of a fire.

The removal of the means of exit in united buildings is one of those things also which the existing statute does not prevent, or is powerless to interfere with. Surely the proposed amendments of the County Council ought to have included a provision for this subject. The Council should have made a provision compelling everyone who unites premises beyond a certain area to provide proper means of exit from the upper stories. There is one proposed amendment giving the Council power to permit the erection of a building without party-walls used for trade or manufacture including more than 216,000c.ft.; but the space is not to exceed 450,000c.ft. This is a very large space to be left undivided, and should only be allowed under particular conditions; but the question of the most urgent importance is to what limit it is safe to allow owners or tenants of premises to unite them for business purposes without substantial alterations. The walls of single houses are scheduled for certain lengths and heights, and are too thin for warehouse uses. By allowing partitions to be removed internally and additional stairs built, their limits of strength may be often exceeded, and they should be properly made thicker to endure the stress put upon them, and to be secure in case of fire. No safer rule can be insisted upon in uniting buildings than that they should have their party-walls interfered with as little as possible, and that the openings allowed by statute should be protected in the manner stated; and, secondly, that proper staircases should be placed in positions readily accessible in lieu of any removed. In regard to the custom to which we refer, of joining a dozen or more houses, no legal obligations appear to be in force.

#### LEWANNICK CHURCH, CORNWALL.

THE parish church of Lewannick, about six miles from Launceston, was destroyed by fire early on Sunday morning. The church was rebuilt in 1546—at least, the fine oak carved benches by which the body of the edifice was seated bore that date. As an excellent example of what Mediaeval seating was, the benches at Lewannick, now unhappily totally destroyed, were the best example in the West Country. The chancel was restored in 1880, at the expense of the vicar, by Mr. Harry Hems, of Exeter. The church consisted of a tower with a nave, north and south aisles, small vestry-room, two porches, and chancel. The tower and walls,

with the pillars marking the north and south aisles, the small vestry and the porches, are the only portions now remaining. The disastrous fire was caused in the customary manner, by the overheating of timber which touched the flue of the warming apparatus. The bells were injured by heat beyond possibility of use without recasting. All the monuments on the south walls were destroyed. On the north wall two modern memorials escaped. The porch on the north side is not much damaged, and the font sustained only a crack, the result of intense heat. The walls of the church will probably need reconstruction, and the tower, if allowed to remain, will need costly repair. The church was not insured. Fortunately, the Communion plate and the registers, dating from 1661, were at the vicarage. All antiquarians will be glad to know that the famous cresset stone in this church, wholly perfect, and with 7 cup-like holes, to which attention was first called in this journal by Mr. Hems some ten years ago, was, through the gallantry of the vicar, saved from the burning edifice, and is now quite intact and none the worse for the fiery ordeal it has passed through. It was illustrated in the BUILDING NEWS for July 18, 1879. Examples of cresset stones are extremely rare in this country. The nearest ones to Lewannick are at Wool, in Dorset (with 4 cups), and at St. Mary's, Monmouth (6 cups). At Calder Abbey there is one (16 cups); also at Carlisle Cathedral (6 cups), and at Furness Abbey (5 cups). At Llanthony Abbey is a cresset stone (3 cups), at St. Mary's, York, another (6 cups), and at Dearham Church, Cumberland, is also an example (1 cup). This probably completes the list in Great Britain. In the Stockholm Museum, however, there are four cresset stones (labelled "Vigoatens-sten"—i.e., holy-water vessels); one with 4 cups and another with 5 are both of unknown origin. Of the others, one comes from Balla Church (6 cups), and the other from Onaruds Church (6 cups). In the diocese of Sund, in Sweden, two cresset stones are still *in situ* in local churches—i.e., at Nöbbelofs (6 cups) and at Strö (5 cups). This latter is not unlike the Lewannick cresset. The latter, however, is the most perfect specimen in existence; and, therefore, it is the more fortunate that it has been rescued from the peril it was in last Sunday morning.

#### CHIPS.

The Art Gallery Committee of Wednesbury have accepted the tender of Mr. H. Wilcox, of Wolverhampton, for the building of the Wednesbury Art Gallery, for the sum of about £3,400, which is somewhat more than was at first estimated would be required for this purpose, but the increase is accounted for by recent advances in the prices of materials and rates of wages. Mr. Wilcox was the builder of the Wolverhampton Art Gallery.

The Liverpool City Council, at their last meeting, finally adopted a new code of building by-laws which has been approved of by the Local Government Board.

The local board of Smethwick decided, at their last meeting, to instruct Messrs. Harris and Harris, civil engineers, of Birmingham, to prepare a scheme for lines of sewers in the streets of the portions of the district adjoining the city of Birmingham. At the same meeting Mr. C. J. F. Allen was appointed assistant surveyor.

A spiral front cover of pierced and open tracery has been placed over the 15th-century font in Awliscombe parish church as a memorial. It has been executed in oak by Mr. Harry Hems, of Exeter.

On Tuesday week Col. W. M. Ducat, R.E., held an inquiry at the Guildhall, Stafford, on behalf of the Local Government Board, as to an application by The Town Council to borrow an additional £4,400 for waterworks purposes. The Town Clerk stated that altogether £40,000 had been spent upon the various water schemes, and the further loan, which would make a total of £42,000, was necessary to complete the work. He added that after all their troubles, disappointments, and mistakes the water supply would not cost above £2 a-head of the population, a sum which was less than the average cost throughout the country.

The church tower of Bodmin was reopened on Wednesday week, after restoration. The work consisted of new pinnacles in De Lank granite, a new vestry within the tower, and general repairs and repointing throughout, at a cost of about £400. The contract was intrusted to Mr. N. Shelly, Bodmin, and the plans were prepared by Mr. John Dennis. The granite work was executed by Messrs. Bate and Son, of Cardynham.

## Building Intelligence.

**BIRKENHEAD.**—While the Mersey Tunnel excavations were in progress beneath Beckwith-street, Birkenhead, the work caused a sinking in the foundations of St. Lawrence's Roman Catholic Church, which was situated at the corner of Beckwith and Park-streets. So serious did these disturbances become that the church had finally to be pulled down, arbitrators having decided that the railway company should pay £8,000 damages to the trustees (of which, however, only £3,500 has been handed over), and on March 17th, 1889, the foundation stones were relaid on a new site, about 60ft. removed from the old one. Since that date Mr. J. Shaw, Priory-street, Birkenhead, has been rebuilding the church to the plans of Mr. Edmund Kirby, Cook-street, Liverpool, and the new edifice has now been opened. The building differs somewhat from the old one, but all the materials used have been those of which the older place was constructed. The old church was of one span from wall to wall, but the new one has been built with nave and aisles. A chancel has been added, and the total length is now 130ft., width 60ft., and height to the apex of roof inside 70ft. The church is Gothic in style, and is built of stone. All the old fittings, entrances, and window frames have been used. Mr. H. L. Whittingham was the clerk of the works. The glasswork throughout the church has been done by Mr. Lockland, Conway-street, Birkenhead, and the inner fittings by Mr. W. Johnson and Mr. Herbert, of Messrs. Herbert and Cox.

**KENSAL GREEN CEMETERY.**—The church and chapel of this cemetery have been redecorated. The former being much larger and more architectural in its features, is the more important work of the two. The style of the building is Greek Doric of a severe type, and the details of the work have, as far as possible, been assimilated thereto. The dome or vault, which is fluted, is treated in a cerulean blue as a ground powdered with gold stars in the flutings. The walls are toned in various shades of cream, of nut and russet browns and cinnamon, relieved by stencillings of brighter hues, the salient features being gilded, as the structure is none too light in dull weather. The Alpha and Omega are introduced here and there to give Christian character to the work. The east window (not really east, we fear) has a painted representation of the Risen Saviour in a style of art which is not now in vogue, but as a relic of the early days of the cemetery it has been allowed to remain. A handsome organ has been provided for those cases, increasing in number, where the addition of music to the funeral office is desired. The scheme of decoration has been carried out by Messrs. Hayward and Son, art decorators, Newgate-street, under the supervision of the architect, Mr. Robert Willey, F.R.I.B.A., 66, Ludgate-hill.

**SALFORD.**—The Town Council have adopted plans for a new infectious hospital, to be built on a plot of land, about 13½ acres in extent, situated at the extreme south-west corner of the borough, between the Eccles New-road and the river Irwell. The chief feature of the buildings will be three pavilions, in which provision will be made in six "acute wards" and six "convalescent wards" for 144 beds. At the south end of the convalescent wards there will be inclosed balconies, from which a fine view of Trafford Park will be obtained. The corridors between the wards are to be unusually wide, and they will be divided from the wards by plate-glass partitions, so as to permit friends to see the patients without danger of infection. There will be two isolation blocks, which will contain provision for 40 patients, bringing up the total accommodation to 184. The administrative departments, as planned, will be sufficiently large to provide for 48 additional patients, without any extension. The total cost is estimated at £50,000. The plans have been prepared Messrs. Maxwell and Tuke and Messrs. E. and F. Hewitt, of Manchester, and the work will be carried out under their superintendence as joint architects.

A series of special articles on "The National Monuments of Ireland," from the pen of Mr. T. H. Deane, R.I.I.A., is appearing in the *Dublin Daily Express*. The first paper was published on the 1st inst., and dealt with Cashel Cathedral, Hoar and Holy Cross Abbeys, and the Priory at Athassail.



## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

**EDINBURGH ARCHITECTURAL ASSOCIATION.**—A lecture on "Some Early Scottish Architects" was given by Mr. J. Balfour Paul, advocate, to the members of this Association, on the 9th inst. Mr. H. J. Blanc occupied the chair. Having pointed out that few records as to the designers of our cathedrals and castles were available, the lecturer proceeded to mention some of the more prominent of Scottish architects of early times. Gilbert of Moray, Bishop of Caithness in the first part of the 13th-century, had the credit of designing and building at his own charges the church of Dornoch, the remains of which were still in existence, incorporated with the present parish church. The Castle of Kildrummie, in Aberdeenshire, was also probably erected by him. In the 15th-century a family of the name of Merloun was largely employed by the king in executing work at Stirling Castle, Dunbar, and other Royal fortresses. Thomas Cochrane, the favourite of James III., who fell a victim to the vengeance of Angus and other nobles, was stated to have been an architect, though his exact position in the King's household had always been doubtful. Another architect of that century, Sir James Hamilton, of Fyvirait, came to a violent end, being executed on a charge of inventing an infernal machine by which the king was to be shot from the tower of Linlithgow. A distinguished man, William Schaw, held the post of king's architect to James VI., and he restored Dunfermline Abbey, and was buried there. After alluding to some of the nobles who were instrumental in erecting the leading mansions and castles of Scotland, the lecturer gave an account of the family of the Mylnes. Belonging to Aberdeen, they gradually came south, and in the 17th-century John Mylne was located in Edinburgh, and was member of Parliament for the city. He was buried in Greyfriars' Churchyard. His nephew Robert was the builder of Mylne's Court, and several other premises in Edinburgh. A descendant of his built the North Bridge, and another attained eminence in his profession in London. The lecturer subsequently made reference to the claims put forward for Inigo Jones, Wallace, Aytoun, and Balcanquhall as the designers of Heriot's Hospital. He also spoke of Sir William Bruce, of Kinross, who restored Holyrood in 1671. In conclusion he gave sketches of James Gibbs, Colin Campbell, and the elder Adam.

**MANCHESTER ARCHITECTURAL ASSOCIATION.**—The members of this society met on Tuesday evening, and Mr. Lawrence Booth, F.R.I.B.A., a past president of the association, read a paper on "Commission." The paper dealt with the subject of commission as understood and practised in business life, treating it in its several degrees of legitimate, through the questionable, to that of absolute dishonesty; and indicated that many industries were groaning under the effects of the latter, as an incubus preventing their progress and prosperity. In its application to architectural practice, he deprecated all secret commissions, and advocated complete candour on the part of the architect towards his client, as "suspicion always dogged the steps of secrecy." The author protested against a very general imputation that architects, being paid by commission, brought about extra expenditure in order to increase the amount of their own charges, and asked men of the world to consider for a moment whether any architect so depraved as to be willing to squander his client's money, in order that a shilling in every pound would find its way into his own pocket, would not be likely to devise some more simple and less palatable method of robbing his employer. Extras of a preventible character did make their appearance, and were frequently the result of the desire of architects, especially new beginners, to put in "all they know in the way of decorative features and good architectural effect," in the hope of enhancing their own professional reputation. Such efforts had frequently the opposite result, and ought to be avoided, but fell very far short of deserving the condemnation bestowed on gross and corrupt motives. The main argument of the paper was directed against the remuneration of architects being regulated by the amount of money spent, or, in other words, against the principle of payment by commission, and in favour of payment by results; the writer saying, "it is, indeed, doubtful whether the community would not long since have compelled us to adopt

a more rational method in the assessment of our services if they had been less familiar with payment by commission in their other transactions."

**SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.**—At the usual monthly meeting of this society on Tuesday evening, Mr. F. Fowler, the president, occupied the chair. Mr. J. B. Mitchell-Withers read an interesting paper, entitled "Elementary Notes on the Mouldings of Mediæval English Architecture." He quoted the late Mr. Sharpe's authority for the statement that English architectural history was written as much in the mouldings as the general outlines and masses of its old buildings. It was an easy matter for the architect who had diligently drawn and measured old work to understand and trace out its development from Early to Late forms. The nave of Westminster Abbey was a notable instance of the use in one general grand design of the various styles of mouldings from the 13th to the 16th century. No architect who had not an intimate knowledge of the subject ought to meddle with any old building, the humblest of which was generally a good school to study in, and young architects should diligently study and draw the buildings of their district. The late Sir Gilbert Scott had laid down that measured and full-sized drawings were far more useful to the architect than photographs, &c. The lecturer gave illustrations on the black board of the principles of grouping and designing mouldings of the different periods, and alluded to the best means of drawing them from actual work. He also noticed the nomenclature of Mediæval mouldings, quoting from William of Worcester, who wrote at Bristol in the 15th century, and the late E. J. Willson's notes in "Pugin's Specimens." The illustrious French architect, the late M. Viollet le Duc, had said "that to the practical architect a knowledge of mouldings was of the first importance," and that the mouldings of the Greeks and 13th-century architects "satisfy alike taste and reason."

## CHIPS.

The memorial stone of the Irvine Memorial Free Church at Camelon, near Falkirk, was laid on Saturday. It is Gothic in style, seats 400 persons, and has cost £1,200. Mr. G. D. Page, of Falkirk, is the architect.

At a meeting of St. Paul's Ecclesiological Society, held last (Thursday) evening at St. Paul's Chapter-house, E.C., a paper on "Mural Decoration in Churches" was read by Mr. Hamilton Jackson, R.B.A.

A memorial to Col. J. W. Watson in grey Devonshire granite and white Sicilian marble has just been placed in the Rajkot Cemetery, Bombay, by Mr. Harry Hems, of Exeter. The exterior kerb measures 11ft. by 8ft., and is of granite. The space within is filled by one slab of white marble, upon the centre of which is a coped Gothic cross, 6ft. long, and panelled with sunk trefoil at the four ends. The whole is surmounted by iron railings. The legend occurs upon the slab, and is in lead lettering flush with the face of the work.

In continuation of last year's restoration of the Church of St. Giles', Cripplegate, when Messrs. Jones and Willis made and fixed the wrought-iron screen, and the oak and ebony altar table, they have now completed the new system of lighting. The whole of the old fittings, pipes, &c., have been removed. The new system embraces lighting the nave and chancel by drops from the centre of each arch, the coronas are each of 8 lights, and are of hammered leaf work to match the screen. The whole of the work has been carried out from the designs and under the superintendence of Mr. F. Hammond, the architect to the church.

Dedication services were held in the new Swedenborgian Church in Moss-lane East, South Manchester, on the 9th inst. When the church in Peter-street, Manchester, was sold for the purposes of the technical school, it was arranged that two new churches should be built in the suburbs—one on the north side and one on the south side of the city. A site for the northern church was found in Bury New-road, and the building is almost complete. The southern church has been erected in Moss-lane East, at the end of Baby-street. The style adopted is Gothic of the Decorated period. The spire rises to a height of 100ft. Inside the church measures 76ft. by 35ft. (across the transepts 45ft.), and there is accommodation for 360 people. In the rear of the church are school premises and an assembly-hall. The cost has been about £5,500. The contractor was Mr. W. Thorpe, Cornbrook Park-road, and the architects were Messrs. Isitt and Verity, Bradford and Wigan.

## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., and LVI., may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. A. and Son—G. E. and Co.—W. B. and Son—J. E. and Son—J. A. and Son—Prof. J. H. M.

A. B. (We really cannot supply the information you ask for.)

## Correspondence.

## SOUTH STOCKTON PUBLIC OFFICES COMPETITION: MODIFIED CONDITIONS.

To the Editor of the BUILDING NEWS.

SIR,—In compliance with the suggestions of suggestions of several architects who propose to send in competitive drawings, the Board have decided to modify their original conditions to the following extent—viz., that the plans submitted shall comprise elevations of both fronts, plans of each floor, and transverse sections with an abstract of specification, but that it is to be understood that the full requirements of the conditions with respect to working drawings and schedules of quantities shall be afterwards complied with by the three successful competitors.

In answer to several inquiries, I may say that the site is practically level; that it is quite open on three sides, but that on the east side there is a house and shop; so that it will be necessary for the purposes of light to leave a sufficient area on that side.

I am desired to say that if the terms offered are satisfactory and there are no sufficient reasons to the contrary, the Board propose to employ the successful competitor to carry out the work.

The Board hope that these modifications will meet the wishes of all competing architects.—I am, &c.,

W. J. WATSON,

Clerk to the Board.

## HINTS TO A YOUNG ARCHITECT.

By AN OLD BUILDER.

SIR,—A sense of paternal duty lately led me into making a number of private notes on the "Don't you forget" principle on things "not generally known" by young architects—things



simple in themselves, but none the less essential; practical things, the neglect of which an experience of well-nigh half a century has taught me is too common; not matters of art or style—of these I know little—nor yet such matters as are necessary to be studied to pass the “exams.,” but such as may be found—but I don’t know where—in costly or ponderous books, but require too much looking for by ordinary readers—cautions with advice, in short, as to construction, materials, &c.

Having during the time I have named carried out an all-round sort of business in town and country under architects of all sorts and conditions, I should either be very forgetful or very stupid if I did not know of “blunders many,” both my own and others; so the thought struck me to ask through you if anyone knows of a published work on these lines, not in a voluminous, but in a terse, concise form, the more direct the better. To make my meaning more clear, I will give one or two from my “Memorabilia.”

**Levels of Site.**—See these are taken and shown correctly before, and not after, contract is let. Often neglected. A frequent source of trouble and “extras.”

**Cavity Walls.**—See they are cut-off between stories. Have known bed-rooms almost unuseable from this source. Cavities conduct sound.

**Dry Rot.**—Provide through ventilation, not only in uncellared portions, but round timbers bedded in walls.

**Foundations.**—Unsafe not only on previously disturbed soil, however remote, but on some stiff clays, given to cracking in hot weather. Have known such cracks 7ft. deep. Concrete preferable to either brick or stonework foundations.

What more useful to many than a column in your pages headed “Blunders I have Known,” if only those qualified would only contribute to it. My experience is meagre as compared with many of my fellow builders, yet how seldom do we profit from anything in print from them? Is it my limited vision that leads me to say this, or is it we are too much engaged in this “helter-skelter competitive age” to give it the time, or is it a tinge of selfishness in not giving gratis what has doubtless cost them much? A sense of advantage to those coming after us ought to overcome this. It may be, and I fancy often is, a fear of criticism, or being unable to write for the Press. All I can say is, of the first, if fair, and not vulgar or personal, it is generally refreshing and instructive. As to the latter, let them try, as I have, and see how indulgent the Press can be, particularly in putting into readable shape what otherwise might hardly be so. I have often been astonished to see my homespun material so well put together.—I am, &c.,

R. B.

#### ANOTHER ADVERTISING “ARCHITECT”!

SIR,—The advertisement of which a copy is appended appeared recently in a paper published in the Isle of Man. Comment is needless. The last words actually appear as a kind of footnote.—I am, &c.,

REGISTRATION.

“Architect, Surveyor, Auctioneer, and House, Estate, and Commission Agent, begs to announce that his attention is given to the Preparation of Plans, Specifications, &c., for the erection of New Buildings, Alterations, Drainage, &c. The development of Estates for Building Purposes, Valuations, Inventories, Delapidations. Sales by Auction, and otherwise, of Estates, Residences, and Properties of every description, the Letting of Furnished and Unfurnished Houses, &c. N.B.—Choice sites for Business and other Premises for Sale on the Brookfield, Ballastowell, and Mooragh Estates, and in other eligible parts of the town of . . . New Houses and Shops now in course of erection to be Let . . . It pays to advertise in this journal.”

#### CARRIAGE PAVING.

SIR,—If your correspondent, “E. W. H.,” will refer to a back number of the BUILDING NEWS, he will find an illustration of some paving, which I have lately had laid in Wellington-street, Strand, at the corner of Russell-street.

Last year the Horse-Accident Prevention Society was formed. I, being a horse owner, and taking a great interest in the subject, attended all their meetings, and I think they came to the conclusion that wood was the only form of paving in which the much-needed improvement could be made for the following reasons:—

1st. Wood does not jar a horse so much as other paving, and there is not the shock to the system in case of a fall. All must admit that the

London horses of the present time are far straighter in the legs than they used to be.

2nd. It is the most noiseless form of paving.

3rd. It is not so slippery as asphalt, and does not require the repair that macadam does.

Most of the London drivers will tell you that they prefer driving over the old granite cubes, as the horses are less liable to slip on them; but this paving is, I think, out of the question, on account of the tremendous noise. Seeing that the public were indebted to an architect for the invention of the hansom cab, and, judging from the protected (?) state of the profession, it is likely that most of its junior members will soon be driving these useful vehicles, I thought it would not be out of place, as a member of the profession, to turn my attention to the improvement of the roads over which they travelled.

With this object in view, I tried a number of experiments, finally deciding upon a form of wood paving, as laid in the street mentioned above, and similar in every respect to that suggested by “E. W. H.” in stone. The rounded arris prevents slipping, giving a foothold to the horse; in the case of a heavy load, it is something to draw against.

All horses stop themselves and start a load on their toes; proof of this is seen where the omnibuses pull up at the bottom of Fleet-street, the paving there being practically worn into the same section as mine.

The grooves run parallel across the road; they are not wide enough to cause any jolting with an ordinary-sized wheel, and they also act as a drain. I lay with asphalt, and then grout in, as suggested by “E. W. H.” The groove will last a 3in. wear of the block, and as the paving wears down the grouting wears out with it, thus preserving the foothold.

The wood is properly hardened, so that the corners do not spread or splinter. In my opinion, most of the faulty wood paving has been through laying the wood soft and in its green state, simply grouting it in. This form may be a little cheaper, but the system must be wrong.

Well-prepared wood paving has been known to last seven or eight years. Indiarubber will, I believe, be found far too costly, and the plain Jarrah wood too slippery.

After many endeavours to obtain permission for a trial, I was at last, by the kindness of the Strand Vestry, allowed to lay 40ft. at my own expense in Wellington-street. But, before this, it had been tried for some months, under heavy traffic, with most satisfactory results in the suburbs.

Had I been able to afford it, I would have laid the whole street, as 40ft. is not sufficient for a fair trial, a horse being no sooner on than off, before he can realise the change.

It also appears too little to have attracted much observation; this must be my excuse for again bringing the matter before those interested in it.—I am, &c., W. A. WILLIAMS, A.R.I.B.A.  
156, Regent-street, W.

A deputation from the Royal Institute of Architects of Ireland waited upon Lord Zetland, the new Lord-Lieutenant of Ireland, on Monday, to present a loyal address of welcome, signed by Mr. Thomas Drew, as president, and Mr. Albert E. Murray as secretary. In his reply, the Lord-Lieutenant referred to the new Science and Art Museum in Dublin, now approaching completion, as an example of the excellent work carried out by Irish architects, adding:—“In my visit to the building I was specially struck by the beauty of the Irish marble that decorates its walls, for I had no idea that this country could produce such varied and splendid specimens, which compare most favourably with Italy’s celebrated marbles. I do not doubt that if their excellence were more widely known, an important industry might soon be developed.”

An addition to the stained glass of Truro Cathedral has recently been made. The three lancet windows in the baptistry have been filled in memory of Mrs. Boger. The subject illustrates the life and work of St. John the Baptist. In the centre light is a figure of the Baptist; on the other two lights are Elijah and Noah, both preachers of repentance. In the lower compartments are placed the following scenes:—(1) The appearance of Gabriel to Zacharias; (2) the naming of the child; (3) the preaching in the wilderness; (4) the baptism of our Saviour; (5) Herod rebuked; and (6) the Baptist beheaded.

Lieut.-Col. William Wigginton, formerly a F.R.I.B.A., died on the 8th inst., at his residence at Forest Hill, in the 64th year of his age.

## Intercommunication.

### QUESTIONS.

[10205.]—**Surrey Churches.**—Will some correspondent who is acquainted with Oxted and Lingfield Churches, Surrey, kindly tell me if the same are worthy of being studied and measured, with a view of gaining a knowledge of style, ornament, mouldings, &c.; and also if there are other buildings within a few miles of above worth visiting, and their chief points of interest? Any information will greatly oblige.—VINCENT VENTAS.

[10206.]—**Strains.**—Will any reader tell me how to work out the following formula for strains—

$$C \frac{b d^2}{l} = W$$

C = constant

b = breadth

d = depth

l = length of bearing

W = weight.

It is for the following: weight 15cwt. in centre on a timber beam, 20ft. bearing. What is size of beam? I cannot, in working out by algebra, separate b and d.—Como.

[10207.]—**Bridges with Skew Arches.**—I shall be glad if any reader will give me any information as to the building of bridges with skew arches, or would name any books which treat this subject, not in a scientific way, but in one that a practical man could build from.—J. M’L.

[10208.]—**Perspective.**—Being engaged in a country office, and anxious to learn architectural perspective, I will be obliged if someone will advise me of the best book to obtain in order to teach myself.—DILIGENT.

[10209.]—**Sugar in Mortar.**—I should be glad to hear from any of your numerous readers whether they have tried sugar in mortar, and in what proportions? In 1886 some correspondence took place regarding the Indian practice, but no definite proportions were stated, except for plastering. I am now trying a series of experiments, and should be glad to know what others have done before, and the proportions, with results. I may say that there appears to be a very great increase in hardness of mortar, also quicker-setting properties imparted by the sugar. I am using the common Madras sugar.—JOHN CLARKE.

[10210.]—**Ventilation.**—Will some reader give the names of a few books on Ventilation, and which are considered the best on the subject?—M.

[10211.]—**Party Wall.**—A. wishes to rebuild his premises; but on preparing the plans it is found that adjoining owner B. has encroached on A.’s moiety of the party-wall with a plaster to the extent of 7in. A. wishes to put in a shop-front, and the frontage being narrow 7in. is a consideration. Can he compel B. to remove his plaster, notwithstanding that B.’s front is about 25 years old?—YOUNG PROVINCIAL.

### REPLIES.

[10175.]—**Buttress.**—The apparent discrepancy which “J. W.” finds between theory and practice as regards the thrust of a collar roof, arises from not taking into consideration the resistance of the rafter to bending. If the rafter is perfectly rigid, and does not bend at D where the collar is fastened to the rafter, it is evident that there can be no outward thrust on the support at B (see Fig. 7, p. 692, BUILDING NEWS for Nov. 22, 1889); and even if not perfectly rigid it may offer sufficient resistance to bending to counteract a part of the thrust, while the weight of the wall does the rest. This can be determined by the usual rules for strength of beams. Prof. Fenwick shows in “The Mechanics of Construction” that when the load is uniformly distributed over the rafter, the horizontal thrust at A is,  $H = \frac{1}{2} p (l + l_1)$ , cot.  $\alpha$ , where p is the load per unit of length of the rafter, l the length AB of the rafter,  $l_1$  that of the part AD,  $\alpha$  the angle of pitch. When  $\alpha$  is 45°, then cot.  $\alpha = 1$ . Consequently the value of H gets less and less as we diminish  $l_1$ , or as the collar is moved up towards the vertex A, and greater as it moves downwards towards B. When the point D reaches A, or there is no collar, H = half the load on the rafter; when the collar is half-way up the rafter H is three-fourths of the load on the rafter; and when D is at B, or the collar becomes a tie-beam, then H = the whole load on the rafter; the angle of pitch being 45°. Colonel Wray, R.E., in “Application of Theory to the Practice of Construction,” makes the following remarks on this kind of roof, the span of which, he says, should never exceed 18ft.:—“The ordinary position of the collar is half-way up the rafter, it being intended to act as a support to the middle of the rafter as well as to carry the ceiling. So long as the wall does not yield to the thrust, it actually performs this duty; but if the wall yields, the collar is brought into tension, and the rafter, in addition to being deflected by the distributed load, is further deflected by the tension of the collar applied at the centre of its length. The result is that the roof gets out of shape.”—E. W. T.

[10199.]—**Fireproof Floor.**—“Bray” does not give the least idea of the area to be covered, so that I cannot give the depth of joists, but suggest rolled joists and Portland cement concrete, from 6in. to 9in. thick. Form rough centring with boards on the underside of joists, and fill in from above.—H. L.

[10199.]—**Fireproof Floor.**—Try Blanchard’s blocks, which are of terracotta, and can be rendered thoroughly fireproof. By these blocks, which are grooved into rolled iron joists, and protect the flanges both top and bottom, the head room required is very small. The iron is protected from the action of the fire.—G. H. G.

[10201.]—**Damage.**—B. is liable to A. for reinstating the wall. If A.’s chimney was supported on B.’s wall, and B. takes down his house he is still liable to A. for its support. From the facts stated B. can be called upon to rebuild A.’s wall.—G. H. G.

[10201.]—**Damage.**—“J.” does not state whether the houses in question are in the county of London, or where, so that I cannot give an answer in accordance with



the Building Act, 1855. If in the provinces, the wall having been used for so many years as a party-wall, B. has no business to pull down to the injury of A., without arranging to make good to the wall in such a way that A. may not sustain injury. A. should consult a surveyor, who could inspect the premises and advise.—H. LOVEBROVE.

[10203.]—**Bridge Construction.**—The treatises by Haskell and Humber are good treatises on the respective kinds of bridge—masonry and iron.—G. H. G.

[10203.]—**Bridge Construction.**—**Heating.**—For the former, study Humber's great work (Crosby Lockwood and Co.); also "Modern Engineering," by the same author and publishers, both excellent, but expensive books. For heating, read "Warming and Ventilation," Weale's series, and get particulars from Messrs. Perkins, Messrs. Bacon, Mr. Grundy, and others.—H. L.

[10203.]—**Books on Hot-Water Heating.**—The best works on heating are Baldwin's "Hot-Water Heating," Hood's "Hot-Water Heating," and Billing's "Heating and Ventilation."—B.

[10204.]—**Crushing Weight of Stone.**—I have found Monk's Park a very excellent stone, uniform in colour, even, and close in texture. Ancaster is harder and heavier by about 15lb. per cubic foot.—H. L.

[10204.]—**Crushing Weight of Stone.**—The Commissioners on Stone for Houses of Parliament give 1'04 crushing weight of Ancaster (free-stone), 3'01 ditto for Ancaster (rag), 0'66 ditto for Bath (Box). This was tested in 2in. cubes, and no doubt on its natural bed. Although Monk's Park is not given, it is a similar stone to Bath.—J. W.

### LEGAL INTELLIGENCE.

**SUPPORT OF ADJOINING BUILDINGS.**—MILLER V. LONG.—An action was heard in the Queen's Bench Division, on Friday, brought by a cabinet-maker, of Shoreditch, leasing a house in Kingsland-road, against the executors of the owners of adjoining property, to recover damages, estimated at £101, arising from excavations which caused a wall of his workshop to fall, so as to interfere with his business and make it necessary for his family to remove for a time from the dwelling. The defendants paid £25 into Court, admitting that the excavations caused the wall to fall, but denying that the plaintiff incurred loss and expense necessarily to the extent alleged. Mr. Justice Mathew gave the plaintiff judgment for £40, including the sum paid into Court, with costs.

**IN RE BISSETT BROTHERS.**—The Official Receiver of Sheffield has issued a statement of affairs in the bankruptcy of Messrs. J. F. Bissett, L. C. Bissett, and W. C. Bissett, of Sheffield and Birmingham, builders and contractors, and who have carried out work in London, Brighton, Liverpool, and elsewhere. The unsecured creditors are put down at £34,439, and the assets at £6,758. Nothing reliable has been heard of the brothers W. C. and L. C. since they left the country.

### CHIPS.

The local board of health of Malton accepted at their last meeting the resignation of office sent in by Mr. C. W. Smithson, their surveyor and inspector of nuisances, who had been suspended from duty, and resolved to appoint a successor on the 22nd inst.

The death occurred on Wednesday week of Mr. Edward Ellis, of Fenchurch-street, at his residence, Bruce-grove, Tottenham, in his 73rd year. For 45 years he carried on a practice as an architect, during the last ten years of which he was in partnership with his son, Mr. E. B. Ellis, A.R.I.B.A. He had carried out the erection of many large buildings.

The Prince of Wales has consented to lay the foundation stone of the new vestry-hall and the public library buildings, for the vestry of St. Martin's-in-the-Fields, in the second week of March next.

A gift has been presented to Christ Church, Ealing, consisting of a font cover in oak and walnut, given by a member of the congregation in memory of an infant daughter. The design is pyramidal in outline, and the detail is Decorated Gothic in character, thus harmonising with the style of the church itself. The work was from the designs of Mr. Robert Willey, of Ludgate-hill and Ealing.

The Sphincter Grip Armoured Hose Company, limited, 9, Moorfields, have been awarded a bronze medal (being the highest award given for hose exhibited) for their patent Sphincter Grip Armoured hose, at the Brighton and Hove International Exhibition. The company have added five new patented improvements to their machinery since they first placed this hose on the market. The hose is now in very extensive use at the various departments of H.M. Government, the Continental and Colonial Governments, railway, steamship, and lock companies, the large engineering and other industrial establishments in this country and the colonies.

At a meeting of the governors of the East Retford Grammar School, the plans and specifications prepared by the Borough Surveyor (Mr. J. D. Kennedy) were presented and approved, and it was decided to advertise for tenders.

### WATER SUPPLY AND SANITARY MATTERS.

**LEAD POISONING FROM DRINKING WATER.**—At the last meeting of the West Riding County Council, a report was received from the Medical Officer of Health upon cases of lead poisoning which have occurred at Mirfield and other parts of the Riding. From time to time, for several years past, cases of lead poisoning have been reported in certain districts in the West Riding which are supplied with soft moorland water, and chemical analysis has shown that the water had become contaminated with lead in its passage through leaden service pipes. Why the contamination should be intermittent, and why it should be limited to certain localities, while others apparently similar remain unaffected, are points only imperfectly understood. Keighley, Batley, and the districts near Huddersfield and Bradford, have suffered considerably from this cause, and cases of lead poisoning have been especially numerous and severe in Mirfield, Batley, and Gildersome. All danger may be avoided by the use of iron pipes, or pipes of other materials, but even in new houses no substitute is so convenient as lead, and where lead pipes are already in use, the change involves considerable cost. Attempts have been made to prevent the solvent action by adding quicklime to the water, by running the water through conduits lined with limestone, and by adding silica. These remedies have never been thoroughly tested; nor, on the other hand, have the partial experiments always yielded satisfactory results, although at Keighley the water is still being treated with quicklime and exposure to limestone. Unless some means can be found of preventing the danger of soft waters acting upon lead, it will be essential for the public safety to prohibit the use of lead pipes for drinking water. If such a remedy can be found, its immediate adoption by the water-supply authorities is no less essential. It was resolved to urge the Local Government Board to direct an immediate and comprehensive inquiry into the matter.

**LONDON SEWAGE DISPOSAL.**—A discussion took place at the Society of Arts, Sir Henry Roscoe, M.P., presiding, on a paper recently read by Sir Robert Rawlinson, late Chief Engineering Inspector of the Local Government Board, regarding the London County Council's heritage of difficulties from the late Metropolitan Board of Works in respect to London sewage and sewerage. A long letter was read from Edwin Chadwick, K.C.B., the veteran sanitarian, dealing with some of the details of Sir R. Rawlinson's paper, and also a letter from Mr. John Phillips, the engineer to the old Board of Health, dealing with the separation of the sewage and the rainfall. In opening the discussion, Mr. Clare Sewell Read spoke on the question of applying sewage to the land, and doubted, seeing the cheapness of chemical fertilisers, whether it would pay the farmer to use the sewage. He himself had used dried sewage, but it had not done the land any good. Mr. Sillar advocated his own system of utilisation of sewage, by which the sewage is treated with chemicals and the effluent water run off, the rest of the solidified matter being known as "native guano." Dr. Dupré declared against sewage farms, and asserted the Metropolitan Board's deodorisation scheme had lessened the amount of the polluting effect of the sewage emptied into the Thames from that of 5,000,000 people to that of 2,000,000 people. Dr. Thudichum declared that the idea of applying London sewage to a farm was perfectly chimerical. Professor Corfield held that the question, first, was how to remove the nuisance of London sewage from the Thames, and how to make the refuse profitable was a secondary consideration. If the London County Council purified the Thames, that body would justify its existence. Mr. Isaac Shone, C.E., said that the London County Council would have to provide for the disposal of the sewage of 7,000,000 in a few years. Mr. James Lemon, C.E., insisted that trial should be given to the proposals to utilise the system at the outfalls. Sir Robert Rawlinson, in reply, repeated that all who had tried to make a commercial value of the sewage had failed.

The town council of Hyde, near Manchester, adopted on Monday a report by a sub-committee recommending that a scheme of sewage disposal be carried out on the plan in use at Acton, which is one of intermittent precipitation and filtration. The precipitant used is magnetic ferrous carbon—ferrozone—and the filter-beds are composed of layers of sand, gravel, and polarite. The sludge from the precipitating tanks gravitates in a liquid form into a well, and is then raised by pumps and forced through a series of presses, which reduce it to one-fifth its bulk, after which it is dried and sold for manure. The area which the proposed works will have to provide for is 3,042 acres, and the estimated cost is £12,500.

The parish church of Braunston, near Oakham, is about to be restored from plans by and under the supervision of Mr. J. C. Traylen, of Stamford.

### Our Office Table.

The foolish mistake made by the Secretary of the Institute on Monday when reading one of the prize winners' sealed letters caused considerable laughter at the time; but the actual fun of the thing clearly was not seen by the meeting. "*Margravine-gardens, Hammersmith*," was read out instead of the well-known "*Margravine-gardens*," which stand near the site of the once famous Brandenburg House, originally built by Sir Nicholas Crispe in the days of Charles I., at a cost of £23,000. Here Fairfax made his headquarters in 1647, and on the death of Crispe, Prince Rupert gave the place to his mistress, Mag Hughes, the actress, "a pretty woman newly come, called Pegg." Lord Melcombe bought the property, and altered it, adding a sculpture gallery, as figured in the "*Vitruvius Britannicus*." Mrs. Sturt afterwards made the house gay again, and turned Doddington's "Convent" into a rendezvous for royalty, and here it was that George IV., dressed as a Highlander, "made a lady feel his bare knee" (Sir Gilbert Elliott to Lady Elliott, June 13, 1789). All this the Secretary of the Institute was, of course, not supposed to know; but he ought to have remembered about the Margravine of Brandenburg-Anspach having lived so grandly at Hammersmith, and of the theatre there for the entertainment of the world of fashion, including the celebrated Duchess of Gordon and her three famous beauties, as well as the Countess of Cork. Here, too, Queen Caroline lived pending her trial in 1820. The mansion was then again the scene of constant turmoil, and the unhappy Queen died there two years later—

"All kinds of addresses  
From collars of SS  
To vendors of cresces  
Came up like a fair;  
And all through September,  
October, November,  
And down to December  
They hunted this hare."

Fulham Workhouse now stands on part of the grounds, and a private lunatic asylum till lately stood there. This account records only well-known events, and Margravine-gardens, too, has a history; not "*Margravine*," a word diverted from its legitimate meaning a few years ago, and degraded by being compelled to do duty for a better substitute.

MR. H. PERCY BOULNOIS, M.Inst.C.E., of Portsmouth, has been elected city engineer to the Liverpool Corporation in succession to Mr. Clement Dunscombe, now engineer-in-chief to the London County Council. Mr. Boulnois, who comes of a Huguenot family, is 42 years of age, having been born in 1847. He was educated at King's College, London, and was articled to Sir Joseph W. Bazalgette, C.B., with whom he was subsequently engaged in the construction of railways. He then proceeded to Jamaica, where he held a Government appointment for two years. The climate not agreeing with him, he returned to England in 1873, and was appointed city engineer of Exeter, a position he filled for ten years. He then became connected with Portsmouth as borough engineer, and has given a service of six years to that town. At Portsmouth he has carried out many works, including miles of new sewers and the canoe lake at Southsea. He is a Fellow of the Sanitary Institute, and is well known as a lecturer on sanitary subjects at the Parkes Museum, London, and various literary and scientific gatherings.

THE Yorkshire County Committee have under consideration a scheme for taking down the portion of the high wall surrounding York Castle, which abuts on Tower-street, and erecting in its place a dwarf wall of masonry with iron palisading. The cost of the change, which will open up a view of Clifford's Tower to the citizens, is estimated at £700, while the value of the Bramley Fall stone of which the wall consists is set down at £900, so that the operation will be almost costless. The wall, only a portion of which it is proposed to interfere with, has no antiquity to protect it from removal, for it was only erected in 1825-37 by order of the county committee; the outlay was no less than £203,530, and was met by an annual rate of 1½d. in the pound during the twelve years the alterations were in progress.

MR. LAWSON TAIT, the well-known surgeon, writes stating that, while in an old curiosity



shop at Birmingham, he found two church brasses, belonging, he believes, to the end of the 15th century, and clearly of the same make. They seem to be a pair, belonging to one slab, from which they have been violently wrenched from their matrix. They are about 22in. long, and at the broadest part of the body 6in. across, and both of the figures are females, in all probability the two wives of the major feature of the group, as one turns to the left and the other to the right. Mr. Tait offers to make the brasses over as a gift to any clergyman who can prove that they belong to his church, and for the purpose of identification he will either send rubbings or visit the spot, from which similar memorials are missing, with the brasses. He suspects that they have been taken from some church in Oxfordshire, Berkshire, or North Hampshire.

The Corporation of Newcastle-on-Tyne have under consideration a scheme submitted by a special committee for the alteration and practical reconstruction of the town-hall, concert-hall, and municipal offices, now quite inadequate to the requirements of the city, at an estimated cost of £46,000. Some opposition is offered to the proposal by certain public-spirited citizens, who point out that as tinkered up the buildings are not expected to be equal to the needs of Newcastle for more than a quarter of a century, and that truer economy would be displayed by demolishing the whole block, and erecting on its site and over adjoining business premises, a modern and commodious suite of offices worthy of the city, and creditable to its reputation.

Mr. J. G. BROWN, the assistant surveyor under the Sunderland Corporation, died at his residence in Peel-street, Bishopwearmouth, on Friday. The deceased, who had been for many months past incapacitated from following his occupation, owing to a painful malady, was a man of cultured tastes and literary ability, many of his contributions appearing regularly in the local newspapers. He was best known for his biographies of local characters, and descriptions of well-known North Country scenes, the sketches of which were greatly enhanced by the illustrations of his son, Mr. J. Gillis Brown. Mr. Brown himself was an artist of some ability, and his literary work was not only interesting but of historical value. He was born in Newcastle, but had been a resident in Sunderland for nearly forty years. His first appointment in Sunderland was as assistant engineer to Mr. Meek, the engineer to the Wear Commissioners. He was afterwards connected with the architect's department of the N.E.R. Company, and subsequently held the appointment of bridge master for the North Riding of Yorkshire. Until within the last few months he had discharged the duties of his office in Sunderland, which he had held for fifteen years.

#### CHIPS.

At Thursday's meeting of the London School Board Mr. James Taylor, Mr. Joseph Taylor, Mr. T. E. Wilford, and Mr. T. Woodhouse were appointed additional clerks of work for repairs at the commencing salary, under the scale, of £150 per annum; and Mr. C. Frost was also appointed clerk of the works for repairs (vice Mr. W. J. Cooper, deceased), at the same commencing salary.

An anonymous correspondent offers £1,000 as the nucleus of a fund for placing on the vacant pedestal in Trafalgar-square a replica of Boehm's equestrian statue at Calcutta of the late Field Marshal Lord Napier of Magdala.

Mr. John Eaglesham, C.E., Ayr, was appointed on Monday surveyor for Ayr burgh at a salary of £250. He is to give his whole time to the duties of his office.

A new organ chamber at the parish church, Alnwick, was dedicated on the 15th inst. The chamber measures 18ft. wide by 20ft. long, and 22ft. high, and is placed on the north side of the ancient chancel, and recedes under a fine arch in keeping with the Perpendicular character of the fabric. The contractor was Mr. Wm. Darling, Alnwick, and the architect was Mr. Fred. E. Wilson, Alnwick, diocesan surveyor.

The London County Council, at their meeting on Tuesday, decided to appropriate the vacant space in the centre of Piccadilly-circus for the fountain to be erected as a memorial of the seventh Earl Shaftesbury. The fountain has been modelled by Mr. Alfred Gilbert, A.R.A., and will have a height of 30ft.; it will be octagonal on plan, and have a frontage of 23ft. on each face.

#### MEETINGS FOR THE ENSUING WEEK.

**MONDAY.**—Royal Academy. Lecture on "Painting," No. 6, by Prof. J. E. Hodgson, R.A. 8 p.m.  
Royal Institute of British Architects. Award of Prizes and Address by the President, A. Waterhouse, R.A.  
Society of Arts. "The Electro-Magnet," No. 1, by Silvanus P. Thompson, D.Sc. 8 p.m.  
Leeds and Yorkshire Architectural Society. "Public Libraries," by E. W. Mountford. 7.30 p.m.  
**TUESDAY.**—Institution of Civil Engineers. Discussion on "Recent Dock Extensions at Liverpool." 8 p.m.  
Society of Arts. "Tea, Coffee, and Cocoa Industries of Ceylon," by J. L. Shand. 8 p.m.  
Manchester Architectural Association. "Perspective: a 30th-Century Architect," by F. R. L. Edwards.  
Glasgow Architectural Association. "Decorations," by A. Roche.  
**WEDNESDAY.**—Society of Arts. "Vision Testing for Practical Purposes," by R. Brudenel Carter. 8 p.m.  
**THURSDAY.**—Royal Institution. "Sculpture in Relation to the Age," by E. R. Mullins. 8 p.m.  
Royal Academy. Lecture on "Painting," No. 6, by Prof. J. E. Hodgson, R.A. 8 p.m.  
**FRIDAY.**—Institution of Civil Engineers. "The Up-Keep of Metal Roads in Ceylon," by T. H. Chapman. 7.30 p.m.  
Royal Institution. "The Scientific Work of Prof. Joule," by Prof. Dewar. 9 p.m.

Among the adjudications in bankruptcy announced in Tuesday's *London Gazette*, the name occurs of William Youlten, late of James-street, Bedford-row, now of Finsbury-square, E.C., architect and surveyor.

St. Saviour's Church, Upper Chelsea, is about to be enlarged at a cost of £3,000. Messrs. Geldart and Randall-Vining are the architects, and Messrs. Foster and Dicksee, of Rugby, are the builders.

A new county hall has been erected at Anglesey, and special attention has been paid to the ventilation, the latest improved form of Messrs. Robert Boyle and Son's patent Self-Acting Air-Pump Ventilator being adopted for the extraction of the vitiated air.

A series of buildings for use as test houses have just been erected for the West Derby board of guardians in Belmont-road, in that township. They form a range of seven large pavilions, each building being about 400ft. in length. Mr. C. H. Lancaster, of Liverpool, was the architect.

**Holloway's Pills.**—The balsamic nature of Holloway's Pills commends them to the favour of debilitated and nervous constitutions, which they soon resuscitate. They dislodge all obstructions, both in the bowels and elsewhere, and are, on that account, much sought after for promoting regularity of action in young females and delicate persons.

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#### TENDERS.

\* \* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**AUDENSHAW.**—For sewerage, levelling, kerbing, flagging, and paving Paradise-street, Providence-street, Mount Pleasant-street from Manor-street to Providence-street, and Manor-street; also levelling, kerbing, flagging, and paving only Mount Pleasant-street from Tame-street to Manor-street, for the Audenshaw Local Board. Mr. J. H. Burton, Ashton-under-Lyne, surveyor:—  
Underwood & Bros., contractors, Dukinfield, per schedule of prices.

**AUDENSHAW.**—For sewerage, levelling, kerbing, flagging, and paving Lord-street, for the Audenshaw Local Board. Mr. J. H. Burton, Ashton-under-Lyne, surveyor:—  
Worthington and Pownall, contractors, Manchester, per schedule of prices.

**BARMOUTH.**—For extension of cast-iron outfall sewer. Mr. T. Roberts, A.M.I.C.E., engineer:—  
Williams, E., Bangor ... £2,980 0 0  
Griffiths, G., Criccieth ... 2,965 0 0  
Morris, O., Carnarvon ... 2,855 0 0  
Williams, A., Aberdovey ... 2,400 0 0  
Engineer's estimate, £2,439.  
\* Accepted.

**BECKENHAM, KENT.**—For the erection of a residence, for Mr. G. H. Manger. Mr. G. W. Cooper, Bedford-row House, Bedford-row, W.C., architect. Quantities by Mr. A. R. Brede, Bedford-row House, W.C.:—

Billiard-room.	Palmer, E. R., Beckenham	£1,670 0 0	£200 0 0
Graham and Co., Beckenham	1,650 0 0	198 10 0	
Mid Kent Building Works,	Beckenham	1,600 0 0	200 0 0
Mattock Bros., London	1,537 0 0	193 0 0	
Patman and Fotheringham,	London	1,585 0 0	220 0 0
Jerrard, S. J., Lewisham	1,533 0 0	193 0 0	
Price, C. W., Beckenham	1,440 0 0	175 0 0	

**BIRKENHEAD.**—For the erection of a weights and measure office, for the town council:—  
Davies, R. (accepted) ... £270 0 0

**BODMIN.**—For laying a causeway in Gaol-lane, for the town council:—  
Harris, E. (accepted).

**BOOTLE.**—Tenders for the erection of the new police buildings at Bootle. Mr. C. J. Anderson, Liverpool, architect. (Illustrated in *Building News*, Oct. 25, 1889.) Architect's estimate, £8,400. Twenty tenders received:—

Wood, G., and Son, Bootle	£11,678 0 0
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\* This was the lowest tender, and at the town council meeting on Wednesday, after some discussion on the discrepancy between the estimated cost of the buildings and the amount of the lowest tender, it was decided to accept Messrs. Geo. Woods and Son's tender, and to borrow £12,000 to defray the cost of the building.

**CADOXTON.**—For the erection of 12 houses in Moor-road, for Mr. J. Morgan. Messrs. Richards and Gethin, architects:—  
Mathews Bros., Cadoxton (accepted) ... £1,800

**CADOXTON.**—For forming Old Mill-road, Cadoxton, for the Wenroe Castle estate. Messrs. Richards and Gethin, surveyors:—  
Roberts Bros., Cadoxton (accepted).

**CADOXTON.**—For forming Belle Vue-road, Cadoxton, for Mr. Chappell. Messrs. Richards and Gethin, surveyors:—  
Brock, J., Barry (accepted) ... £450 0 0

**CAMBRIDGE.**—For new premises at the corner of the Market-hill and Petty Cury, Cambridge, for Mr. W. Bond, J.P. Mr. G. McDonnell, F.R.I.B.A., Barnsbury, London, architect. Quantities by Mr. J. Yarrow, 16, Milford-street, Cambridge, surveyor:—

Prime	£5,020 0 0
Bell and Sons	4,574 0 0
Willmott and Sons (accepted)	4,225 0 0

(To be completed by 30 Sept., 1890.)  
All of Cambridge.

**CARDIFF.**—For the erection of trimmers' lodge, Barry Dock, for Messrs. Worms, Josse, and Co. Messrs. Richards and Gethin, architects:—  
Milward and Co., Barry (accepted).

**CARDIFF.**—For the erection of 94 cottages in Sydenham and Fryatt-street, Barry Dock, for Mr. J. Milward. Messrs. Richards and Gethin, architects:—  
Smith, R., Cardiff ... £16,030 0 0  
Valis, P., Cardiff ... 15,400 10 0  
Edmunds, J. C., Penarth ... 15,000 0 0

**CARDIFF.**—For the erection of 42 cottages in Lombard-street, Barry, for Messrs. Jenkins and Rees. Messrs. Richards and Gethin, architects:—  
Edmunds, J. C., Penarth (accepted) £4,953 0 0

**CARDIFF.**—For making Burlington-street, Barry Dock, for Messrs. Jones and Roberts and J. James. Messrs. Richards and Gethin, surveyors:—  
Brock, J., ... £485 5 8  
Smith, R., Cardiff ... 410 0 0  
Love, D., ... 370 3 11  
Milward and Co. ... 365 6 9

Rest of Cadoxton.

**CARDIFF.**—For the erection of offices at Barry Dock, for Messrs. D. Davis and Sons. Messrs. Richards and Gethin, architects:—  
Jones Bros., Cardiff ... £310 0 0  
Price, R., Cardiff (accepted) ... 276 15 0

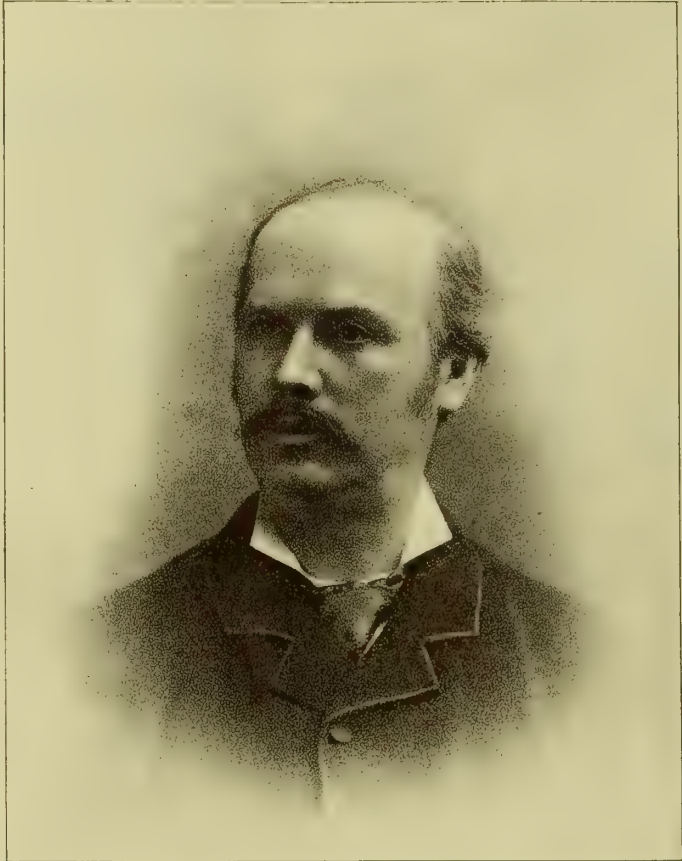
**CARDIFF.**—For the erection of three shops in Holton-road, Barry, for Mr. D. Jones. Messrs. Richards and Gethin, architects:—  
Ashite, G., Barry ... £2,041 0 0

**CARDIFF.**—For the erection of offices, Barry, for Messrs. D. Davies and Co. Messrs. Richards and Gethin, architects:—  
Price, R., Cardiff ... £248 15 0  
Jones Bros. (accepted) ... 240 0 0



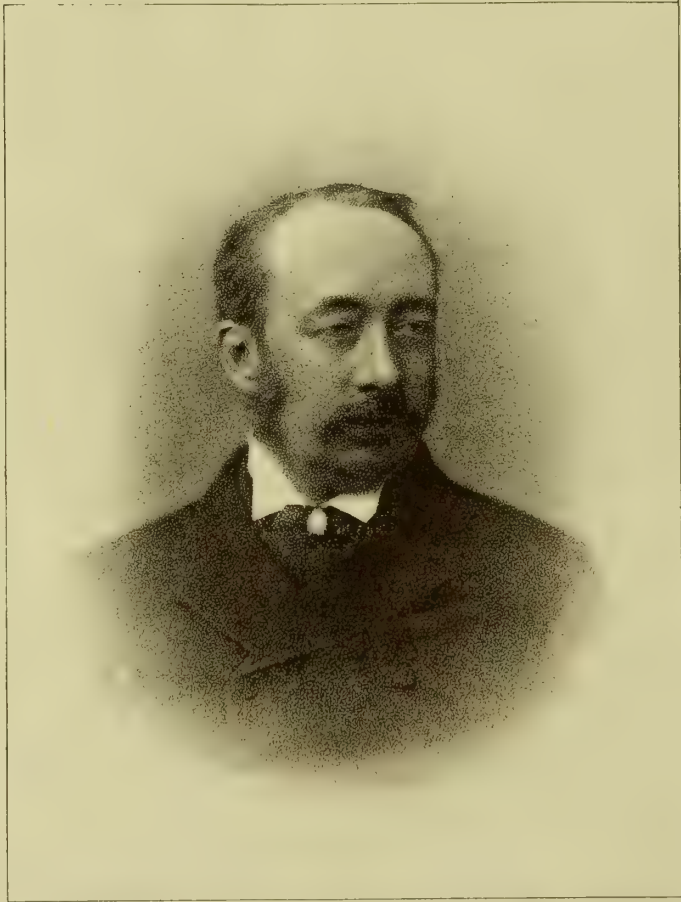






*W.A. Royle-Frith*

W.A. ROYLE-FRITH  
PRESIDENT OF THE MANCHESTER SOCIETY OF ARCHITECTS



*R.H. Carpenter*

R.H. CARPENTER, F.S.A.  
ARCHITECT OF LANSING COLLEGE



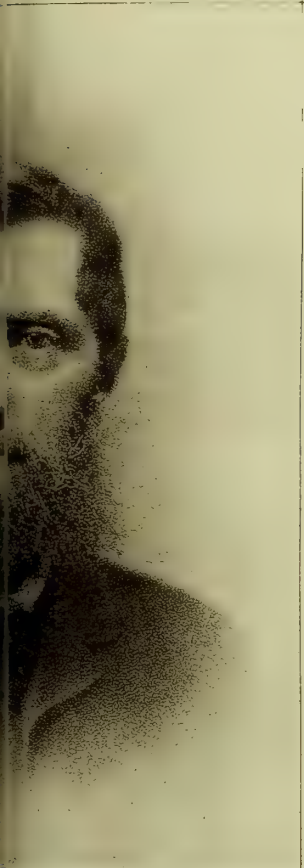
J.P. SMITH  
ARCHITECT OF THE UNIVERSITY



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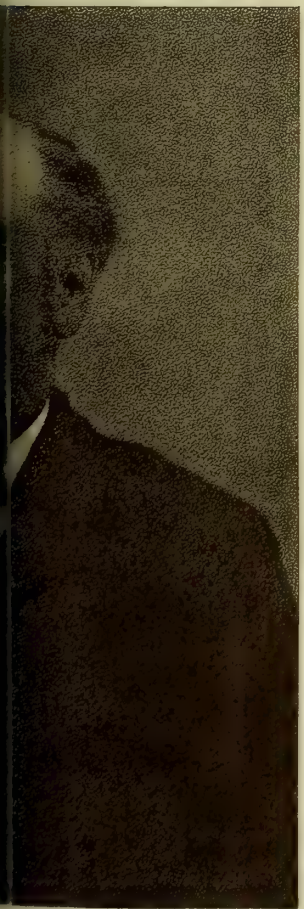
*John P. Seddon*

FRIBA  
COLLEGE OF WALES



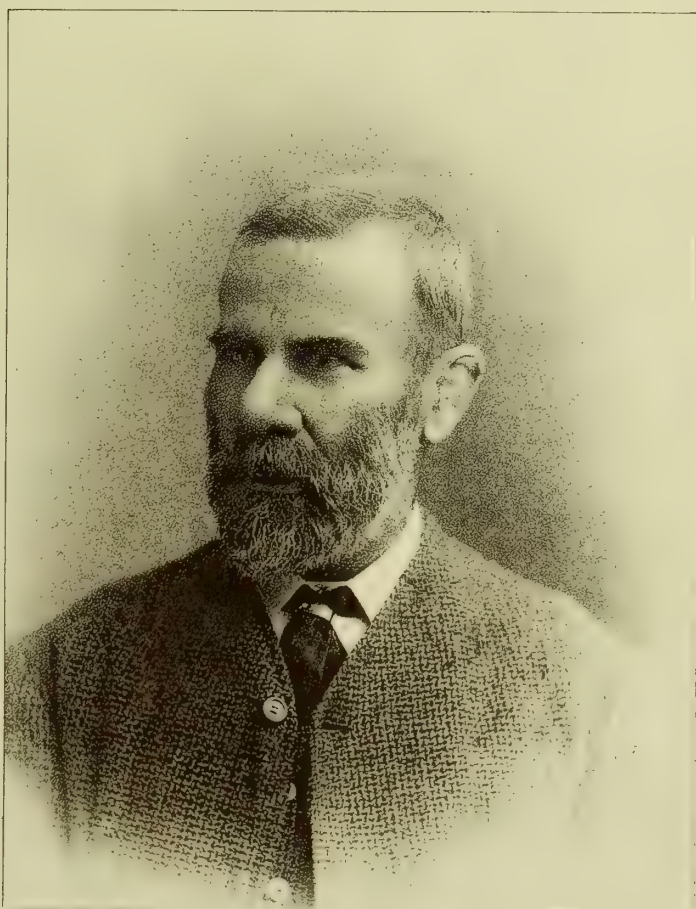
*G. Thine Friba*

G. THINE FRIBA  
PRESIDENT OF THE NOTTINGHAM ARCHITECTURAL SOCIETY



*W. H. Lynn*

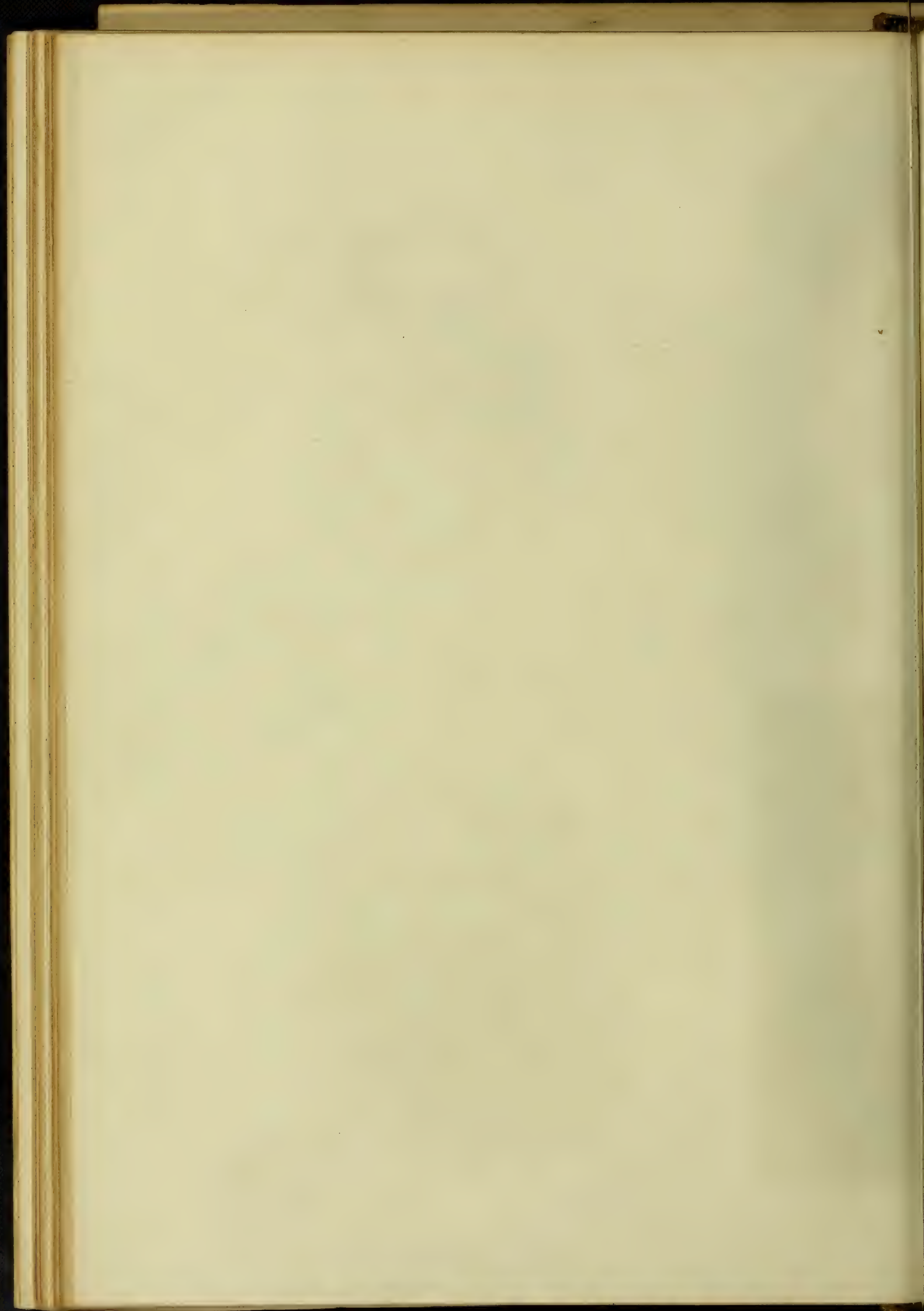
FRIBA  
ARCHITECTS OF IRELAND



*Henry Crisp*

HENRY CRISP FRIBA  
PRESIDENT OF THE BRISTOL SOCIETY OF ARCHITECTS



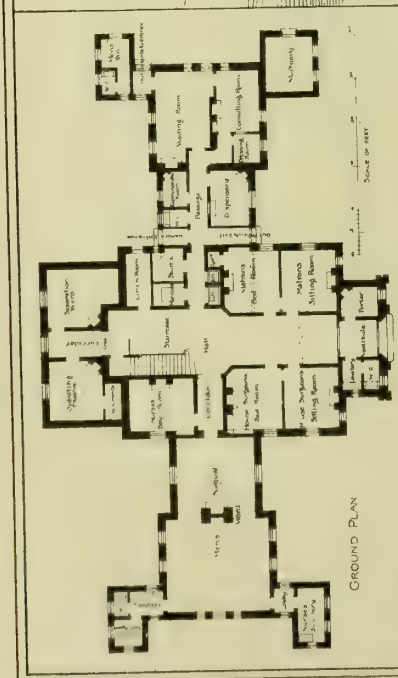




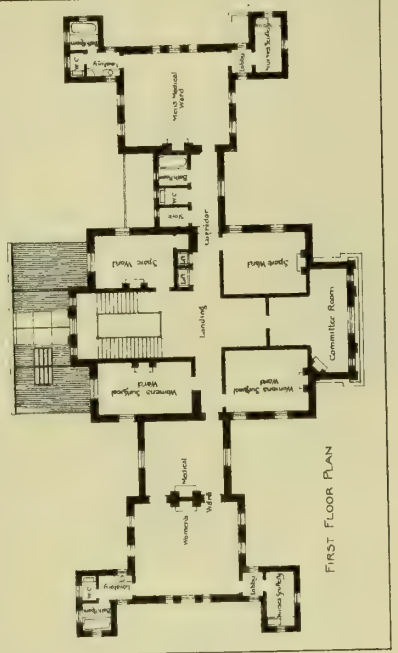




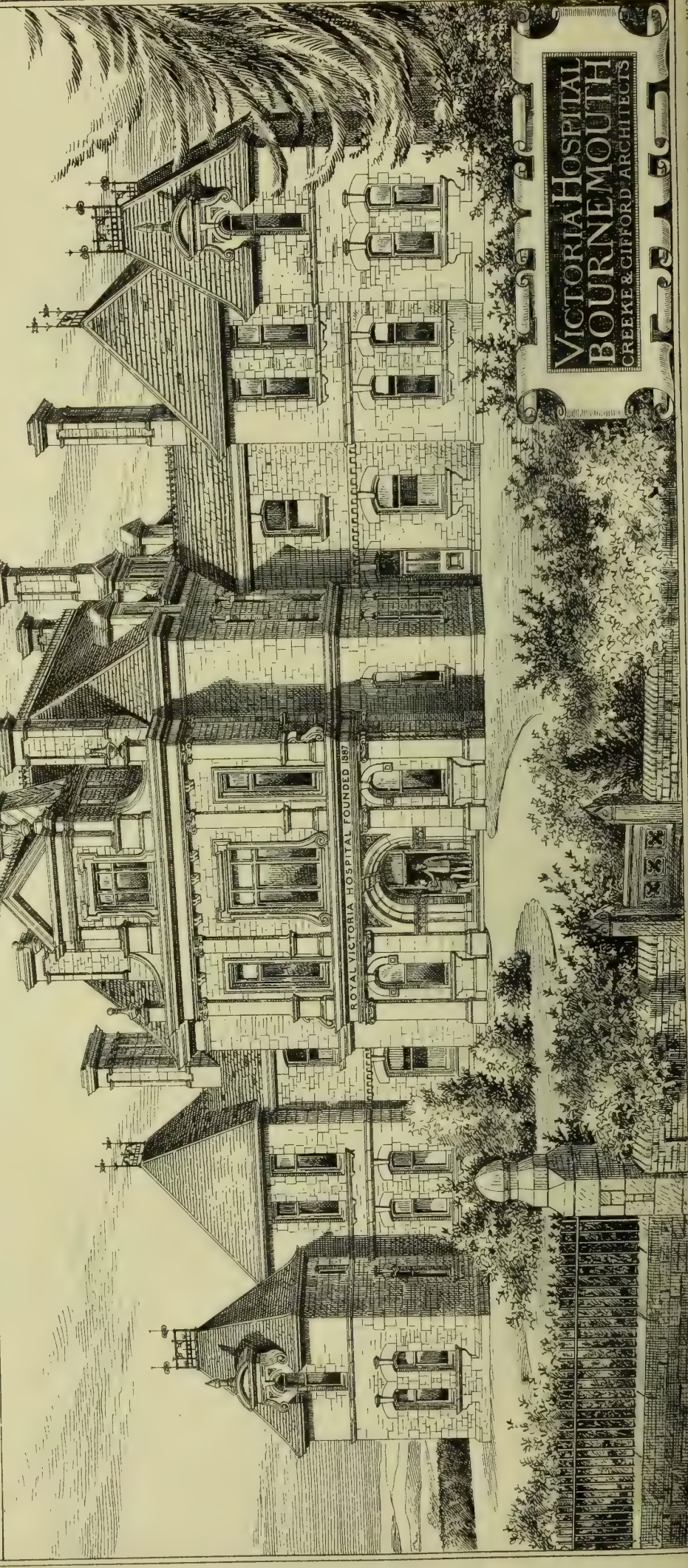
THE BUILDING NEWS, JAN. 17. 1890.



GROUND PLAN



FIRST FLOOR PLAN







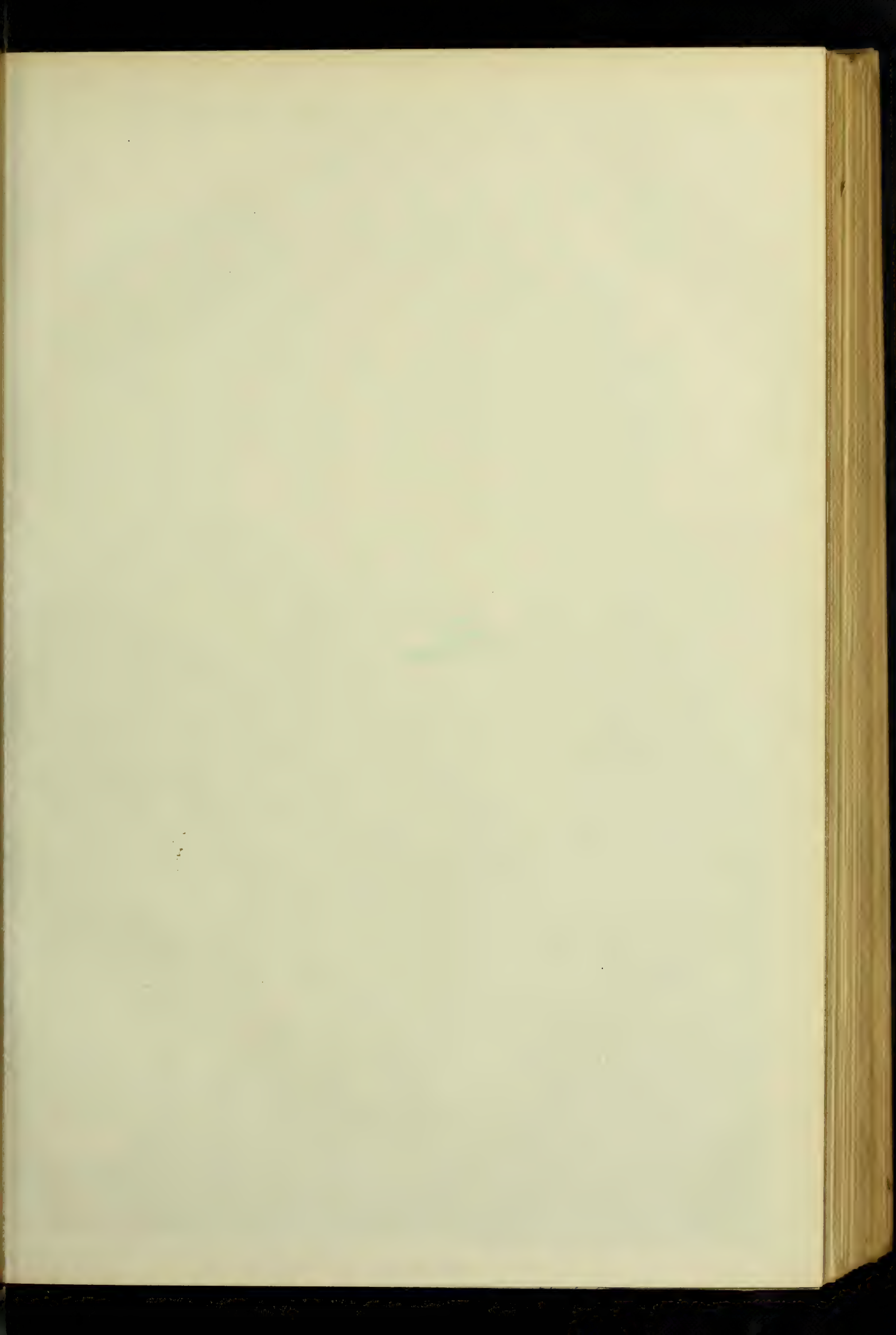
CHURCH OF S. MARY MAGDALENE · WORCESTER · NEW TOWER AND SPIRE · J.S. ALDER ARCHT. · E.C.

Photo Lithographed & Printed by James Akerman 6, Queen Square, W.C.

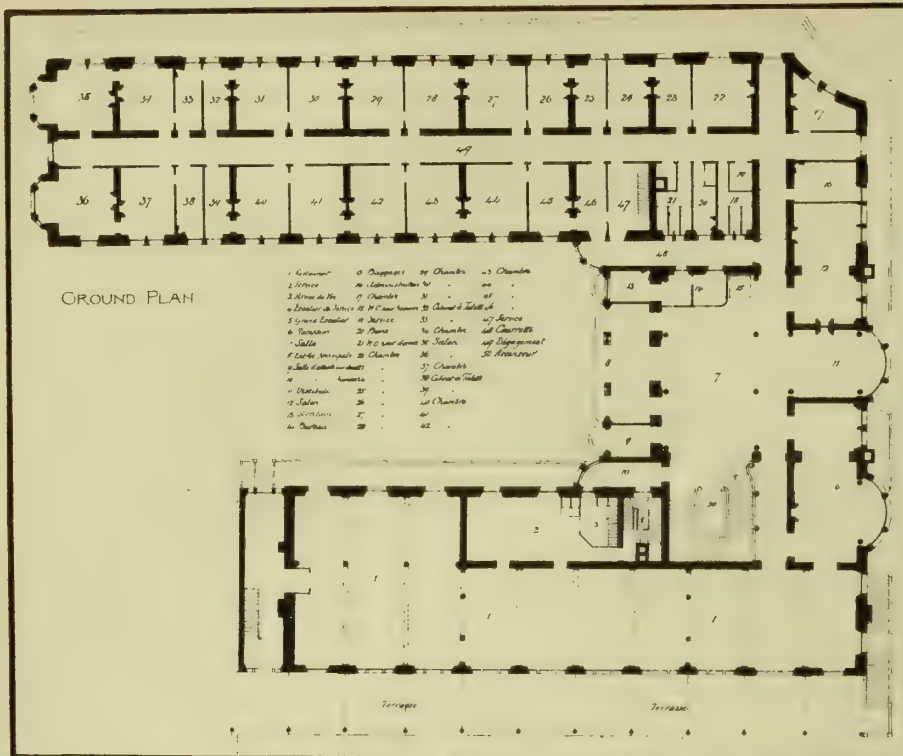






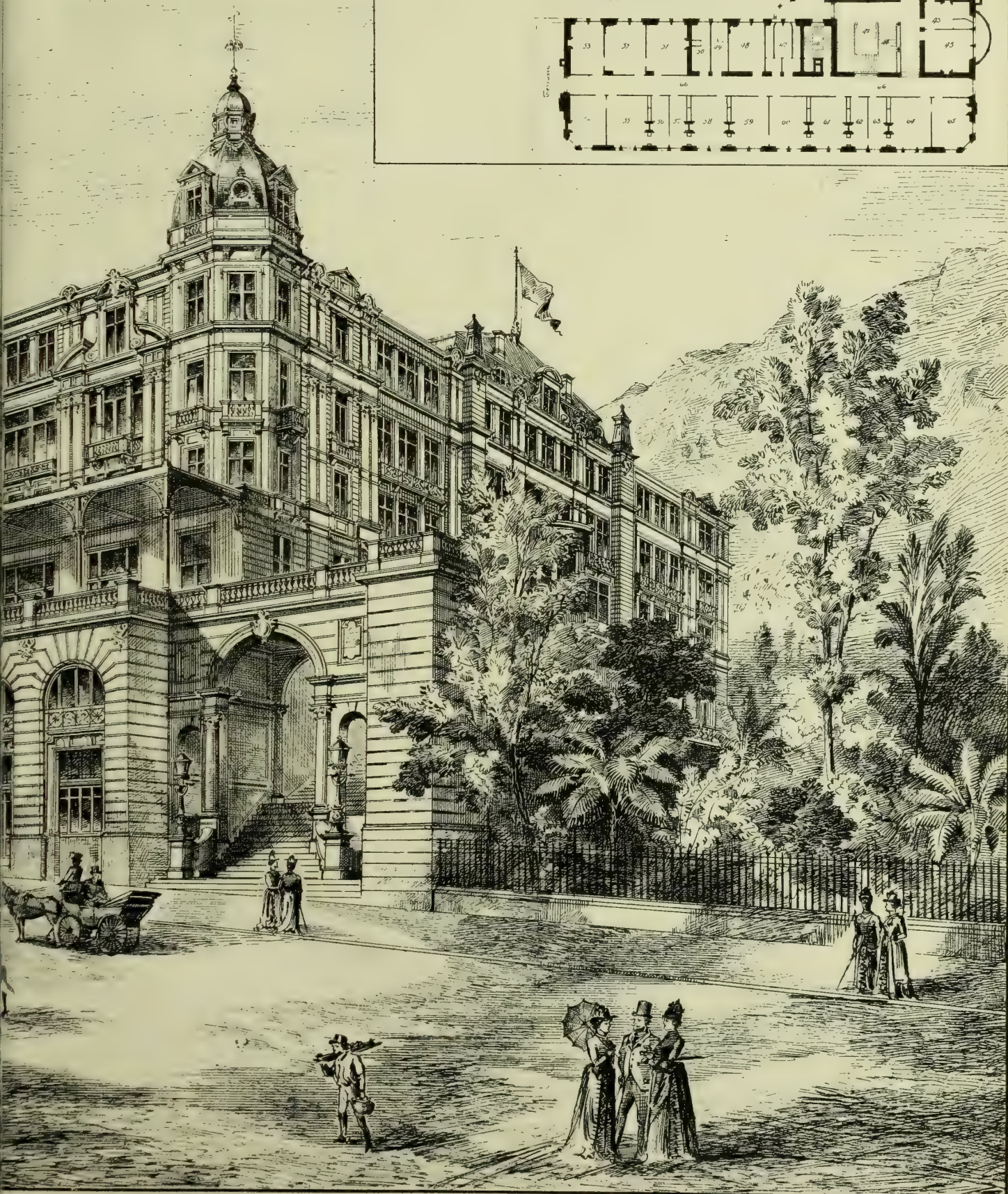




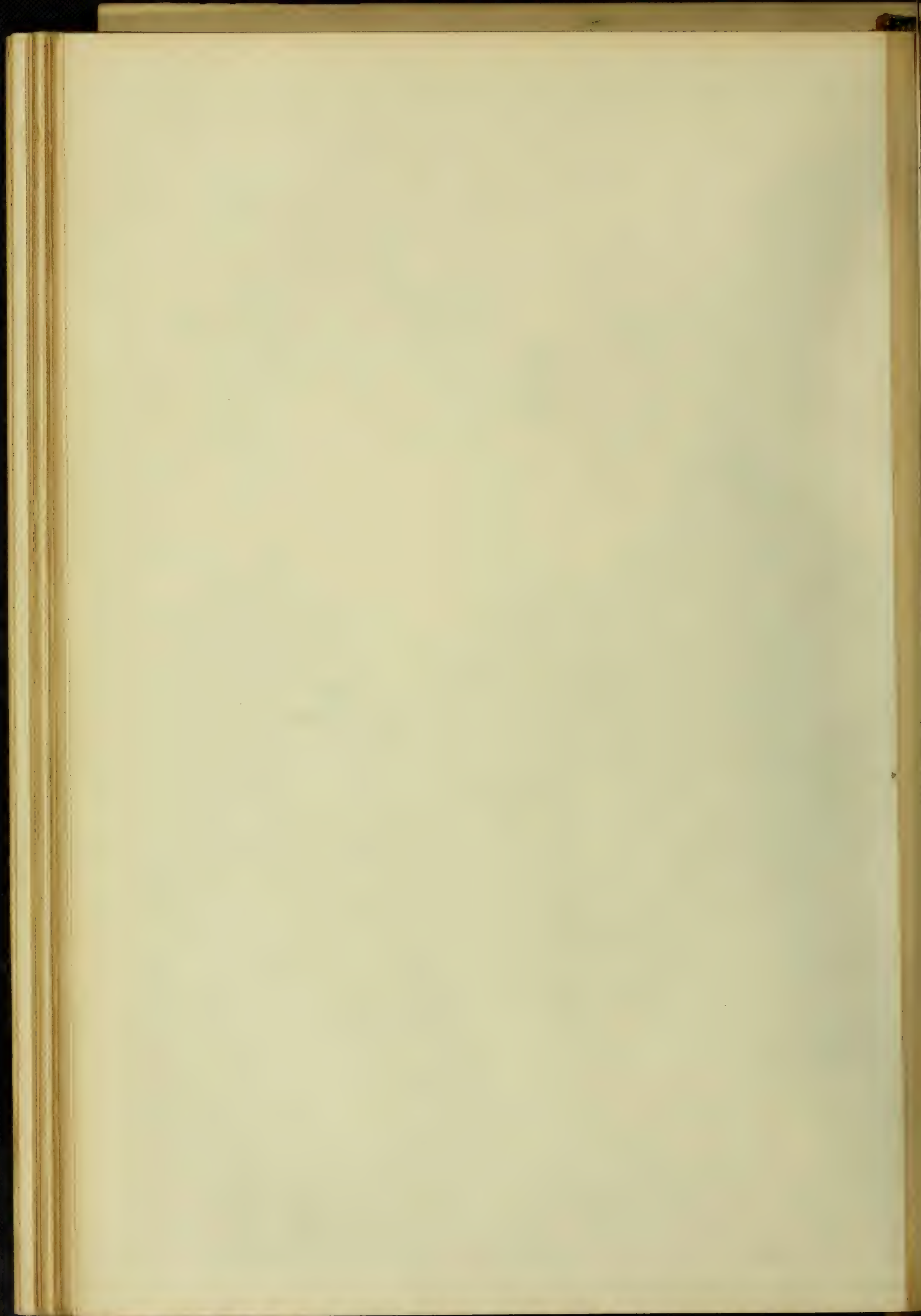


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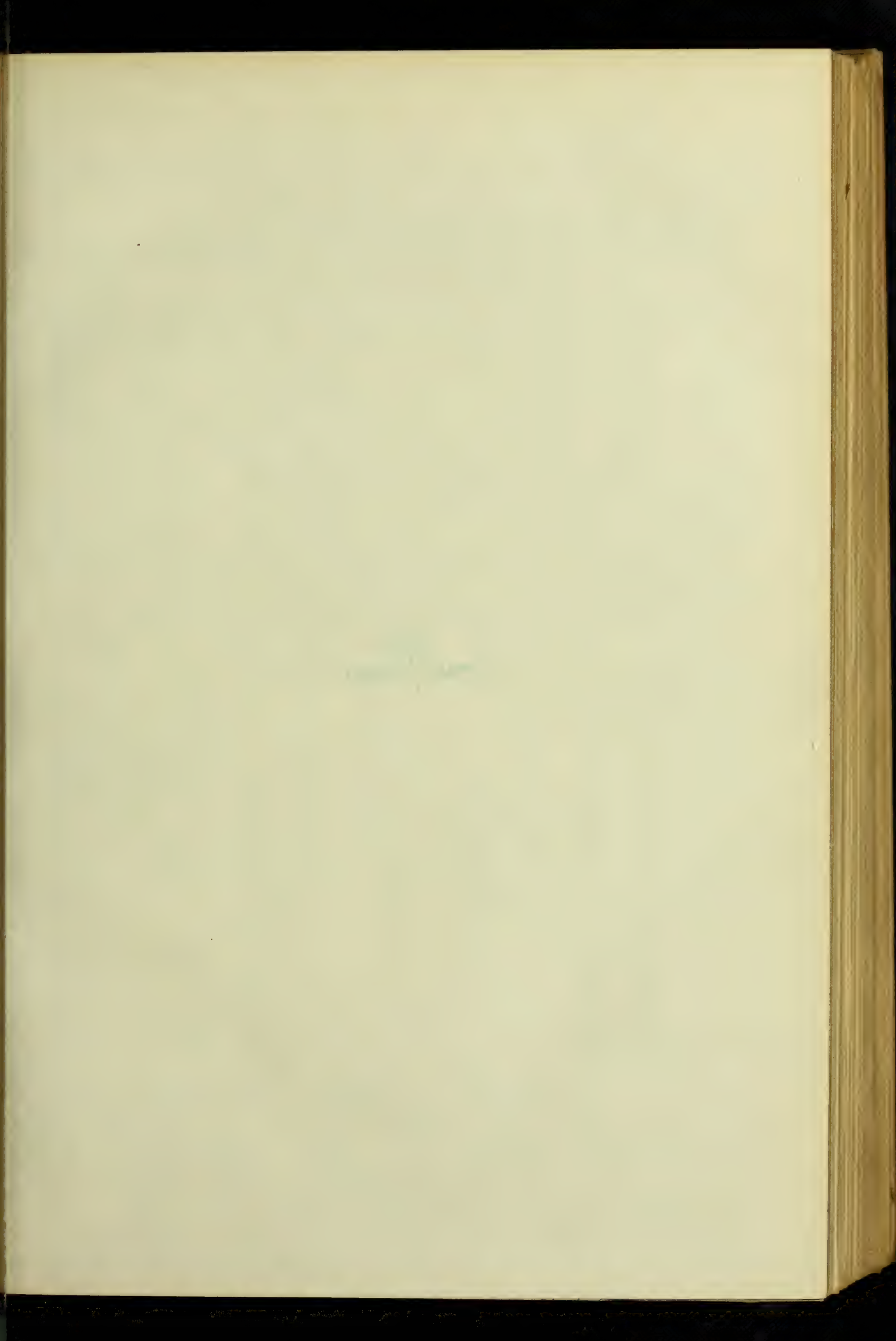




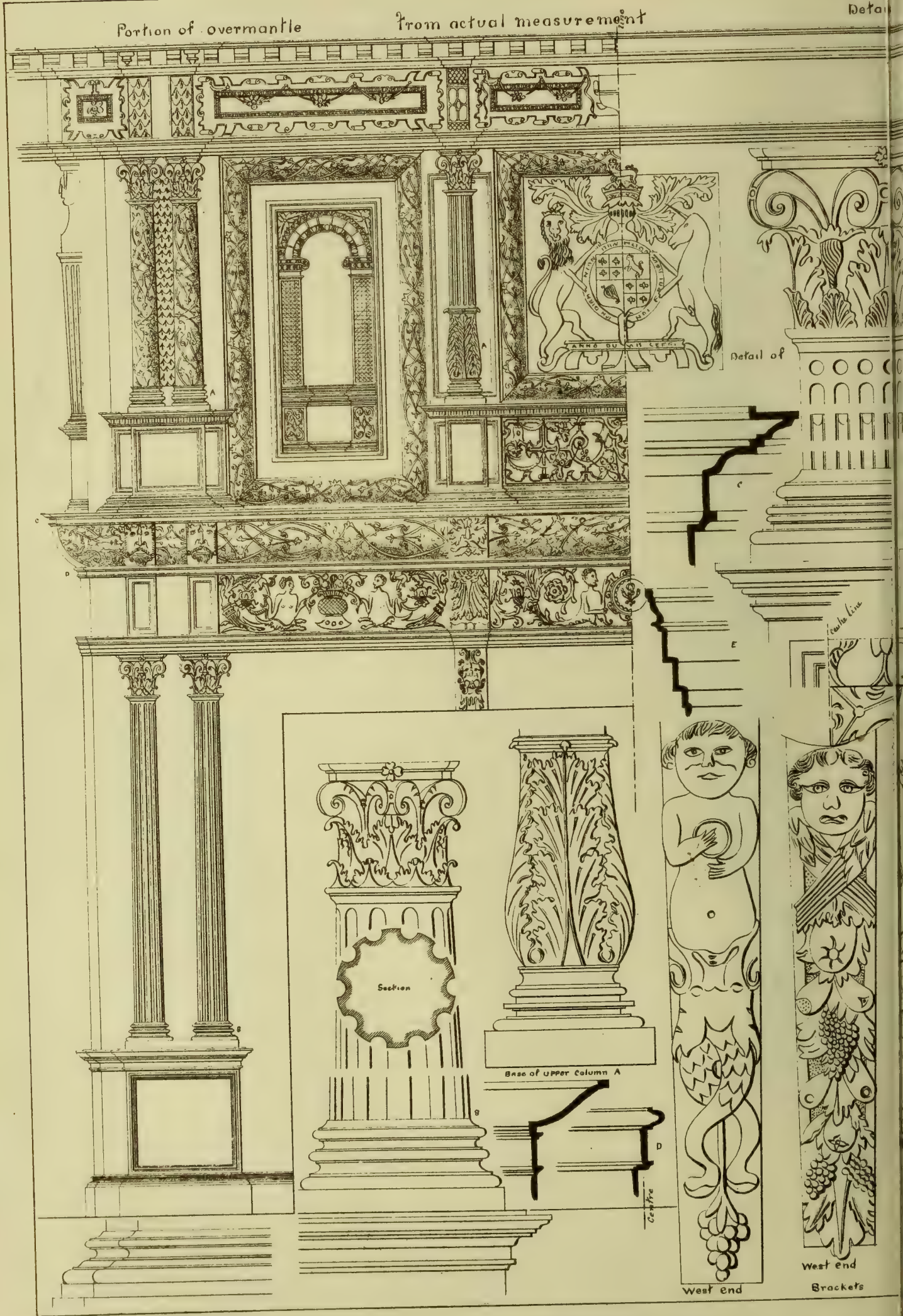










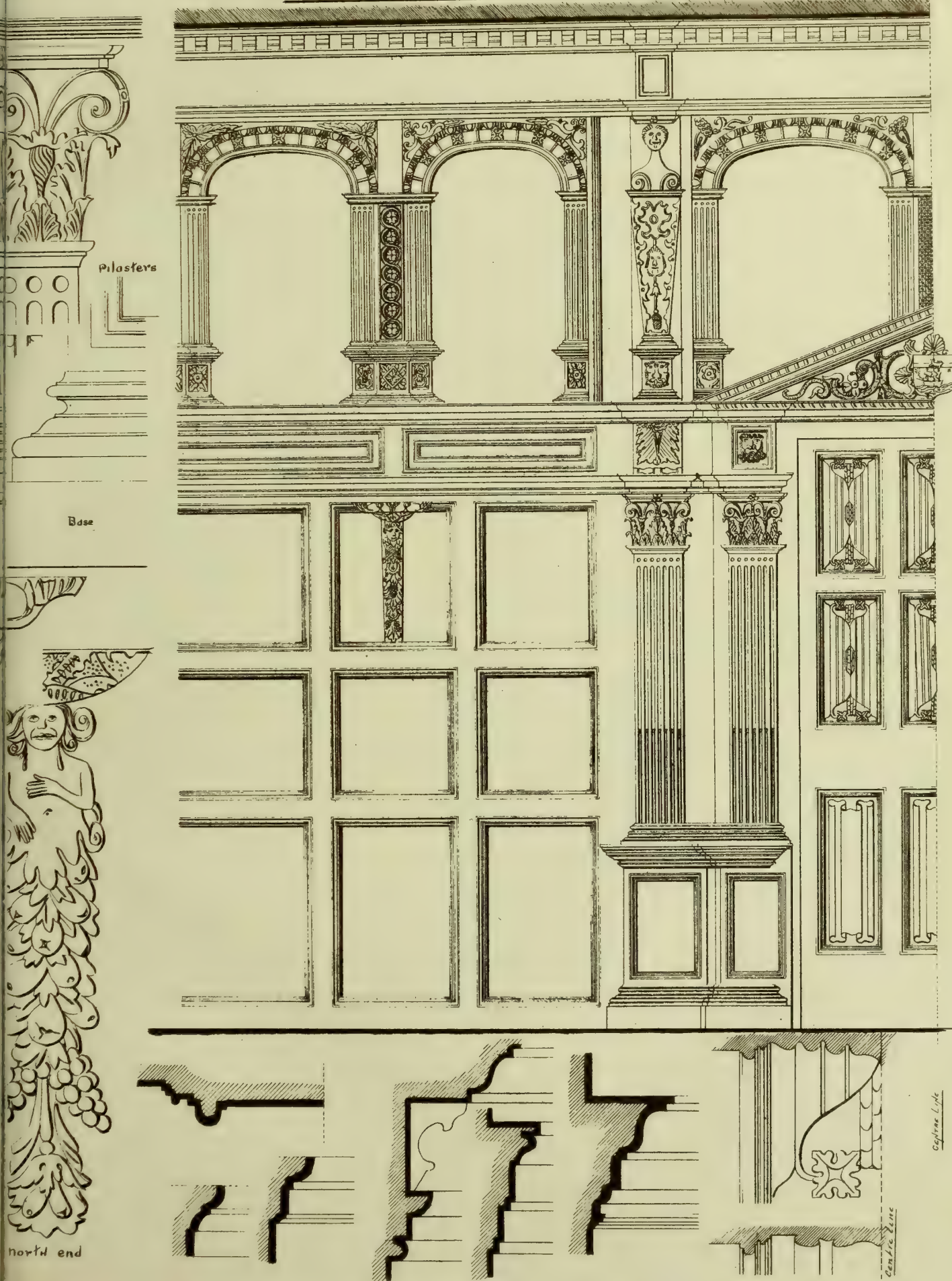




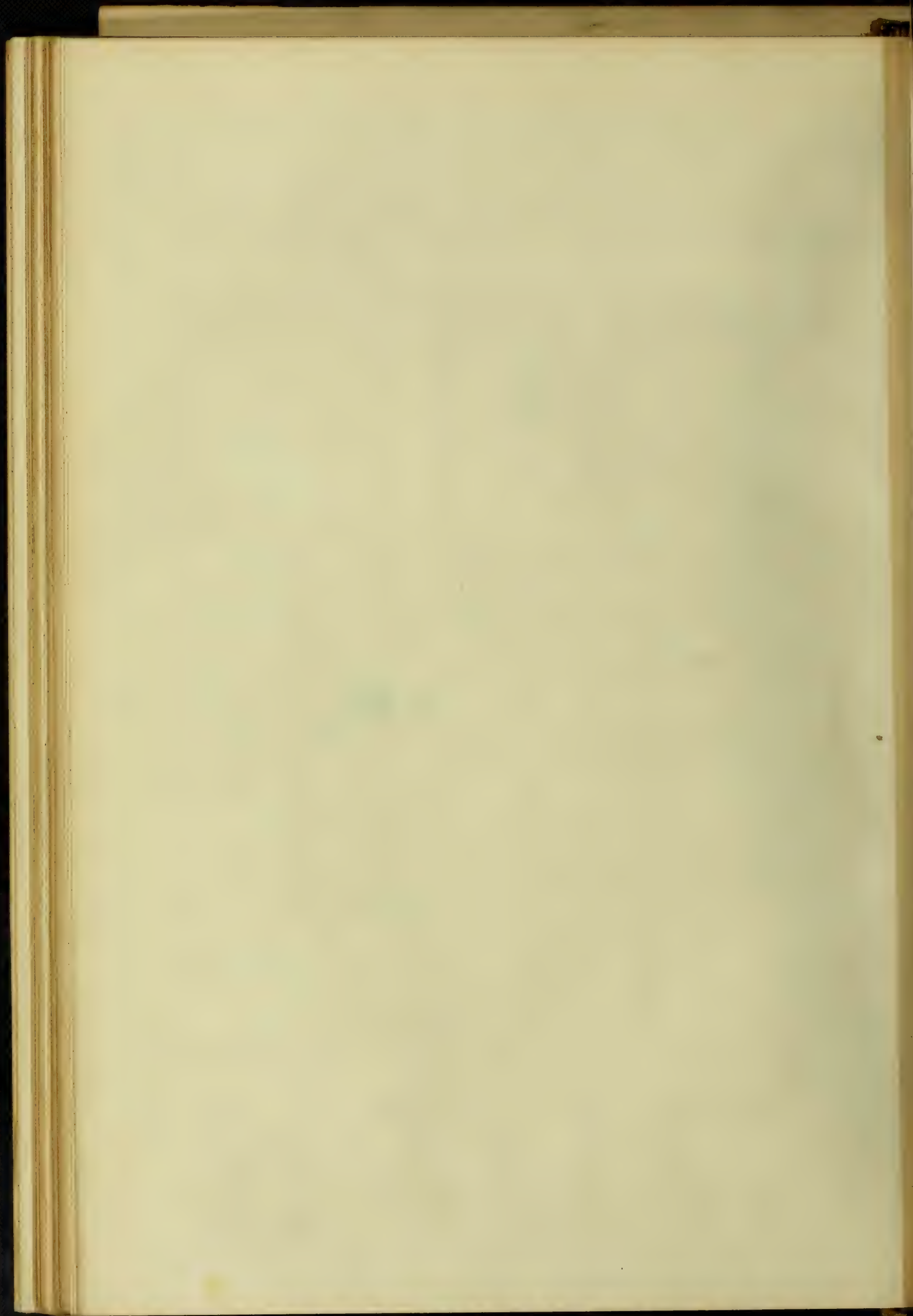
# Measured drawings Room 11<sup>th</sup> 4 South Quay G<sup>th</sup> Yarmouth 15<sup>th</sup> Century

— From drawings Plotted to same scale on the spot —

— Portion of West Elevation Shewing Doorway —









# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1329.

FRIDAY, JANUARY 24, 1890.

## WHOLESALE CONTRACTS.

TO the eminently practical mind of the English employer of labour, a bargain by the lump has an attraction. It is a less troublesome and irksome mode of obtaining what he requires than in employing his own tradesmen to do the work at a fair measure and value price, and in taking upon himself the duties of the general contractor. Not only does he like to know the cost from the beginning, but he fancies that by dealing with separate tradesmen he will get himself involved in expense and difficulty, and it is this fear which deters so many building promoters from undertaking any work themselves. Public bodies, in whom the power rests of advertising for tenders, adopt the same course in what they deem the interests of those they represent; they obtain a tender for a public building, such as a vestry hall or a board school, which shall be inclusive of everything connected with it. As these tenders are generally based on competitive prices obtained in the open market, it is next to impossible that any margin can be left for remuneration. The recent School Board scandals are to be attributed mainly to the keen competition promoted; the highest and lowest tenders have shown a difference of several thousands of pounds, and as the lowest tender is generally accepted, the builder is compelled to have recourse to the "sweating system." The public have been the sufferers: they have had to pay for defective building at a higher price than they would have done if the highest tenders had been accepted, in addition to costs of actions in the courts for alleged libels.

The question of responsibility enters into this mode of contracting. By making the contractor responsible for all risks and defects, the idea of employers is that they get the best part of the bargain. But what are the facts? The majority of buildings carried out under contracts cost a considerable addition of percentage for extras, or are found so defective afterwards as to entail a heavy expenditure. Sometimes the contractor is unable to fulfil his engagement, and we have only to turn to the facts revealed in the London Board School proceedings to find cases of all three of these. A contractor's responsibility cannot be determined by the stringency with which the contract agreement has been drawn up, as many appear to imagine, but his obligations to carry out the work in a satisfactory manner will mainly depend on his position as a contractor, and will rest on the amount of his tender. Experience has proved that the measure of his responsibility is directly in proportion to the remunerativeness of the price he has agreed to work for. If we cut him down in price, he will be inclined to scamp the work, or to introduce inferior materials; and though compulsory measures may be taken, we shall find they are inoperative to produce satisfactory results, as any loophole will afford him relief. In the wholesale contract, as each trade works under handicapped conditions, the responsibility falls upon the contractor of the whole. Each sub-contractor agrees to do his portion of the work at the lowest cost, undertaking to carry out his particular trade in compliance with the terms of the specification. But sub-letting under the contractor fails, because the artisan knows that he is not directly answerable, and shelters himself under the contractor's responsibility. These conditions are inimical to good building. The profits of the artisans

are reduced to a minimum. The large contractor, who supplies his own materials as well as labour, and pays by time, can appropriate the profits and do the work cheaper; but the workman is reduced to a machine: he works in a groove, and a process of cheese-paring is exercised prejudicial to the building. Whether one wholesale contract, or several separate ones are better for the employer is a question that can be answered by comparing buildings erected under both systems. In France and Germany, and America, as well as in the North of England and Scotland, we find the separate system largely in operation. It will not be denied by the most strenuous supporters of wholesale contracts that the separate tender system is less open to scamping than the undivided contract. The objections to this plan is that it involves a series of separate agreements—entails more trouble on architect and surveyor. On the other hand, more careful workmanship and individual responsibility are secured, as each tradesman has an interest in turning out his particular portion of the work in such a manner as to give satisfaction, and as all the trades take the same individual responsibility and interest, there is more chance of obtaining good work than when one contractor only is interested. We do not say that if the wholesale contract is based on a just tender, and conducted with the necessary safeguards, it is not the most desirable plan of carrying out buildings; but we contend that with keen competition and the acceptance of tenders at unremunerative prices—which is generally the course now followed by our boards and public authorities—the system is most pernicious, and the employer is unquestionably the loser. Need we cast our eyes at some of the London Board Schools to see the result, to find almost every trade grossly scamped—to wit, the recent examinations of the superior officer of the Board, who has found out imperfect, and in some cases not any connection between, drains and the sewer-pipe, allowing the soil to percolate through the ground; in other instances, absence of ventilation of drains, some completely at variance with the plans of the architect.

The system of obtaining tenders is open to serious question. The above startling disclosures would never have been possible if the schedule system of obtaining quantities prevalent in Glasgow and other towns in the North had been adopted by the Board, by which system the selected tradesmen tender upon schedules which are returned to the architect with the rates filled in against each quantity, the work being afterwards measured and valued by the same rates. But, as we have hinted, this procedure is distasteful to the ordinary employer, and to those who prepare contracts and quantities; the former prefers to know the entire cost at the onset, the architect and quantity surveyor object to a system which would give them more labour, while the usual bill of quantities would be superseded by schedules, and the large emoluments made would be reduced. The wholesale contract based on a single tender and bill of quantities is the plan that has been most favourably considered by the employer, because it is less troublesome, and by the builder and architect because it reduces their labour; but it fails to secure either good workmanship or fairness to the contractor: further, the system has a tendency to ruin trades, and to encourage "slop" hands and jerry-builders. All details are neglected. Two alternatives remain: the one is to encourage separate contracts, to let the trades of a building out in parts under a competent clerk of works; the other is to adopt another method of tendering and contracting by which a fair value will be paid for good workmanship—the only alternative likely to reform the general contracting system as it at present exists. The "lump" sum contract, with its unadjustable pro-

visions for after settlement of extras and omissions, with arbitration clauses that are seldom resorted to, have encouraged not only bad building but jerry-builders. If our large public buildings, like schools, were carried out on either of these plans, we should never probably have heard half the complaints we do now about buildings which are erected by contract. Separate contracts, for example, might be entered into for the erection of the building: one contract for the carcass, another for the mason's work, another for the carpenter and joiner's work, and these would be under the strict supervision of a competent clerk of works. We doubt very much whether his labour in supervision would be so onerous as it is under the old system of one contractor and one foreman, with the everlasting production in case of dispute of a deficient bill of quantities, the constant endeavour of the foreman to introduce the wrong material or to evade the specification and drawings, the hard words exchanged between the two representatives, and the evil that, if friendship is again made, the building may suffer more than ever. Each separate contractor, for his own sake, would do his best, and the clerk of works would be more a master of the situation than he is now, when the contractor is often, owing to the low price at which he has taken the work, dictatorial, or is in a better position to plead for a more lenient interpretation of the quantities. The tendering for these separate contracts would be managed in the usual manner, any extras or variations being determined by a schedule of prices and measure and value. The employer would benefit by the division of the labour; but beyond this, the mere middleman would be supplanted, and encouragement be given to tradesmen who are now afraid to compete against the powerful contractor.

There is another aspect of the question which affects the architect—we mean the execution of details in building. One of the hardest duties of the architect in a large contract taken for a low amount is that of carrying out the details of his design. Every one who looks beyond his mere percentage is aware of the difficulty of obtaining attention to details from some contractors. They seem to think that, as they have taken the work at a low price, every consideration should be shown them, and that the architect ought to forego his details and fittings. His price has been given for the mass, and details are considered too trifling to discuss. It is in this spirit the ordinary contractor acts towards the architect and employer. If each trade was separately considered, a very marked change in this respect would take place, and architects and employers would then be able to introduce specialities into their buildings, which now they have neither power nor heart to ask for.

## SPORT AND ART EXHIBITION AT THE GROSVENOR GALLERY.

AS a collection of pictures, apart from the themes of some of the subjects represented—many of them painfully suggestive of the "killing something" propensity of Englishmen—the exhibition at the Grosvenor Gallery illustrative of sport is of much interest. One of the earliest pictures is lent by the Duke of Westminster—"A Hare" (55), alleged to be by Albert Dürer, though stated by Mr. W. M. Conway, late Professor of Fine Arts at Liverpool University College, to be an enlarged copy from one of the finest of Dürer's drawings at Vienna. However, it gives apparent evidence of the master by the minute detail in which every part of it is painted. Near this is a large picture lent by Lord Ashburton of "A Spanish Fête," dark in colouring and attributed to Velasquez; a landscape in which a long inclosure of screens is erected, in which spectators are



viewing some sport. "The Wolf Hunt" (32), a still older work, is said to be by Rubens. The canvas is of huge size, hangs in the centre of gallery, and contains wolves, dogs, and several figures, some on horseback, including the well-known portrait of the painter's wife and that of himself, executed with all the animation and brilliancy of colour of the master. It was painted in 1625. The other picture of Rubens (62) "Diana Returning from the Chase," in the centre of long wall, is lent by the Duke of Northumberland, and is full of glowing colour and poetic feeling. The goddess of hunting is shown with her usual attendants, clad in a scarlet short-skirted garment.

Of less historical value we must mention the "Perch Fisher" (3), by G. Morland—a stream under the foliage of trees, in which there is a warmth of colour; Landseer's clever "Study of Heads" (4), "Hunter and Hounds" (6), lent by Lord Cheylesmore. His touching and pathetic picture of "Highland Nurses" (8) is well known by the engraving, and represents an incident in the painter's own experience, where a wounded deer is attended by her young. "Highland Interior," "None but the Brave Deserve the Fair" (69), "Retriever and Woodcock," "Monarch of the Glen" (88), the last lent by Lord Cheylesmore, and the fine subject, "The Sanctuary" (67), lent by the Queen, are among the notable Landseers in this gallery. Altogether there are 54 examples of this painter's work. The "Monarch of the Glen" (88) is the now familiar picture, through the art of the engraver, of a stag perched on a precipice or rock—a grand composition, wonderfully true to life, the atmosphere and colour charmingly harmonious, and the coat of the stag splendidly realistic. This picture was painted for the refreshment-room of the House of Lords for 300 guineas. The House of Commons rejected the vote, and Lord Londesborough bought it for 800 guineas; the copyright was sold to Mr. Henry Graves for 500 guineas. Afterwards it was sold at Messrs. Christie's, to Lord Cheylesmore, for £6,000. Passing this picture, which stands at the end of the large room, the next one of interest is "The Connoisseurs" (115), with a portrait of the artist between two favourite dogs, who look over his shoulder. The painting is graceful and full of tender pathos, and now belongs to the Prince of Wales. In the other gallery is "The Shrew Tamed," known as "The Pretty Horsebreaker"—a loose-box with the young lady in riding habit reclining on the straw, leaning her head on the body of the tamed steed. Other Landseers can only be glanced at: such are "Children of the Mist," on which the painter received many congratulatory remarks; "The Stag at Bay," a chalk study on paper, a series of studies being shown in the East Gallery (121, 122, 125, &c.) "Honeymoon" has all the poetry and pathetic interest of the painter (184), while the "Morning" (186), a large picture of dead stags on the mountain side, is a noble and stirring incident. A huge pastel subject, "The Chase"—a fine stag and a hound trying to keep pace, is of interest, inasmuch as the nose of the deerhound, since added, covers the mark Landseer placed on the stag's side, to show the right place to strike a deer. "Browsing" (203), too, is a fine drawing of the "antlered stag" in its more peaceful moments. The Holme Wood collection is laid under contribution for many of these examples.

In the West Gallery we must note the work of J. N. Sartorius on "Pointers" (5), "Hunting" (22), "Death of the Fox," and other hunting and racing scenes (133), and portraits of famous racehorses. But the great horse painter is George Stubb, A.R.A., whose *forte* as a portraitist of racehorses and other animals is shown by such pictures as (47) portrait of "Molly Long-Legs"—a landscape, with jockey in blue jacket, hold-

ing a bay filly, whose career upon the turf was a brilliant but short one; (63) portraits of William, Duke of Portland, and Lord E. Bentinck, who are shown as figures in a landscape, with a black horse and a groom leading a cob to a leaping bar. In other instances we see the painter's skill in portraits of horses, such as the "Eclipse" (86), the sire of 334 winners, "Shark" (81), both pictures belonging to Mr. Walter Gilbey; "Mares and Foals" (97), lent by the Duke of Westminster, who is a large contributor. The last is a fine piece of horse-painting. Stubbs modelled his horse's limbs and flanks with extreme care; the drawing is true to life and graceful. No. 91, "Mambrino," a grey horse, the sire of Messenger, from which the best American trotters are descended, is a good instance. No. 60, the portrait of a gentleman on a grey horse, with the Old Riding School at Welbeck, is another fine specimen of Stubbs's work, showing his mastery of colour, accessories, and background. Carl Haag's "Evening at Balmoral" (28), the stalked stags brought home, with figures of the Queen, Prince Albert, Prince of Wales, Duchess of Kent, and others standing at the threshold of the Castle, is a finely-painted scene; the torchlight effect is skilfully rendered. It belongs to the Queen. So, too, does "A Stag Hunt" (29), by J. Wootton, another eminent painter of animals. The Earl of Carnarvon sends Sir Francis Grant's "Ascot Meet of Stag-hounds," on which picture (too technical and overcrowded) numerous huntsmen and celebrities figure (41); and we must also pay tribute to Hondecoeter's "Horses, Dogs, and Grooms" (30); his "St. Leger," 1812 (31), a large centre picture; to J. Janssen's "Dead Game," a small but finely-painted group (43); to Landseer's large painting, "The Swannery Invaded by Eagles" (68); to Morland's delicately-painted interior, "Innocence Alarmed" (73), with sportsman discharging lock of a flint gun, frightening a child, who clings to her mother; to Snyder's large "Wild Boar Hunt," and a warm-toned picture by Morland (83), also "Rabbiting" (76). The picture of St. Hubert, the patron saint of hunting, by Breughel (51); R. Wilson's interesting "Cricket Match at Hampton Wick," lent by the Marylebone Cricket Club; S. Gilpin's portrait (77); J. Weenix's "Dead Game" (108); Briton Riviere's "Vae Victis!" eagle and wolf in combat on a rocky eminence; and the portrait of R. Tattersall, the founder of Tattersall's (112), are other works of interest, and in this connection we must name Johann Zoffany's "Old Tattersall's" in 1776, whose site is now covered by Grosvenor-crescent.

In the East Gallery are hung several pictures of note. In addition to several Landseers noticed, we see Briton Riviere's "Wounded Adonis"; Herbert Johnson's "The Prince of Wales's" tiger-hunting exploit in India, 1876, lent by His Royal Highness (162); and a spirited water-colour sketch of Randolph Caldecott (178). Dendy Sadler has a charming picture (180) of "Lea Roachers," and "A Pegged-down Fishing Match" (195), full of humour and masterly delineation of character; and we find works by Jan Fyt (132), J. Bateman (138), H. Alken, Rosa Bonheur (166), Gainsborough (171), Herring (174), a finely-painted moor scene by A. Stuart Wortley (182)—a deliciously soft and mellow picture, full of tone, light, and shadow, "Old Friends," by W. Huggins (187), and J. C. Hook's clever "Fishing by Proxy" (188). In the third room are several portraits of racers by J. F. Herring, winners of the Derby and St. Leger; also pictures of horses by S. Gilpin, R.A., Sartorius, Chalon, J. Seymour, and Wootton. A. Cooper, R.A., is represented by several pictures—duck shooting, pheasant shooting, partridge shooting (254-257), Stubbs's "Godolphin

Arabian," lent by the Duke of Leeds, and J. F. Herring's "Horses' Heads" (290), and J. Seymour's "Famous Carriage Match at Haymarket against Time, 1750," are historically of interest; so are the series of coaching pictures by Alken and Boughton's "First Journey of the Exeter and Devonport Coach," with a child's head inside, by Sir T. Lawrence, P.R.A.

We can only glance at the room given to the art of falconry, where we find pictures of fighting cocks and of stag-hunting, pheasant and grouse-shooting, fishing, and other sports; also a perch of hawks used by English falconers. A few works by Sir E. J. Boehm, R.A., R. Bonheur, Fremiet, and Jacquemart are amongst the sculpture. The fine collection of plate in the West and East Galleries, consisting of racing cups and plates, statuettes of horses, fowling pieces, a collection of arms and flasks will alone repay a visit. Thus we see the First Ascot Queen's Cup, 1839, a very beautiful and unique design after German 17th-century work; the Emperor of Russia's Ascot Cup (3), another Ascot Cup representing St. George and Dragon, lent by the Duke of Portland, who contributes several racing cups. Messrs. Hunt and Roskell and Messrs. Elkington and Co. also lend some notable specimens of cups and other silver articles. Great plate, representing Godfrey de Bouillon (24), lent by the Duchess of Montrose, is a conspicuous silver group in the cases, and was a prize given by the late King of the Netherlands. Some of the designs are unique, such as the New-castle Cup, 1824. The cases of arms comprise wheel-lock guns of the 17th century, a Couteau de Chasse of the French Empire, several beautiful powder-horns, a 16th-century combination axe and gun, crossbow belts, hunting knives, carved walnut flask of the 16th century, a "prod" or stone-bow for discharging pebbles or clay, used in Elizabethan times for fowling; a case of breech-loading repeating flint rifles and flint guns, many lent by the Duke of Devonshire, Prince of Wales, and Purdey and Sons. The entrance-hall is adorned, over the staircase, by a huge black Russian bear, lent by the Duke of Edinburgh. On the walls are trophies of bear-heads and antlers, black-tail heads of the genus *Cervus*, including one of a white-tail deer (112), with 60 points, from Southern Texas. Other spoils of the chase decorate the walls. Portraits of celebrated racers, stalked stags, hunting, racing scenes, foxes and foxhounds make up the bulk of this fine collection of sport. There is a little wearisomeness in an exhibition of this character. Some of the pictures suggest too vividly the cruel nature of sport, others display too much of the *technique* of sport, as in the "Spanish Fête" ascribed to Velasquez, and Sir F. Grant's elaborate picture of portraits of hunting notabilities, "The Ascot Meet of Her Majesty's Stag-hounds," where the scarlet coats, hunters and hounds are numerous and distracting, and we lose the artistic qualities in the composition. It and others of its class have an historical interest as a record, and it is only in the pictures of Rubens, Snyders, Morland, Gainsborough, Herring, Landseer, and one or two more that we can see the true painter's handling of sport.

#### ARCHITECTURAL BRICKWORK.— XXVII.

##### ARCHES.

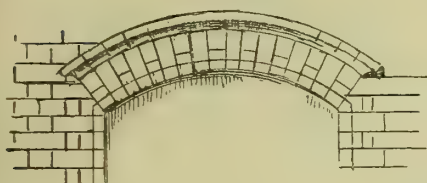
IN brickwork considerable effect is obtained by the arch. Its construction being visible, care should be used in setting out the arch bricks, in making them radiate properly to their centre, and in cutting the bricks to the true bevel. A faulty brick arch reflects on the skill of the bricksetter, and detracts from the general appearance of the work. In our last article we described a



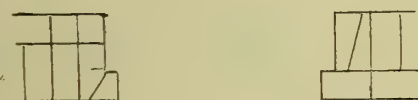
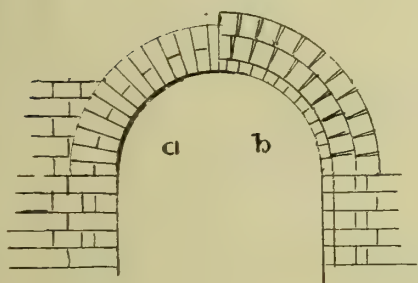
plain segmental arch formed with heading bricks, such as those generally seen over windows and doors. Each voussoir is a brick tapered to the required curvature; but, as we said, there are two other modes of constructing an arch, either as it is in Flemish or English bond. In both these cases the face of the arch presents alternately a single brick and two half-bricks—that is, every other voussoir is divided by a joint, which follows the curve.

#### ARCHES IN FLEMISH BOND.

We now show Fig. 1, a gauged arch over



2



an opening in Flemish bond. The bricks are alternately 9in. and 4½in. deep. This kind of arch is used for an opening, in which the reveals are 9in. deep, as then the intrados face or soffit would show the right bond, that is, a stretcher and header alternately. When the reveals are only 4½in. deep, the bricks of the arch are all 9in., as in our first example, and this is the only way an arch can be constructed over an opening in a wall of half a brick thick. An authority on arch building, Col. Pasley, says, speaking of the three methods, the Flemish bond, the English bond, and the heading bond previously described, "I am inclined to think the heading bond is the best of all, for the strength of an arch depends most upon the length of the voussoirs, which constitute its thickness; and in great arches, such as those of bridges, where stones are used, the voussoirs are all in one piece, not in several lengths or successive courses." By the "heading" bond arrangement it will be remembered is meant an arch on which all the bricks, except on the faces or extremities of the arch, are their whole length—a section of which will be represented by the arch, Fig. 1, page 61. For appearance in the fronts of houses, the Flemish bond arch, such as we now illustrate, is preferable.

#### STRAIGHT ARCHES.

The straight, or French arch, so commonly met with in old Queen Anne or Georgian houses, is certainly a sham construction at the best, as the horizontal joints, which usually cross the bricks, are all false, and marked for appearance on the bricks, the real joints being perpendicular to the radiating joints, and concealed. These straight arches are generally equal in height to four courses of the brickwork; but as the

arch bricks are on the slant an additional half-brick is put on, making the arch look 1½-brick thick. A horizontal joint is, therefore, introduced, as described, alternately in each voussoir to break bond. The straight, or camber arch has a rise of about ½in. for each foot of opening. One word of advice is necessary as to the working of bond above and below window openings, and that is to make it, if possible, regular; when this cannot be done the difference should be thrown in the centre of the opening, above the arch and below the sill. The alternate "perpends" or vertical joints should be invariably kept in line in the face work. The skewback of an arch is generally taken at a joint, though this is not necessary, as the bricks have to be cut to form the abutment or skew. It is better, however, so to arrange the springing, and the same coincidence of the top side of a straight arch with a brick joint is desirable.

#### EXTERNAL AND INTERNAL ARCHES.

In the openings of windows, owing to the reveal and recess for window frame, external and internal arches are necessary. In Fig. 2 we show half an elevation of each arch in a wall of 14in. thickness. The left-hand side represents the gauged face arch. The arch springs from a joint. On the right-hand side the arch is formed rough in two rings; here the bricks, being uncut, have parallel sides, and the lines representing the joints do not converge to a point, but are drawn as

tangents to a circle at the centre of arch, the diameter of which circle equals the thickness of a brick. The plans of alternate courses of the jambs and reveals are shown above.

#### EXAMPLE.

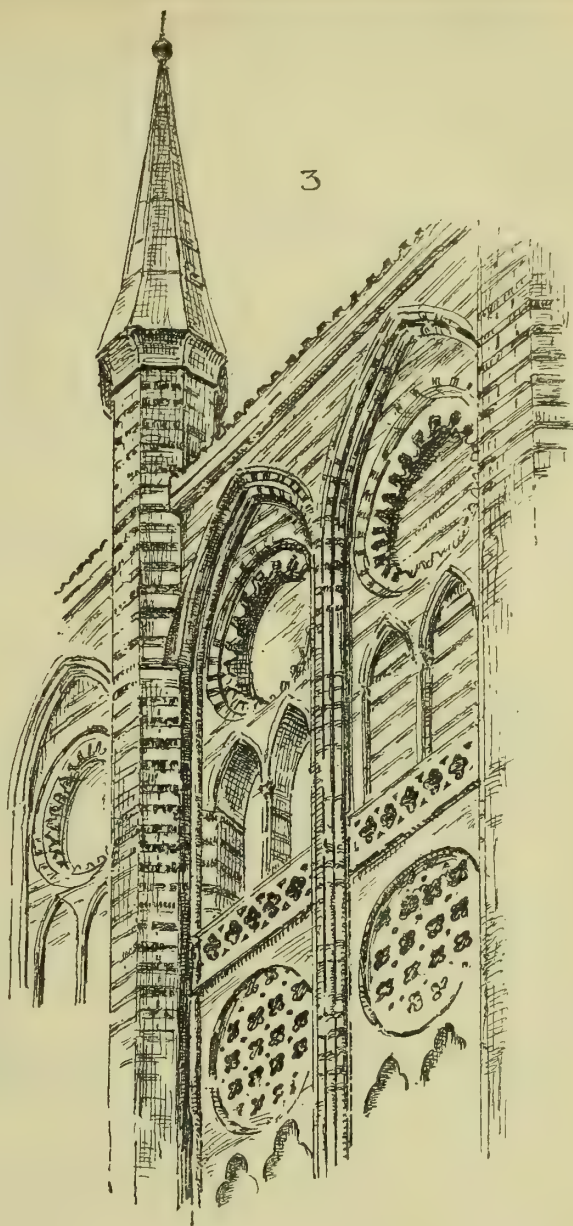
As an interesting example of ornamental brickwork, we give a sketch (3) of a portion of the upper part of the Rathhaus, Lubeck. Here we find moulded brick arches and recesses to the windows, the joints of which all radiate, the heads are filled in partly with horizontal courses of brickwork, and by a large circular opening, with cusps cut in shape very much like the cogs of a wheel, composed of radiating bricks. The semi-octagonal piers are also of brickwork, and are excellent examples of bonding, carried up and crowned by spirelets.

#### THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—V.

By R. OWEN ALLSOP, Architect.

(Author of "The Turkish Bath: Its Design and Construction.")

A WELL-PLANNED building is the Tynedale Hydropathic establishment at Hexham, in Northumberland, the property of Mr. Frank G. Grant, and designed by Mr. W. Lister Newcombe, F.R.I.B.A., of Newcastle-upon-Tyne, who has kindly lent the tracings from which the accompanying illustrations have been prepared. The plans







GROUND FLOOR PLAN

TYNEDALE HYDROPATHIC ESTABLISHMENT, HEXHAM, NORTHUMBERLAND.

exhibit careful study in the placing of the bath-houses, and the accesses provided thereto. An arrangement—the desirability of which I urged in my first article—whereby separate means of approach for ladies and gentlemen may be gained, has here been made. As will be seen from the plans, the building consists of a main block having two side wings, the addition, on left, being an old house incorporated in the new building. Between the wings is placed a bath-house containing ordinary and hydropathic baths. Adjoining this is the Turkish bath, accessible from either set of baths at stated times, according as the bath is set apart for the use of ladies or gentlemen. Attached to the wings and in line with the baths, are projections containing staircases and lavatories, &c., those on the right being for ladies, and those on the left for gentlemen.

The usual accommodation is provided on the ground floor; but the culinary department, with many obvious advantages, is placed on the floor above. The bedrooms over the kitchen, &c., are for the domestics, and gained by means of the servants' staircase. The principal staircase is arranged opposite main entrance. A thoughtful provision is the separate arrival entrance—a consideration for the comfort of fresh arrivals at the establishment that all frequenters of hydropathics will appreciate to the full. A feature in this building is the arrangement of the combined bed and sitting room, a recess for bed, &c., being provided in these apart-

ments.\* A fine recreation-room is included, distinct from the drawing-room. The winter-garden, shown at the end of the corridor of left wing, is not, however, yet constructed.

The long bath-house is divided into two portions, giving accommodation for both ladies and gentlemen. On one side of either bath-room are dressing-boxes, and opposite are ordinary, shallow baths, with douches in adjoining compartments. Sitz and vapour baths are also provided. The Turkish bath consists of cooling-room, first and second hot rooms, and shampooing-room. It is handsomely fitted; the cooling-room is furnished with divans, and contains the plunge bath. Under the hot rooms, &c., are placed the heating apparatus for Turkish bath, and the boilers for steam supply, and for the hot-water system by which the corridors and public rooms are warmed.

The establishment is capable of accommodating 150 visitors, the main front block of building being four stories high. Its general arrangement is found most convenient, the carefully studied approaches to, and placing of, the baths, indicating a laudable effort to meet the peculiar exigencies of an institution of the nature of a hydropathic establishment.

The new schools, Millom, are warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

\* These rooms, Mr. Newcombe informs me, have been most successful, and are in constant demand.—R. O. A.

#### THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MEDIEVAL CHRISTIAN ART.—X.

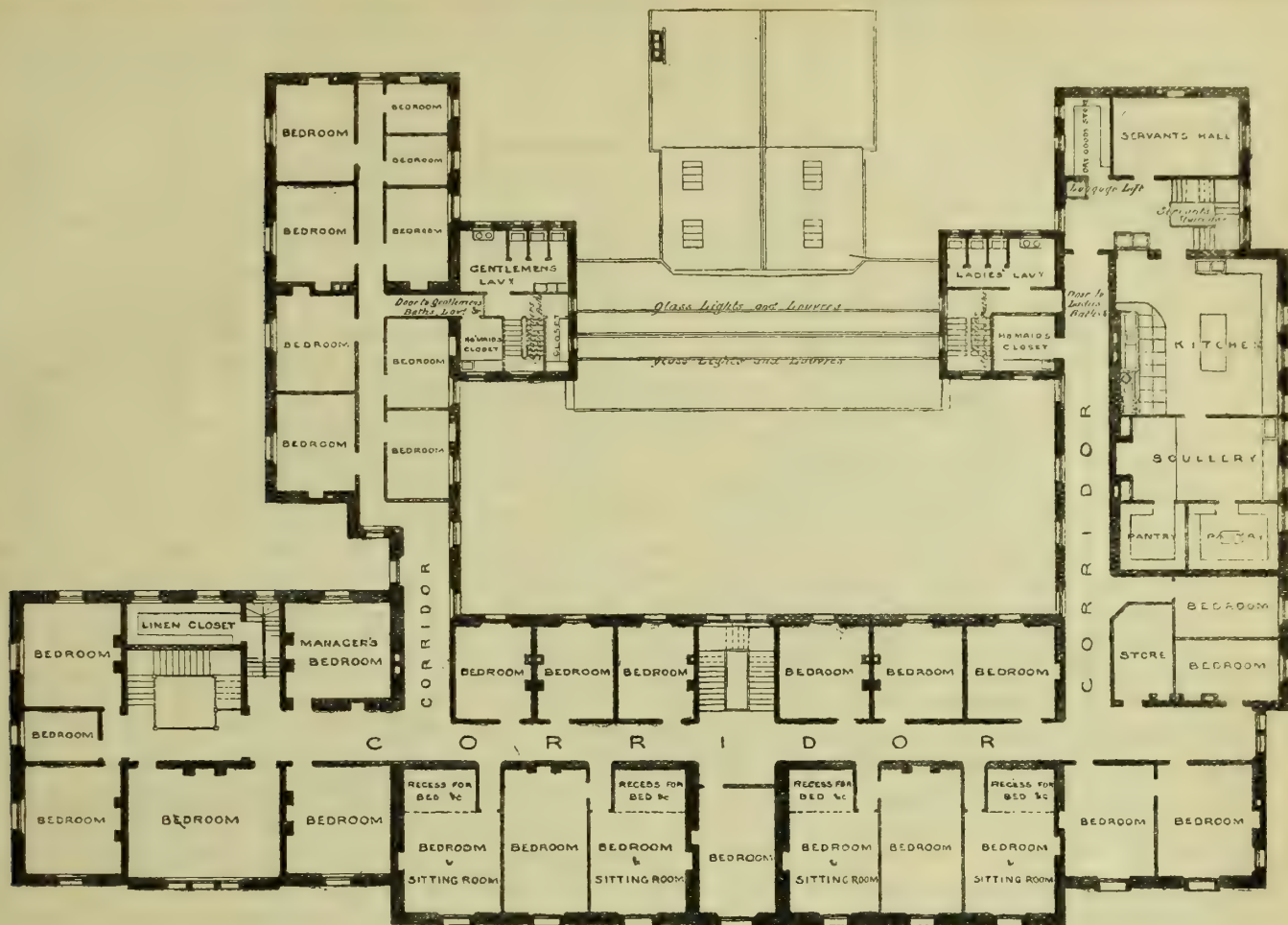
By GEORGE ASHDOWN AUDSLEY, F.R.I.B.A.  
(Author of "Handbook of Christian Symbolism," and several works on Architecture and Art.)

#### THE COLOUR AND ARTISTIC TREATMENT OF THE NIMBUS.

UP to the present we have almost entirely confined our attention to the several forms the Nimbus has assumed in art; now, in concluding this branch of our subject, we may say a few words with reference to the colouring and the decorative treatments which have been followed by artists in its different renderings.

It will be remembered that in the course of our opening remarks on the Nimbus, we alluded to the very probable origin of this attribute in the sun—the source of life and light, and the object in nature which, above all others, uneducated humanity has in every age, and in almost all countries, looked upon with the greatest awe and reverence. Whether this supposition is correct or not, there can be no possible question that the Nimbus was first introduced in art—pagan art—with the view of conveying the idea of radiance or light encircling or emanating from the head of the person invested with it, and that when borrowed and modified by Christian artists it still retained much of its original signification is equally certain. Such being the case, one would suppose that





## FIRST FLOOR PLAN

TYNDALE HYDROPATHIC ESTABLISHMENT, HEXHAM, NORTHUMBERLAND.

artists would, with common consent, adopt the colouring and treatment best calculated to convey or express this idea of light and radiance. They have not, however, done so in a consistent manner, although such a treatment has in all periods been in use.

With reference to colour, yellow, white, and red would, of course, be accepted as covering, practically, everything in the nature of light, brilliant radiance, and fire; and so far as decorative art is concerned, gold, highly burnished, would take the place of all those colours. In Christian art, we observe such practices to have obtained, although not to the exclusion of other systems of colouring, as we shall presently show. No one at all familiar with the illuminated manuscripts of the Middle Ages can fail to remember the countless glittering gold Nimbi which adorn their miniatures, and which impart so brilliant an effect to the storied pages. In the manuscripts of the 14th and 15th centuries gold Nimbi, highly raised and burnished, were almost invariably used; and, accordingly, it is reasonable to surmise that in the higher class of mural paintings of those centuries gold was largely used for the Nimbi of sacred persons. In the illuminations of earlier epochs, we find gold Nimbi far more sparingly introduced; but when the metal is used in the ornamental portions of the manuscripts it is generally applied to the Nimbus. In early Byzantine manuscripts, large, plain, gold Nimbi are characteristic features; these are frequently edged with a narrow line of colour. In the West, the earliest examples of the Nimbus, met with in the Celtic and Anglo-Saxon manuscripts, are almost invariably in colours, frequently and appropriately in plain yellow. In the *Gospels of Mael Brith Mac Durnan*,

preserved in the Library of the Archbishop of Canterbury, at Lambeth, we find the curious portrait of St. John the Evangelist invested with a plain circular Nimbus of a bright yellow colour edged with white; whilst in the miniature of the Betrayal of Christ, of later date than the portrait just mentioned, Christ's head is invested with a plain red Nimbus; and the head of Judas has a white, St. Peter a green, and another apostle a red Nimbus. This manuscript was probably executed some time in the eighth century, but the miniature of the Betrayal is certainly about four centuries later. Turning now to the finest and most interesting Celtic manuscript in existence, the *Book of Kells*, preserved in the Library of Trinity College, Dublin, and attributed to the seventh century, we find some remarkable specimens of the Nimbus, both as regards colouring and surface enrichment. For instance, the Nimbus of the Virgin Mary has a bright pink field, powdered with small crosses and triplets of dots, in yellow and blue, and round the field is a border of tawny brown edged with white lines, and having a row of yellow dots in its centre. The artist here seems to convey the idea of a transparent field, for he has shown portions of the wings of two angels passing across the field and then behind the head. This effect is, so far as we are aware, unique, but it is not altogether happy. In the same manuscript, the Nimbus of the portrait of St. John, which accompanies his Gospel, is ornamented and coloured with all the minuteness and careful elaboration which characterise the early Celtic work; indeed, so elaborate is this Nimbus, that it is impossible to convey an idea of it in words.

In the "Royal Manuscript" preserved in the British Museum (marked 1 E 6), and

esteemed one of the finest monuments of Anglo-Saxon caligraphy and illumination in existence, we find the portrait of St. Mark delineated with a large, plain, circular Nimbus of a pale blue colour. In the celebrated Anglo-Saxon *Gospels of Lindisfarne* or *Durham Book*, the glory of the Cottonian Library, we find the portrait of St. Matthew invested with a very large, circular Nimbus, having a yellow field and a broad red border. These typical examples will suffice for our present purpose.

The stained glass of the Middle Ages furnishes the student of Christian Iconography with a fertile field for study. In the matter of the Nimbus, we find a series of treatments resembling very closely, in certain respects, those presented by illuminated manuscripts. Space will not permit us to treat the subject as presented by stained glass in anything approaching an exhaustive manner, and accordingly we may localise our remarks to the Nimbus as met with in the fine glass of the Cathedral of Bourges. In the large window in which are represented the scenes of the Creation specially relating to man, the Creator is invested with the tri-radiated Nimbus, having a white field and broad rays of red. In the scene, in the same window, in which God appears to Moses, in the burning bush, His head is invested with the same form of Nimbus, but with a yellow field and red rays. The two angels who appear along with the Deity have plain yellow Nimbi. In the scene of the creation of the angels, the Nimbus of the Almighty has red rays on a green field, whilst the angels have Nimbi of white, yellow, and red, all plain. In other windows we observe the Nimbus of our Lord with a light blue field and yellow rays; and the Nimbus of the Virgin with a red field surrounded by a narrow border of



white dots or pearls, whilst that of the infant Christ in her arms has a green field with yellow rays. The numerous other figures of apostles and saints depicted in the glass of this Cathedral are invested, for the most part, with unornamented Nimbi of blue and red. In the case of the figures of St. Peter and St. Paul a different treatment obtains: the Nimbus of the former has a light blue field, with a narrow white edging, and the Nimbus of the latter has a low-toned green field, with a narrow red edging.

From the examples above given, from both illuminated manuscripts and stained glass, it seems difficult to trace the adoption of any recognised system of colouring on the part of Western artists; on the contrary, one gathers the conviction that the colouring of the Nimbus was commonly held secondary in importance to the general tonal scheme of the subject. Contrast of colour was invariably secured; for instance, a red Nimbus was introduced when the ground colour of a window was blue, and a blue or green Nimbus when the ground was red. In other cases, when several heads appeared in one composition, the artist varied the colours of their Nimbi, probably to prevent confusion where the Nimbi overlapped, or to impart richness to the general effect when there was no overlapping or risk of confusion. We cannot help thinking that a Nimbus of white and yellow would in all cases have been equally effective, and certainly more correct from a symbolical point of view than either a dark blue or green one. For pictorial work, either in the pages of a book or on walls, panels, &c., the gold Nimbus, plain or rayed with ornament or appropriate colour, is unquestionably the most suitable and effective.

The Byzantine artists have from the earliest period of Christian art recognised the value and appropriate character of the gold Nimbus, and, accordingly, we find it almost to the exclusion of every other treatment in their ancient and late paintings. When their icons or figures are painted on gold grounds, and where there is every temptation to indulge in the display of rich colours, they have contented themselves by simply dividing the Nimbus from the plain gold ground by either raising its outlines and surface enrichments slightly, or defining its form by a system of sunk lines or dot work, executed, most probably, by a blunt tool whilst the *gesso* was in a wet state. In the *Guide to Painting* only one direction appears to be given for the rendering of the Nimbus. It is as follows:—

"How to make the Nimbus in Paintings.—When drawing an image, describe round the head a circle with a compass. Take a thread and dip it in thin gypsum in such a way that it will be well coated; then place it all round the Nimbus, following the line traced by the compass. You then move the compass round the inside of the circle described by this thread in order to make it regular. Use a fine thread for the Nimbi of small images, and a thicker one for those of large images. When the thread becomes fixed and dry add within it a coating of plaster if you wish the Nimbus to be in relief; then draw on it the ornament you wish to produce, and add some plaster on the foliage and on the threads in order that any desired prominence may be obtained. Lastly, scrape carefully the entire design, and gild it, finishing all off with a pointed bone. You will have to be particular in raising the ornaments to use different plaster to that which you employed at first; for this add a little ochre to give it a yellow colour."

These directions, although brief, are perfectly clear to anyone conversant with the decorative processes of the Mediæval artists. It is plain to see with what facility a Nimbus could be outlined and filled with elaborate and delicate designs by means of threads, of different sizes, dipped in a cream-like mix-

ture of fine lime and water; and also how easily many artistic patterns could be produced by filling in certain portions, between the threads, with plaster, left plain or manipulated by simple stamping or incising tools. Processes somewhat similar to that given in the *Guide to Painting* were commonly used by Western artists in their fresco and panel paintings, and always with satisfactory results.

There can be no doubt that the practice of richly ornamenting the field and border of the Nimbus originated with the Byzantine artists, and was conveyed by them into Italy. We observe their influence in this respect in the paintings of Cimabue, Duccio, Giotto, Orcagna, Simone Memmi, and Fra Angelico. Italian art, however, does not show any leaning to the extravagant treatment which is frequently found in the paintings of the Russian branch of the Greek Church; notably in those highly-prized representations of the Virgin and Child, which, beyond the faces, hands, and feet, are entirely covered with beaten plates of gold, studded with precious stones and pearls. Amongst such elaborate works are the "miraculous paintings" of the Virgin and Child of Vladimir (Russia) and Czenstochowa (Poland). We can quite easily understand the desire to impart the highest degree of richness, and to spare no expense in the embellishment of such ecclesiastical treasures as miracle-working pictures or images; and the application of elaborately-wrought discs of gold set with jewels, as Nimbi, to the heads of the sacred personages represented would naturally suggest itself. It is probable that this practice obtained to some extent in Western art; and that the valuable nature of the materials used led to the destruction of paintings so adorned; but no proof of this exists in connection with paintings. In goldsmiths' work the Nimbus, like the figure it invested, was very often of the precious metals ornamented with *repoussé*, enamelled, or set with precious stones. There is reason to believe that in some of the most costly and beautiful pieces of embroidery executed during the 13th and two following centuries, solid plates of gold or silver, gilded, were applied as Nimbi to the figures. These were probably enamelled in colours or studded with gems, so as to accord with the general effect of the silk and gold embroidery.

The Byzantine method of producing the Nimbus in relief was followed more or less closely by Middle-Age artists both in France and England, sometimes in the production of wall or panel paintings, and sometimes upon grounds of coloured glass. An examination of the 13th-century retable preserved in Westminster Abbey, and the series of figure subjects executed upon blue glass in the quatrefoils of the wall arcade in the Sainte-Chapelle, at Paris, will clearly show how such relief-work was executed by the workmen of the Middle Ages. The work in the Sainte-Chapelle is a restoration carried out in accordance with the original remains.

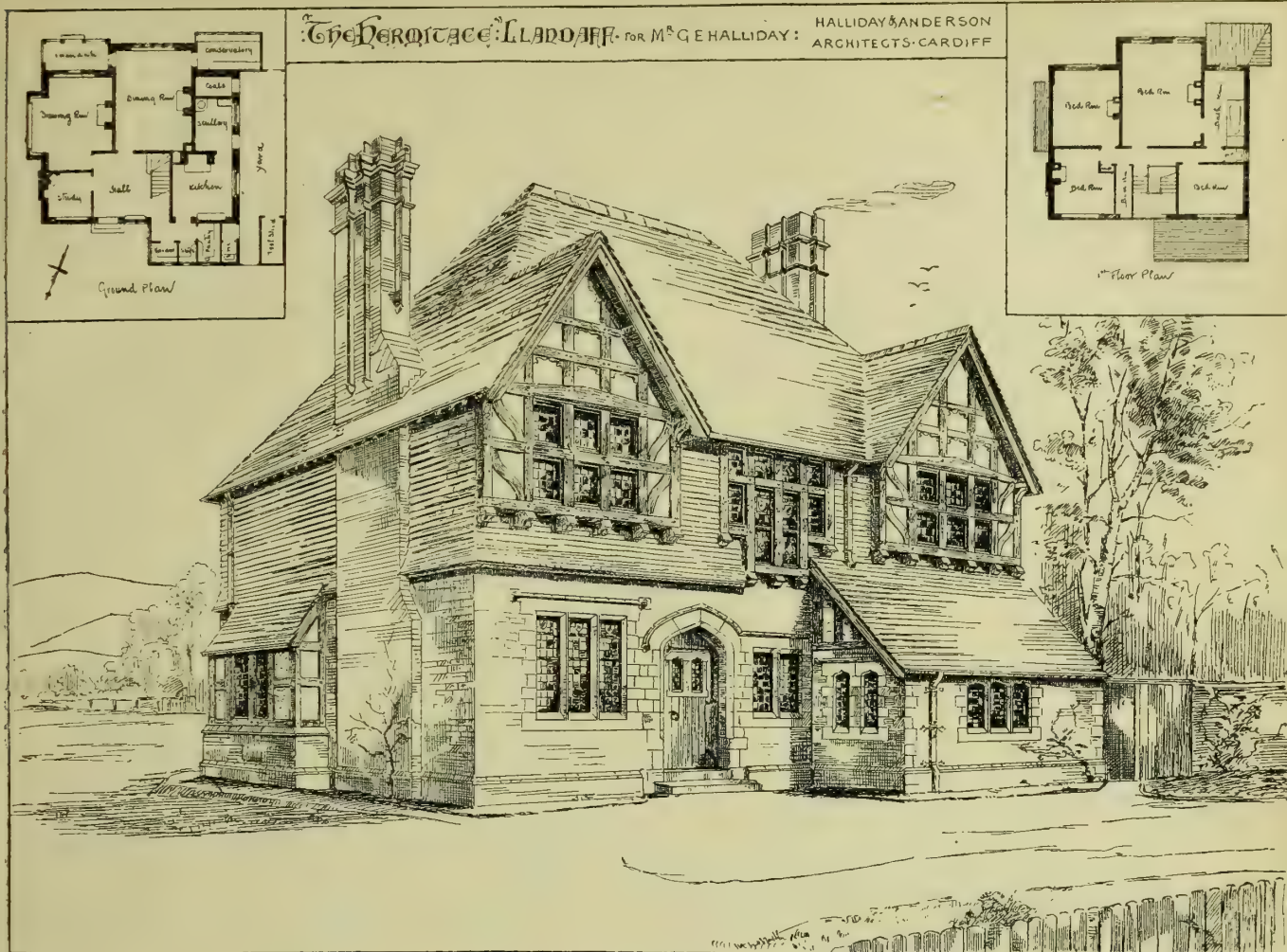
We may now return to the consideration of the colouring most appropriate for the Nimbus of sacred personages. It seems quite evident, mediæval precedent notwithstanding, that the correct colouring is that which best conveys the idea of radiance or light, and it is desirable that any appearance of opacity and weight should be avoided. In stained glass the desirable brilliancy and transparency can be easily obtained by the use of white and yellow only or with the sparing introduction of flame-like ruby and sky-blue. Beyond these we do not advise the artist to venture. At this point we may give some remarks by Didron on the subject. After drawing attention to the fact just commented on, that gold or yellow and white are the most appropriate as representative of light, he says:—"The colour of the Nimbus is occasionally symbolical—as is proved by the

black Nimbus—'nimbe en deuil'—given to the traitor Judas: still, in numerous instances, it is purely hierarchical. The form, therefore, of the Nimbus having been ingeniously rendered the vehicle of a strongly-marked hierarchical distinction, it seems appropriate that the intention of the form should be heightened and still further carried out by the colouring. To cite an example in illustration. The Public Library of Strasbourg contains a magnificent manuscript (*Hortus Deliciarum*), which, if tradition may be credited, was written and painted by Herrade, Abbess of the Convent of Sainte-Odile, in Alsace. It is an encyclopædia of all the sciences known and practised in the Middle Ages; and appears to be the precursor of the admirable work of Vincent de Beauvais, entitled *Speculum Universale*. Towards the conclusion of the manuscript is a painting of the celestial courts. Christ is delineated in the highest place, invested with a Nimbus and crown of gold; then come the nine orders of saints intermingled with angels, and disposed in the following order:—Virgins, apostles, martyrs, confessors, prophets, patriarchs, the chaste, the married, and the penitent. The four first orders, the most exalted of all, have the Nimbus of gold. Prophets and patriarchs, the saints of the Old Testament, and who knew the truth imperfectly only through the veil of metaphor and allegory, have a Nimbus of silver. The Nimbus of the chaste is red; that of the married green, and that of the penitents yellowish, and slightly tinted. Colour is evidently employed in these instances as a hierarchical distinction; it loses its brilliancy in proportion as it descends from a lofty to an inferior grade, after which point the title of saint is no longer awarded, and the persons represented are regarded only as ordinary mortals. It may be observed, in conclusion, that the hierarchy of colours might easily, in the ideas of the Middle Ages, have allied itself with symbolism. Gold is the most radiant of all colours, and it is here awarded to saints of the highest eminence.\* Silver, the colour of the moon, which, though inferior to the sun, is ever his constant attendant, stands next in rank; then red, or the colour of fire, the attribute of those who struggle against passion, which is inferior to the two metals, gold and silver, to the sun and moon, being merely an emanation from the former; then green, the colour of hope, appropriately assigned to married persons; lastly, a sort of yellow, an equivocal tint, partly white and partly yellow, a mixed colour given to the saints who had formerly been sinners, but, by prayer and penitence, had again become acceptable in the sight of God." In the above quotation allusion is made to the black Nimbus sometimes given to Judas, and we may mention one example. There is, or was some few years ago, a fresco painting of the Last Supper in the apse of one of the small churches in Athens, and in this painting all the apostles are invested with the Nimbus. The Nimbi of the good apostles are of bright colours, such as golden yellow, white, and light green; but the traitor Judas has a black Nimbus. Judas is an apostle, and is accordingly entitled to the attribute; but the artist has most distinctly marked his fallen state. The radiance has ceased to surround his head because his soul is darkened.

We have directed attention to the desirability of giving the Nimbus the effect of brightness and transparency and of avoiding any decided appearance of opacity and solidity, and it is just worth while noting the few words Didron says on this subject:—

\* The position of the Virgins in this highest rank is not in accordance with the canon of iconographic art. Probably, as the painter was a nun, she paid this special honour to her sex and vows. Such an irregularity as this is not uncommon.





"The Nimbus, up to the twelfth century, was in the form of a disc, but fine and attenuate. A very beautiful Greek manuscript\*, of the 10th century, preserved in the Bibliothèque Royale, at Paris, contains a personification of Night, under the form of a woman clad in black robes. Her head is encircled by a luminous and transparent Nimbus, through which, as through the glass of a telescope, the stars of heaven are discernible. Even if the Nimbus is not, in all cases, equally diaphanous, it is always so lightly traced as to suggest the idea of transparency, and of the artist's desire to figure it as a luminous atmosphere." The Nimbus of the Virgin in the miniature in the *Book of Kells*, already described, seems to clearly support Didron's supposition. Didron continues:—"During the 12th, 13th, and 14th centuries the Nimbus became more dense, narrower, and extending less beyond the head; it had till then been transparent, but now became opaque. It was nothing more thenceforth than a rude disc, a kind of plate, a sort of circular pillow painted or sculptured behind the head. It no longer, as in the preceding periods, permitted the sky and the surrounding landscape to be seen through it. It was an opaque wall, not transparent glass. Such is the Nimbus given to God, the saints, and angels, in the Cathedrals of Paris and Chartres."

Turning to mosaics, we find the Nimbus almost invariably with a field of gold, simply outlined by a rim of colour or by a narrow border. Throughout the numerous figure subjects which adorn the walls of the Cathedral of Monreale, near Palermo, the Nimbi of God and all the angels and saints are of gold, outlined by narrow rings of red, blue, or white. With the single exception of the Nimbus given to our Lord, every one has a plain gold field. The Nimbus of the

Creator, in the scenes of the Creation, is entirely unadorned; whilst that given to Christ, in the New Testament series, is invariably tri-radiated: the rays being also of gold, like the field, simply defined by thin lines of blue or red. In only a few cases are the rays patterned in any manner.

We may now close our remarks on the Nimbus, and enter upon the consideration of its extension, the Aureole.

(To be continued.)

#### HOUSE AT LLANDAFF.

THIS house has just been completed for Mr. G. E. Halliday, member of the firm of Halliday and Anderson, architects, of Cardiff, by whom the designs were prepared. Mr. John Haines, of Cardiff, was the contractor. The lower part of the house is built of Blackwood stone, with Bath stone dressings. The upper part and roof are covered with Broseley tiles.

#### MR. WATERHOUSE ON THE SHEFFIELD MUNICIPAL BUILDINGS COMPETITION.

THE annual distribution of prizes and medals place on Monday evening, when the President of the Institute, Mr. Alfred Waterhouse, R.A., delivered an address to the students and members. There was but a meagre attendance. We published the prize list, with some remarks on the designs submitted, in our last issue, p. 88. Mr. Waterhouse, having alluded to the recent untimely decease of Giuseppe Brentano, who gained the first prize in the Milan Cathedral competition, in which the President was an assessor, continued: I should be glad to think the day not far distant when competitions would be rarely, if ever, resorted to, except for works of the greatest national importance. I lament their frequency chiefly because of the enormous amount of unproductive labour they involve; but I do not see at present any tendency towards their diminu-

tion. This being so, it seems most important that those who are concerned as assessors in drawing up instructions should see that they are prepared not only to secure the best results from the promoter's point of view, but also to subserve as much as possible the interests of the profession—first, by saving the architects competing from all unnecessary work; and secondly, by not hampering competitors with vexatious restrictions, thus leaving them free to solve in their own way the problem put before them, without the feeling that if all the accommodation asked for is not exactly of a certain size, and every room of certain dimensions, they will be adjudged out of the competition. I would have every competitor put as nearly as may be in the position of an architect acting for a private client, who, though he may have suggested his requirements, would probably listen to his professional adviser if he gave good reasons for not literally adhering to them in all cases. I have endeavoured, when acting as assessor, to use my influence to keep the instructions thus elastic; but I have frequently had to regret that they had not been more so, when, after the designs themselves had come under review, some of general excellence had to be set aside for breach of conditions in some point of minor importance, on which the instructions unfortunately had been allowed to speak too decidedly. Having lately been engaged upon such a labour in the first or sketch competition for the Sheffield Municipal Buildings, I have thought that I could not do better than bring before you some special facts in connection with that competition, and some special considerations which may prove of use to some of my hearers. The instructions in this case were issued in August last, and invited certain drawings to  $\frac{1}{4}$  in. scale—viz., a plan of each floor of the proposed building, two cross sections, and one elevation. They were all to be on stretchers of the smallest possible size—2ft. by 1ft. 6in.—so as to be kept near the eye-line when hung on wall or screen, and easily handled for reference. No mottoes or distinguishing borders or devices were allowed. When a case containing a design was opened, it was numbered by a progressive number, and every drawing and docu-

\* Psalterium, Greek MS. No. 139.



ment within the case was marked for identification with the same number. Alternative schemes were ruled out of court altogether; for, as a rule, those architects whose exuberant imagination would induce them to send in alternative schemes, or to cover their plans with flaps showing how they could vary their arrangements, lose much by so doing. They may show themselves men of varied resources, but hardly architects convinced of the perfection of the scheme they propose for adoption; and the time expended in preparing two schemes would be much more profitably spent in perfecting one. I must, however, leave Sheffield for the moment, to tell you of one exception to this rule which I encountered many years ago. It was in a competition for the Bristol Assize Courts. I was asked by the Corporation to assist them in awarding the three prizes they had to dispense for the first, second, and third best designs among those sent in which agreed with their instructions. I had not much difficulty in discovering what, in my opinion, were the best of the series, nor of placing them in their order of merit; but, though they were in different types of Gothic—one round-arched, another 13th century, and the third of a later style—I was somewhat troubled in divining, and that for two reasons, that they were all by the same hand. At first it was difficult to be sure about it, as the lettering, mounting, and colouring of each set were entirely different, as well as the styles and disposition of plan; but they had all a vigorous character and individuality about them which appeared to flow from one and the same source of inspiration. Secondly, they all showed on their block plan an insignificant feature of an adjacent building, which I had myself observed in visiting the site, but which was not on the lithographed block plan given to each competitor, and which was omitted from all other designs in the room. When meeting the committee, therefore, for the purpose of making my report, I thought it desirable to inquire whether it would, in their opinion, be proper to give all three prizes to one competitor, provided the three designs best, according to the judgment of the assessor, should prove to be by one and the same hand. At first they said "No"; but one of the committee, who appeared to be conversant with affairs of the turf, remarked that if he entered three horses for a race, and they all three reached the winning-post before the rest of the field, there was no reason against his being accredited with the first three places; and that what was fair with horses was equally fair with architects' designs. This argument settled the point. I gave my award, the seals were broken, and the late gifted E. W. Godwin carried off all three premiums. What Edward Godwin might venture upon with success, it is not given to everybody to imitate with equal success—and as it was, this brilliant exploit did not secure him the execution of the work. Another competition was decided upon, in which, after what I have told you, I declined to act again as assessor. But to return to Sheffield. The accommodation there required was given in the form of a schedule, in which the sizes of rooms were only suggested sizes. A general compliance with the dimensions contained in this schedule was all that was insisted upon. The total number of superficial feet of suggested accommodation was also given at the end of the schedule, the blank columns of which had to be filled in by each competitor, to show at a glance what he was providing in each particular case, and also what was the total aggregate of his accommodation. This schedule so filled up has been of the greatest use in the examination and comparison of the different designs. No sooner were competitors fairly at work than numberless letters came from them on the subject of the instructions. They did not like being compelled to limit the amount of their work, and would have preferred sending in more drawings. Partners would have liked each to send in a separate design. Others wanted to make more elevations, and detailed drawings and perspective views. On the 9th October a copy of the printed replies to 121 questions was sent by the town clerk to everybody who had obtained instructions; after this we answered no further questions. Early in December the designs were sent in—178 in all. One of the competitors transgressed the instructions by applying a motto to his stretchers. Three or four other designs were sent in so unfinished as to be hardly in a condition to enter the lists; while a few—but very few—had not kept to the letter of the instructions in other points. On the whole, however, the

competition was a great success. An unusually large number of good, thoughtful designs were submitted, many of them in their elevation showing an excellent originality. Whether the shape of the site, verging towards a triangle, suggested it or not I cannot tell, but a considerable proportion of the plans bore too great a resemblance to a recent building erected for a nearly similar use, the details of which I have reason to be familiar with, and which in some cases has been followed even to its faults. One of the greatest faults in the Manchester Town Hall has always seemed to me the position of its council-chamber, overlooking as it does Albert-square, a position its architect thought unavoidable owing to the public hall occupying the centre of the site. But in Sheffield no public hall is required, and, therefore, that position is available for the council-chamber; as is also the south front, where there is a good light, and no thoroughfare for carriages. Perhaps owing to competitors not having been allowed to submit an elevation of the south front, which will in reality be very conspicuous even from a distance over the adjoining disused churchyard, many designs have a very jagged outline on plan on this side, and which their authors would find it very difficult to clothe with dignity, or even picturesqueness, were they asked for its elevation. The west front, an elevation of which was alone asked for in this competition, is about 200ft. in length. Across the adjacent street on the north is a new building (the Yorkshire Penny Bank and Albany Hotel) about 56ft. high, while on the south is the before-mentioned churchyard, with the church in its centre having a tower surmounted by a cupola. The height of the adjacent buildings does not appear to have been duly considered by every competitor; perhaps some had not visited the site; and no doubt the instructions suggesting the required accommodation almost exclusively on the ground or first floor had a good deal to do with the unfortunate fact that this, the principal front of the Municipal Buildings, was sometimes drawn with a parapet not more than 45ft. from the street level. The want of height in the horizontal features of the front has been, however, generally made up for either by a central tower on a line with the front, or by one set back behind the state apartments, which apartments naturally, in the greater portion of the designs, occupy this front (in the latter position the effect of such a tower would be in great measure lost), or by a tower at one or other extremity of the front. In some cases this lateral tower was placed, not on the western front at all, but facing the side street, just behind the principal apartments, where it would fulfil the useful function of interposing a break between the lofty state-rooms and the lower business offices which overlook the side street. These towers—many of them—show great ingenuity in their design. One had its square trunk surmounted by four gables, not subtending the whole width of each side, but long and slender, with a pierced arcaded parapet on either side in the style of Bishop Gower of St. David's, through which passed the high-pitched, slated, and hipped roof, filling in the angle spaces between the gables. The whole was surmounted by a well-designed *flèche*, and formed altogether a very original and elegant campanile. I dwelt on some of these Sheffield towers with tenderness, and, when they had to be put aside, with sincere regret. Many of them were of great beauty, and some few were entirely free from all suspicion of ever having served an ecclesiastical turn in another state of existence—in fact, they seemed quite original. In some few instances a dome took the place of a tower. When placed behind intervening roofs the dome suffers more than the tower; but in one or two cases the dome was brought to the front of the building. These massive features do not in all cases stand on sufficiently massive supports. We are most of us occasionally tempted or forced to use iron or steel more freely than is desirable in support of walls; but would it not be well to make a rule to dispense with any feature of a non-essential character in a monumental stone building whenever its introduction demands the use of iron girders and stanchions? Another frequent feature at Sheffield—like the tower, entirely optional, neither being mentioned in the instructions—was the *porte-cochère*. Among the 121 questions was one asking whether such a feature might be thrown out beyond the prescribed area

of the site. Leave to introduce this feature being in this way obtained, by far the greater part of the competitors availed themselves of it, but not generally to the improvement of their elevations. Why is it so difficult to make the *porte-cochère* marry with the elevation against which it is placed—unless, indeed, the same treatment (*e.g.*, arcading) is carried through the whole of the ground-floor of the front, and the *porte-cochère* also? By the great projection of the *porte-cochère* it hides half the front from view if seen in quick perspective; by its height and projection it seriously dwarfs the elevation; or, if to avoid these disadvantages it is kept very low, it looks very mean. Lastly, its peculiarities of construction involve too often a want of harmony between it and the building it serves. The best treatment I have seen is when the carriage-way goes behind an open arcade which supports an advancing central gable; and where the wings of the façade also advance there is much to be said for this arrangement. This, however, was not in favour in Sheffield, though in one case the carriage-way was carried within the walls of the building. The main entrance seemed to be in many cases intended to provide a pair of heavy outer doors only, without the usual inner swing-doors, two pairs of which, one within the other, are necessary to keep out the wind on a western front. At Sheffield I again observed what is but too general in most competitions, that the anxiety to get all the accommodation of the suggested dimensions into his plan has often prevented the competitor from observing that his rooms have been made of a proportion which would be intolerable if carried out—*e.g.*, 50 × 30 × 12.6 high. Also, many plans that looked at first most promising were found to have their walls over voids, the chimney-stacks on the lower story giving no account of themselves on the upper floors, and staircases shown on plan which could never have been constructed. Then, again, there is the great light question. In the majority of cases the use to which the light from small areas was put was the best possible—that is, it was used to give side light to corridors, which, as they were seldom more than 7 or 8ft. wide, could of course be lighted across their width much more easily than a room 30ft. from back to front could be. And yet in other designs there were such rooms only about 12.6 high, and with windows inconveniently low for a room of such a depth, which windows were expected to give light enough for important office-work in a smoky town, where the buildings opposite were lofty. When such windows look into a deep and narrow area, nothing but disappointment must be the result. The exceptional favour some competitors expect from the sun fills me with amazement. For the sake of light, air, general cheerfulness, and architectural effect, it is most desirable that internal areas in a building should be as few and as large as possible, instead of many and small. If one large area be adopted instead of many small ones, which has, of course, the advantage of securing a much better architectural effect, it may be difficult to light the corridors only from this source; but if thus deprived of a continuous side light by the interposition of rooms looking into the area the skilful designer will see that they are never dark, especially at their extremities, where they turn, or where there is a change of level—if, indeed, such be necessary in any case. With regard to staircases, it ought not to be necessary to say that a principal flight of stairs in such a building could hardly with propriety have steps less than 6ft. or 8ft. wide, with treads and risers 12in. by 6in., or, better, 12½in. or 13in. by 5½in.; and that until you are able to secure so much ease of going and space in a single staircase it would be folly to think of double flights in the same staircase, still less of twin stairs in all respects repeating each other. One dignified stairway, well considered, thoughtfully designed, with something unusual in it, if attainable without sacrifice of convenience in any way, is infinitely to be preferred to a couple of commonplace, steep, and cramped ascents. In one design additional charm had been secured to such a single principal stairway by allowing a business staircase to be separated from it merely by a stone screen or open arcade, so that one stair could be seen from the other, greatly adding to the effect of both. These business stairs also should be so placed as to be as accessible as possible from the offices in their neighbourhood, thus avoiding all needless traversing of corridors to reach them; and yet none should be



inserted not absolutely needed. In no case should a staircase run up in the ordinary width of a corridor, so reducing its width and the view down it, as is common in gaols, and there permissible for a strictly utilitarian reason. In municipal buildings in places where, as in Sheffield, there is no special residence for the chief magistrate, there will almost certainly be a suite of reception-rooms. These rooms and the approaches thereto should be so arranged as to be cut off from the business portion of the building when required without in any way interfering with access to the latter; further, such rooms as the council-chamber and the committee-rooms, while having approaches from the corridors of the reception suite, should invariably be accessible also from the departmental corridors for ordinary business purposes. The corridors of approach to these reception-rooms should be at no point cramped, especially at the head of the grand staircase, or, on crowded assemblies, an inconvenient block will necessarily ensue. Sanitary considerations make it imperative that closets should each be lighted with a separate window, and that the ante-room of approach should be lighted and ventilated otherwise than through the closets themselves. This is not always remembered by architects competing. One well-lighted and well-ventilated closet is worth half-a-dozen of the sort one so frequently sees on competition plans. It is also most desirable that such sanitary appliances should be kept as much as possible together both on plan and vertically. These are some of the points I thought most open to criticism in the Sheffield sketches, but there is no doubt that the design of the elevations especially is of a higher average than that which has distinguished some late competitions, as those of you will see who care to visit Sheffield, where all the designs are now on exhibition, except the six selected for the final competition, and those whose authors wished to withdraw them before the exhibition. Wherever the authors are so willing, their name is attached to their designs, and I trust that the publicity thus given to merit may be some compensation for the absence of other remuneration. In the case of the six, their sketches are to be hung side by side with their elaborated designs when complete; but in accordance with precedent, for which there is something to be said, they are not to be exhibited until the final competition is over. In many a competition the expenses to which our profession is put before any contract drawings are prepared for a building thus competed for would, if accurately calculated, be found to amount to many times the total of the successful candidate's commission. So that, except for the educational benefit to be derived from having designed and elaborated the details of some important building, there is to the body of the candidates very little profit to be gained from a system which most of us deplore, but do not at present see how to supersede.

A vote of thanks was heartily accorded the President, on the motion of Mr. J. MACVICAR ANDERSON, seconded by Mr. J. DOUGLAS, of Chester.

#### BOOKS RECEIVED.

*Mensuration made Easy, or the Decimal System* (Effingham, Wilson, and Co.), is the nineteenth edition of this useful little manual intended for the artisan and mechanic, though of much value to all persons. The applications of the decimal system to everyday requirements, to common fractions, to the solution of problems in mensuration, and mechanics, are explained, giving after each rule a worked-out example.—*The Insurance Year Book for 1890* (London: Simpkin, Marshall, Hamilton, Kent and Co.) is the fifth annual issue of this useful publication. The new features include two elaborate tables showing the reversionary and cash bonuses granted by various life offices, and sections dealing with mortgage and capital sum insurances.—*The Science of Building*, by E. WYNDHAM TARN, M.A., Architect; Third Edition revised and enlarged (London: Crosby Lockwood and Son), is one of the best expositions of the science of construction, or rather the mechanical principles involved in the architect's work, we know of, and is therefore well adapted for the student of architecture who wishes to master the theories of retaining walls, arches, and cupolas, timber and iron construction, hydraulics, and other subjects. As an elementary textbook, Mr. Tarn's treatise

ought to be placed in the hands of every pupil, as the mathematics supposed to be known are easily acquired. Mr. Tarn does not forget to acquaint the student with the principle of graphic statics or Maxwell's principle of stress diagrams, effect of corbelling out, the mode of estimating the stability of hammer-beam roofs, arched roofs. Shoring is also treated, and the manner of calculating the strength of shores and struts. The strength of stanchions and long columns, wrought-iron beams, and rolled joists, the effect of heat upon iron, are discussed, and the chapters on fluids, flow of water in pipes, strength of water pipes, the pressure of wind on buildings, ventilation, and lightning conductors are valuable additions to a work of this kind. The author has explained the principles of mechanics which are necessary to be known without undue prolixity. One of the additions to the present edition is the rules for finding the strength of iron stanchions and struts of different sections, angle, trough, cruciform, and H shapes. Professor Rankine's formula is given for this purpose. For a long pillar the formula is:

$$W = \frac{f \times A}{1 + a \left( \frac{l}{d} \right)^2}$$

where A is the sectional area of pillar, l the length, d the least diameter, all in inches; f and a quantities found by experiment for different materials, and W the breaking weight in tons. The value of f for cast-iron pillars is 35.7 tons, that of a =  $\frac{1}{400}$ , or .0025. For wrought iron, f = 16

and a =  $\frac{1}{3000}$ , or .00033. The greatest deflection

in a long pillar or stanchion consistent with safety is proportional directly to the square of the length, and inversely to the thickness. The friction of water in pipes, and tables of the strength of timber, stone, and steel, are also given in the revised edition. Perhaps a few more numerical examples would add to the value of the book amongst students and others. There is a commendable brevity in the treatment of the subjects.—*Ipswich Past and Present*, by W. VICK, Part XII., now before us, completes the first volume of these platinotype views in and about Ipswich. The subjects are the Ancient House, a Merchant's House in Fore-street, and a portion of the Ramparts, which, with the cottages behind, has now been removed to make way for a stay factory. Part XIII., beginning a second volume, contains views of St. Nicholas Church in 1865, showing the building's appearance prior to its restoration from Mr. E. F. Bisshopp's plans a few years since; the King's Head in King-street, removed to make way for Mr. Brightwen Binyon's Corn Exchange; and three 15th-century carved angle posts still remaining in Silent-street, Carr-street, and Foundation-street; the subject of the last-named being the fable of the cowed fox preaching to the geese. The photographs in Part XIV., include St. Margaret's Church in 1865, since restored from Mr. Frederick Barnes's plans; the plaster fronted Lion and Lamb Inn in Angel-lane, St. Clement's, with oriel, rich barge boards, and tiled roof, often the subject of sketches, and a view of the Orwell and Hog Highland from the Promenade.—*Alternative Elementary Physics*, by JOHN MILLS, of the Normal School of Science, illustrated (London: Chapman and Hall), is a useful little volume to meet the requirements of the Department of Science and Art for the "alternative course." The subject is treated to give the student a clear conception of the laws of sound, light, heat, magnetism, and electricity. Each of these is explained by an experiment of the simplest kind, and illustrated. For the object proposed, as well as for all students of elementary physics, the book of Mr. Mills will be found of service.—*Perspective Charts for Use in Class Teaching*, by HENRY A. JAMES, M.A. (London: Chapman and Hall), is a valuable aid to teaching perspective, which we cordially recommend both to instructors and pupils. The object of the author is to give an outline of a course of study introductory to perspective drawing which can be used as a table of reference. The beginner has generally a very vague notion of lines and planes. This chart facilitates the acquisition of this necessary knowledge. Thus the classes of lines, those perpendicular and inclined to the picture plane, are illustrated by diagrams on which their relative positions to the picture plane are shown. The

projections of lines on the plane are shown by other diagrams illustrating the perspective delineations of parallelepipeds, prisms, and other solids. Chart C illustrates the principle of finding "starting" and "vanishing points." The projection of points is similarly shown by reference to the two planes, the horizontal and the picture plane. If the student knows the starting point and vanishing point, the direction of a perspective line is assured. Constructions necessary for finding points of lines not otherwise determinable, such as horizontal, vertical, and slant lines, are lastly considered. Mr. James's charts illustrate by a few diagrams the fundamental laws of perspective, and ought to be in the hands of every student.—*Solutions to Questions of the May Examinations of the Science and Art Department, 1881 to 1886, Pure Mathematics, Stages I. and II.*, by THOMAS T. RANKIN, C.E. (London: Chapman and Hall), contains the working out of questions in arithmetic, geometry, algebra, and trigonometry. For students preparing for those and similar examinations, the solutions will be found a valuable aid.—*Handbook of Quantitative Analysis*, by JOHN MILLS and BARKER SMITH, of the Normal School of Science (London: Chapman and Hall), includes examples in quantitative operations, analysis of alloys, minerals, and ores, commercial products, water, gas, and organic analysis, &c. The requirements of students for the honours examinations on inorganic and organic chemistry have been mainly consulted. The book is well printed and illustrated.

#### BRICKMAKERS IN COUNCIL.

A WELL-ATTENDED meeting of brickmasters was held at Cannon-street Hotel on the 13th inst., at which the leading manufacturers of the various districts supplying the London market were present. The following resolutions were proposed, seconded, and unanimously passed:—

- (1) "That in the opinion of this meeting of brickmasters supplying the London market, an advance in the selling price of bricks is imperative to meet the increased cost of fuel and materials, and the advance given in the price of labour."
- (2) "That in the opinion of this meeting it would prove of great advantage to the industry if brickmasters supplying the London district would co-operate in dealing with the various labour questions as they arise."

#### CHIPS.

Daybrook Church, near Nottingham, has just been reopened. Among the fittings in the interior may be mentioned a handsome oak pulpit, prayer desk, and a lectern, all of which were intrusted to Messrs. Jones and Willis, of Birmingham and London, for execution.

A new Congregational church in Hawkshead-street, Southport, will be opened next week. The style is 13th century English, the only other example in the district being a newly-erected Wesleyan church in Southbank-road, Southport. Red brick has been used, with Longridge stone dressings, and the angle is marked by an octagonal tower surmounted by a stone spire. The interior consists of a broad nave, the side aisles being used as passages only. The seating is of pitchpine, and the accommodation for 450 persons. Messrs. W. Waddington and Son were the architects, and the cost, exclusive of boundary walls, has been £3,000.

The memorial stone of the Free Church at Airdrie, now being renovated at a cost of £3,000, was laid on Friday. Mr. A. McGregor Mitchell is the architect.

An infants' department just added to board schools in Sharrow-lane, Sheffield, was opened by Mr. Mundella, M.P., on Friday. It consists of an assembly room and three classrooms, separated by movable divisions, and provides accommodation for 330 infants. The amount of the contract is £1,800, including the cost of covered way and caretaker's house. The architect is Mr. C. J. Innocent, George-street, Sheffield, who designed the original schools, built two years since; and the contractors are Messrs. Ash, Son, and Biggin. Mr. J. Laidler has acted as clerk of the works.

During the past year Mr. Charles Bill has made considerable additions and improvements to Farley Hall, Cheadle, from designs by Messrs. Naylor and Sale, architects, Derby, including an enlargement of the drawing-room, several additional bedrooms, and the lighting of the hall and premises with the electric light. To celebrate the completion of the works, he gave a supper to the workmen at Farley on Saturday evening, when about 45 of them sat down to a substantial repast. Mr. Bill proposed the health of the men, coupling with it the name of Mr. John Fielding, builder, of Alton, the contractor.



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## OUR LITHOGRAPHIC ILLUSTRATIONS.

## DESIGN FOR CHURCH DECORATION, "ISAIAH."

This is a reproduction of a design in chalk by Mr. T. W. Bladen for a painted panel. It was exhibited at the "Arts and Crafts," and was awarded there, by the Society of Arts, a bronze medal and a £5 prize. "Isaiah" is represented as though speaking to the people one of the most characteristic texts from his Prophecies, "Comfort ye," &c., which is inscribed on a label behind. The background is divided up into smaller panels of conventional ornament.

## MANCHESTER PALACE OF VARIETIES.

This building (a double-page illustration of which we give) is now in course of erection at the corner of Oxford-street and Whitworth-street, Manchester. The theatre will have a frontage of 103ft. 6in. to Oxford-street and 139ft. 6in. to Whitworth-street. The auditorium will be 90ft. by 66ft., and the height from the pit floor to the spring of the dome will be 60ft. A novel feature in the planning of the auditorium is that it is placed parallel with the stage, and not in prolongation of it. The block of buildings will stand isolated from the surrounding property. The staircases, corridors, and all portions of the house used by the public will be fireproof. The dressing-rooms and stage are so arranged that each portion can be detached in case of fire. An interesting feature connected with the building is that access can be had from the main tier to the winter garden and foyer on the first floor, the dimensions of which are 66ft. by 27ft., and an outside loggia, connected therewith, fronts Oxford-street. It has been so designed that the stage will be viewed from both the foyer and winter garden. The fireproof staircases, circle tiers, doors, partitions, and auditorium and stage ceilings will be executed by the Titancrete Co., with their patent fireproof materials. The decorations will be carried out by Messrs. Heighway and Depree, of London. The building is being erected by Messrs. W. Brown and Son, contractors, from the designs of Messrs. Alfred Darbyshire, F.R.I.B.A., and F. Bennett Smith, the architects.

## THE RALEIGH TEMPERANCE HOTEL AND NEW POST OFFICE, DARTMOUTH.

This building, which is the first erected on the new embankment, is now completed and open for business. It is within fifty yards of the railway station, and is erected at the corner of two streets, which gives it the advantage of two frontages, one of 37ft., the other of 91ft. Four lofty stories rise to the height of 52ft. above the ground-floor level; the line of frontage is broken with gables, chimneys, and oriel windows; the walls are built to the height of the first floor with red bricks, the doors and windows having moulded Bath stone dressings; the projecting chimneys are carried on moulded brick corbels,

the shafts and tops are built in cement, the remainder of the building is half-timbered, the timber used being of red deal of solid proportions, all moulded and framed together. The overhanging upper stories have balconies the width of the building; the high-pointed gables have deep ornamental barge and finials. The spaces between the timbers are filled in with green and red slates cut to fancy patterns; those parts under windows have carved panels. The accommodation provided in the hotel consists of hall, two dining-rooms, five sitting-rooms, manager's room, billiard-room, thirteen bedrooms, four lavatories, bath-room, housemaids' room, kitchens, and offices. The staircases are constructed with pitch pine 4ft. wide, square sunk moulded newels with turned heads and pendants, moulded strings and turned balusters, and moulded mahogany handrail. The windows of sitting-rooms open on balconies constructed with wood, having turned newels and balusters. The floors are laid with coloured tiles. The post office, which forms a part of the hotel, has two entrances, and consists of main office 59ft. by 22ft., postmaster's private office, foreign mail office, two lavatories, &c. The fittings are of pitch pine. The whole of the works have been carried out under the personal superintendence of the architect, Mr. E. H. Back, of Dartmouth, the builders being Messrs. Row and Watts, of Dartmouth.

## BUILDING NEWS DESIGNING CLUB.—A CEMETERY CHAPEL.

See description on page 151.

## CHANCEL SCREEN, ABBEY DORE, NEAR HEREFORD.

The Cistercian Church of Abbey Dore, as it now stands, is but a fragmentary relic of the vast abbey which once stood on the banks of the Dore, in the Golden Valley, on the foundation laid by Robert de Ewias, in the days of Henry I. Those who wish to see a complete measured monograph of this beautiful example of pure English architecture will find it in Vols. VI. and VII. (1872-74) of the "Architectural Association Sketchbook," and in the Sessional Papers of the R.I.B.A. a lecture on the church was printed in the volume for 1851 by J. Clayton, the author of "Ancient Timber Edifices in England," published in 1846. The building, as it exists, includes the choir, 28ft. 3in. wide with a processional path, 17ft. 4in. wide, round the east end, forming three chapels, and divided into compartments by detached columns of much beauty supporting the groining of the ambulatory. The transepts have eastern aisles for chapels, but the nave has gone. The columns can be traced in the churchyard, showing that the nave, as usual in Cistercian churches, extended about twice as far as the choir. The Chapter House, Refectory, and other conventual buildings at Abbey Dore were placed on the south side of the church. The restorations of the building by Lord Scudamore in 1642, or some years earlier, are of considerable interest to us now, and he added the celebrated screen, pulpit, and pews of excellent Renaissance character. Mr. Wyatt Papworth gives the date of the screen as 1634, and suggests that it was designed by John Abel, who did Leominster Town Hall, Warwickshire, as well as Hereford Town Hall and Market House, built in 1622. We publish an excellent photograph of this remarkable screen by Messrs. Poulton and Son, of Lee, Kent. It is 25ft. 9in. wide, and stands east of the great crossing under the central tower. The whole composition is very spirited and curious, though coarse in its details. The immense altar slab of marble standing on three clusters of massive circular columns, about 2ft. high, is the original altar, and was restored to its ancient use by Lord Scudamore.

The question whether the Amalgamated Society Carpenters and Joiners is a Friendly Society or a Trade Union was argued on Saturday in the Queen's Bench Division. Acting on the assumption that it is an unregistered Friendly Society, the Middlebrough justices had made an order against the secretary of the Society to pay a sum claimed by a member. Mr. Baron Pollock and Mr. Justice Wills reversed that decision, holding that the Society is a Trade Union, over which the magistrates have no jurisdiction.

A new brewery is in course of erection near the Cobden Bridge, Bitterne, from plans and under the superintendence of Mr. E. Cooper Poole, of Southampton. Mr. John Witt, of Bitterne, is the builder.

## TWO PIECES OF FURNITURE AT THE NEW GALLERY.

THE Writing Cabinet by Messrs. Morris and Co., from the designs of Mr. Jack, though beautifully made, and not without a certain "go" and novelty in its style, cannot be spoken of in unmeasured praise. We think there is something heavy and ungainly about the lower portion, which gives it the appearance rather of a stand for the upper cabinet than as forming a part of a consistently designed whole. This is, no doubt, due to a great extent to the abrupt line where the slope of base commences. There is, moreover, something scrappy and incongruous about the decoration of this portion. The foliated work in the slope looks out of scale, and seems to have little reference to the space it occupies and still less to do with any other part; and the decoration of the legs does not strike us as being at all happy. The leaf-work ornamentation of the fall-front to upper part is more pleasing in design, and the execution of the inlay is remarkably good. We are far from discountenancing any endeavour to break away from the commonplace; but novelty does not necessarily mean eccentricity, and we must say that a piece of furniture, however original, should express somewhat the purpose for which it is intended.

The Settle, designed and painted by Mr. Walter Crane and made by Mr. Edward Miles, contains some good points, and certainly both by design and verse announces unmistakably the object for which it was made. The quaint lines in the panels are a happy idea, and the general outline and division of parts is good. We, however, take decided exception to the two pilasters in the back being finished with small projecting caps, which support nothing and end very unfortunately below the moulding; also to the way the curve of the two end brackets becomes, for part of its outline, completely lost in the line of the upright piece by becoming perfectly flush; this surely could not have been intended so. We would point out also that, except for children, the seat is too low for comfort; and the whole thing is rather dwarfish and slight, and does not promise to survive the wear and tear of many years. It is enamelled white, with painted ornamentation of a reddish brown.

## CHIPS.

The Dover Harbour Board have decided to expend £20,000 to further develop the docks, with a view to improve the capabilities of the port for trade purposes. Large warehouses, for the reception of grain and other cargoes, are to be erected on the quays.

A meeting of the Parisian artists who separated themselves from the old Artists' Association was held on Saturday night at the house of M. Meissonier, their chief, when the statutes were approved of a new society, which is to be called the Société Nationale des Beaux Arts.

The rural sanitary authority of Conway adopted, on Friday, a scheme by Mr. Farrington, C.E., for the sewerage of Penrhynside at an estimated cost of £850. At the same meeting it was reported that the Local Government Board had sanctioned a loan of £1,250 for sewerage and water purposes at Llysfaen. It was agreed that these works, for which Mr. Farrington is also the engineer, should be forthwith started.

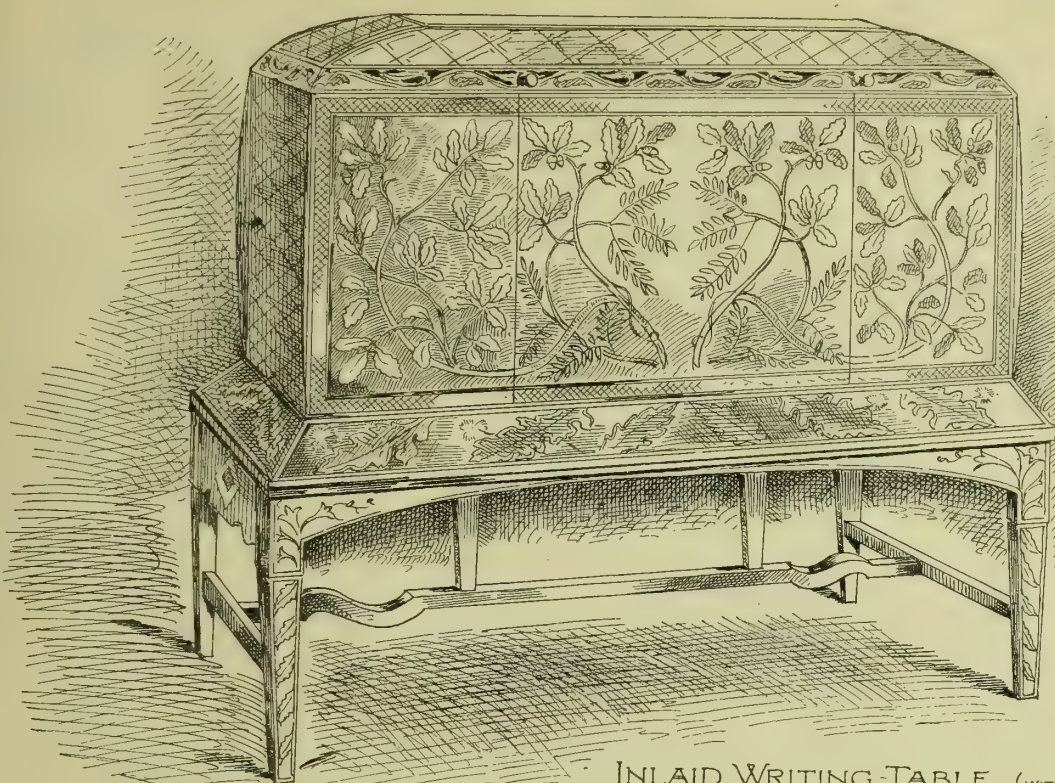
A special service was held on Friday at St. Cuthbert's Church, Newcastle-on-Tyne, to celebrate the completion of the reredos. It is in the form of a triptych, with folding doors, which are closed in penitential seasons. When open the pictures represent joyful events in the life of Christ, and when closed the mournful incidents. The central panels represent the institution of the Holy Communion and the Transfiguration. The carved work is in limetree wood, the canopies are gilded, and over all is a representation of the Crucifixion. The whole is designed by Mr. W. Searle Hicks, of Grainger-street, Newcastle.

The new ring of six bells which has been presented to St. Leonard's Church, Sandridge, Herts, as a memorial, at a cost of £180, was dedicated on Friday afternoon. The new bells were founded by Messrs. Warner and Sons, of Cripplegate, London, and the tenor weighs about 10cwt.

The Rhondda Valley and Swansea Bay Railway is approaching completion. The contractors are Messrs. Lucas and Aird, whose tender has just been accepted at £25,000 for the construction of a pier at the Mumbles, and a line of railway from that place to Swansea.

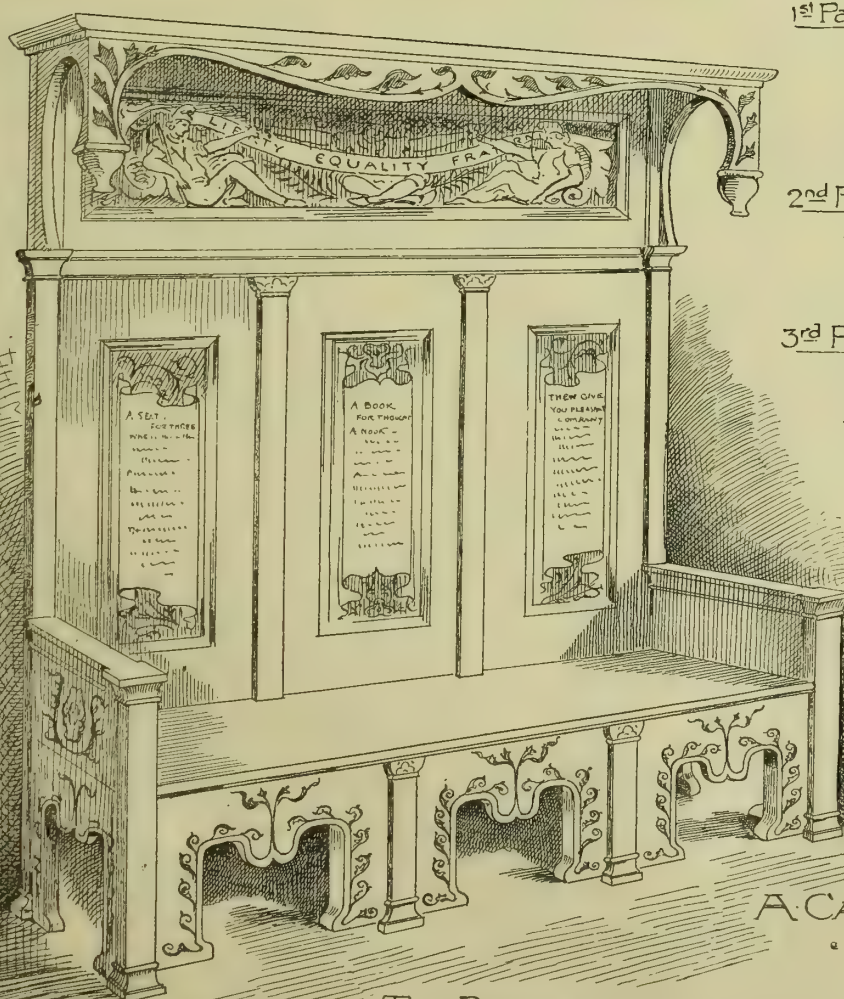
The new school of art in Warwick-street, Leamington, was formally opened on Saturday by the Countess of Warwick.





INLAID WRITING TABLE (WITH FALL DOWN FRONT)

DESIGNED BY G JACK EXECUTED BY MORRIS & CO



1<sup>st</sup> Panel

A Seat for Three,  
Where Host & Guest  
May side by side  
Pass toast or Jest;  
And be their number two or three  
With elbow-room & Liberty  
What need to wander East or West?

2<sup>nd</sup> Panel

A Book for thought,  
A Nook for rest.  
And meet for fasting or for fest  
In fair & equal parts to be  
A Seat for Three.

3<sup>rd</sup> Panel

Then give you pleasant company,  
For youth or elder shady tree,  
A roof for Council or Sequest;  
A corner in a homely nest;  
Free Equal & Fraternally,  
A Seat for Three.

A CANOPIED SETTLE  
BY WALTER CRANE

TWO PIECES OF FURNITURE AT THE NEW GALLERY  
REGENT ST (ARTS & CRAFTS EXHIBITION)



## WAYSIDE NOTES.

THE vast amount of unremunerative labour elicited from architects by the Sheffield competition has evidently left a deep impression upon the mind of the assessor. The Alpha and Omega of the address which Mr. Waterhouse delivered at the Institute on Monday evening last had for their burden an earnest hopefulness—unmistakably the outcome of feeling—that a day may dawn when the vitality of the architectural profession may not be so insidiously sapped by the system of competing that pertains at the present time. And one can scarcely exhibit surprise that an experienced assessor should thus deplore the wastefulness of competitions. Having, previous to an inspection of the drawings, his own notion as to due relation between labour and hire in respect to the proposed work, and coming suddenly upon broad acres of careful design and draughtsmanship, such a one must grieve at the sight presented, and moralise thereon in no happy strain. An assessor, moreover, is the only person connected with a competition who obtains a comprehensive idea of the amount of work involved in the preparation of the designs and drawings. Furthermore, one who, like Mr. Waterhouse, goes from competition to competition in the capacity of a judge must have a memory of these broad acres of draughtsmanship that does not trouble the conscience of the ordinary individual, and it is scarcely a marvel that he should express fervent hopes that a brighter day may dawn, when gratuitous designing of this kind shall be unknown.

Mr. Waterhouse's condemnation of alternative schemes in competition work is to be noted as confirming an opinion often expressed in these columns, that alternative scheming is a sure and certain evidence of a vacillating disposition, unformed opinions, and an ineffectual grasp of the problem at issue. And, says the old proverb, "Between two stools we come to the ground." It would show ingenuity on the part of an architect if he arranged his stretchers so that by pulling strings the drawings would suddenly flap out, like a Christmas-card, and exhibit various alternative designs: thus, pull the top string, and we have "Design for proposed town hall, Pettytweddleum"; pull bottom string, and we have "Ditto, do., without tower"; and pull side strings, and we have respectively, "Ditto, do., showing the same in the Neo-Greek style," and "in the Anglo-Low-German-Queen-Anno-Norman-Shaw-Ernest-George-O! style of architecture"! It would be ingenious, but not likely to obtain for its inventor the coveted job of building the P. Town Hall.

I was sorry to hear from a friend who attended the address to students that the attendance was very poor, both on the part of members and students, and there was little enthusiasm at the meeting. I do not know whether there were, as on the last prize-distribution at the Institute, many absentees amongst the prize-winners; but one might have thought common courtesy and the demands of ordinary etiquette would have prevented a similar occurrence on this occasion. Had it been generally known that the President of the R.I.B.A. was to address the meeting on the subject of competitions, I don't think that there would have been standing-room in the Council-chamber, unless the bulk of the profession are remarkable for sloth and inertness, and too apathetic to take advantage of any opportunities that may open to them. Young architects do not get a chance of hearing practical advice on competing and competitions from Mr. Waterhouse every day of their lives, or on any architectural matter, so far as that goes. But, judging from my friend's description of the meeting, these gentlemen are so busily engaged that they could not find time to attend. I am glad things are so prosperous.

For my own part I have enjoyed reading the address *in extenso*. Mr. Waterhouse said, in conclusion, that he had been addressing students; but in his remarks there was a kind of practical information for any architect. Perhaps that *bête noire*, the porte-cochère, did not get any nearer being killed than heretofore; but the hints given on its design are the result of long experience. If the remarks as to the absurd binding down of competitors to ridiculous restrictions have some weight with the inaugurators of competitions, we shall all be

glad. It would indeed be well if, instead of seeking to instruct, corporate bodies and other would-be clients would endeavour to obtain ideas from architects. The folly of specifying the exact sizes of insignificant private apartments, I place on a level with that of the German students who work out theoretically calculations for machinery, &c., to three places of decimals, a process which the most insignificant inadvertence in practice renders a mere vanity.

Most unreasonable of the many unreasonable wants in connection with the architecture of to-day is the desire for a *new style*. It is a desire the futility of which, one would have thought, was amply demonstrated by thoughtful lecturers and writers years and years ago. The hankering, however, after this "new style" breaks out afresh now and again. I do not think that Mr. Alfred Darbyshire really wants this new style; but, whether he does or not, one might be pardoned for supposing that the former is the correct interpretation of a sentiment expressed in his recent lecture at Manchester. Anyhow, the cry was taken up by the lay Press. A new style! a new style! My kingdom for a new style!! If anyone came to me for a new style I would supply him with one—he wouldn't want another! I would begin building with a cornice and carry above a reversed order of columns, finishing with the plinth, turning every moulding inside out, and do, in fact, anything novel and unlike any decent bit of architecture in the old or new world, either now existing or that "used to was." Any client dissatisfied with his architect, and desiring a brand new style, can apply to the ancient "Goth" for the same, which will be supplied on the shortest notice. No money, however, returned if not approved, as it is believed that the new style might not turn out such a boon and a blessing as some imagine.

"The fact is," said the *Globe* last week, when commenting on Mr. Darbyshire's lecture, "the fact is that we are still in want of a distinctively modern style of architecture." Quite the contrary! The fact is, as many know, we have too much in our latter-day architecture that is distinctively modern in style.

At the root of this "new style" fallacy is a failure to perceive that new style is a *growth*—a slow development, insensible in time present, but appreciable in a retrospect over centuries. No one conversant with a mere outline of architectural history will believe that a new style can be evolved either by an effort of genius or by a "fortuitous concurrence of atoms"—in other words, by chance. Many persons, however, do imagine that a new style of architecture can be made like a new hat, or invented, as one would invent a patent bottle-stopper. It should be plain to those with the smallest knowledge of what constitutes true architecture that attempts in this direction only produce abortions. The most superficial analysis of a design for a new style in this manner would show that it was composed of an incongruous piling-up of forms and features, common to as many different styles as were familiar to the designer.

Perhaps the nearest solution of this new-style problem—if one can pretend to solve a problem which, from its nature, is evidently resolvable only by time itself—would be to get 10,000 men worthy of the name of architects to assist in designing a certain building to fulfil certain stated conditions, each architect binding himself to use only such material as is most adapted to the purpose, and in harmony with the requirements of the age, and undertaking to employ no method of construction, or manner of design, for the sake of mere association. Furthermore, they must employ no method of ornamentation but such as is, first, of intrinsic beauty, and, secondly, adapted to its peculiar purpose. If one of the cravers after a new style could find 10,000 men of the description given, and would employ them to consider this one building for, say, ten years, he might, by the expiration of the year 1899, become the proud possessor of a structure that should be as nearly as possible in the true architectural style of the 20th century. Whether he would think well of the style would remain to be seen.

I have no faith in the practical style-evolver, who says a church should be built of iron and cement-concrete. Nor, on the other hand, do I

believe that mere outward and visible form has anything to do with true style, which is rather dependent upon an inward and spiritual grace. The former is engineering as distinct from that architecture which "proposes an effect on the human mind, not merely a service to the human frame"; and as regards the limitation of old forms and features, I have long held the opinion that the true architectural style of to-day is one not based upon any single style of the past, however good, but upon a study of old styles. Certain it is that if anything has been done, and is to be done, to formulate a Victorian style of architecture, it has been, and will only be, by a catholic study—in a spirit that appreciates the true and beautiful, and abhors the false and debased—of all past styles. GOTH.

## CHIPS.

A new peal of six bells, cast and hung by Messrs. Warner and Son, of 6, Cripplegate, were dedicated at Holy Trinity Church, Bicton, Salop, last week.

An extension of the schools connected with the David Thomas Memorial Church, Bishopston, Bristol, is about to be carried out at an expenditure of £1,300. The new hall will have an open-timbered roof, and will accommodate 600 persons. On the ground floor, and approached by side gallery, there will be two tiers of class rooms. The end gallery will seat about 100, and the space underneath will be inclosed with revolving shutters. The large hall will be fitted with a rostrum. The work will be of a simple Gothic type, agreeing with the church building. The contract has been taken by Messrs. R. Wilkins and Son, of Surrey-street, Bristol, for £1,185; the work will be executed under the superintendence of Mr. Alfred Harford, Broad-street, Bristol.

The banqueting hall of Carlisle Castle, which was used as military orderly-rooms and clothing depot, was on Saturday destroyed by fire, which originated at the pay office. A large quantity of regimental stores and records and the colours of one of the Militia regiments were burned. The hall thus gutted formed part of an Edwardian palace in which Parliaments were held in the reign of Edward I., and communicated with the chapel and tower in which Mary Queen of Scots resided or was imprisoned during her sojourn in Carlisle.

The windows of the north transept at St. Andrew's Church, Conover, which have been filled with stained glass of a character to accord with the Norman period of the stonework, were recently dedicated. The left-hand window contains, in a medallion form, the figure of St. Peter, with his keys; and the other the figure of St. Andrew, with his Saltire cross.

The monthly meeting of the Bristol Society of Architects was held at the Fine Arts Academy, Clifton, on Monday week. Mr. Thomas S. Pope in the chair. A paper, entitled "Architect, Client, and Builder," was read by Mr. W. E. Jones, followed by a discussion, which was joined in by the chairman and Messrs. W. L. Bernard (hon. sec.), W. V. Gough, J. H. La Trobe, J. R. Lysaght, J. F. Wood (Fellows), and Messrs. H. W. Harding and W. S. Skinner (Associates).

The design by Messrs. J. Powell and Sons, of the Whitefriars Glass Works, London, has been accepted for the stained-glass windows to be placed in the Abbey Church, Romsey, as a memorial to the late Lord Mount-Temple. The windows, two in number, are each of three lights, and occupy the east end of the church. The outlay will be £800.

The Roman Catholic schools of St. Mungo, Glebe-street, Glasgow, have just been rebuilt on the site of older ones at a cost of £4,000. The schools are two stories in height, and accommodate 800 boys. The walling facing the streets is of red Dumfriesshire stone. Mr. Devlin, the contractor, has carried out the work under the superintendence of Brother John, of the Passionist Community of St. Mungo's. The plans were prepared by the Rev. Osmund Cooke, who had been an architect, and now is a Passionist stationed in Paris.

On Tuesday week a lecture under the auspices of the South Wales Art Society and Sketching Club was given at the society's club-room by Mr. W. Rönnfeldt (president of the Cardiff Naturalists' Society), on South Wales scenery. Mr. T. H. Thomas presided.

The scaffolding is being struck from the front of the new municipal buildings at Newcastle-under-Lyme, now in course of erection from designs by Messrs. Sugden and Blood and Messrs. Chapman and Snape, joint architects. Four emblematic statues, carved by Mr. J. J. Milson, of Manchester, from designs by Mr. B. Creswick, of Birmingham, have just been placed in position on the Iron Market front of the buildings; they are over life-size, carved in red Corsehill stone, and represent painting, music, literature, and architecture.



## "BUILDING NEWS" DESIGNING CLUB.

## A CEMETERY CHAPEL.

WE have chosen the designs of "Fiddler," "The Red Rover," and "Tyne" for the first, second, and third places in this competition. The following is the text of the instructions issued to members:—"A cemetery chapel for a Church of England burial-ground, with lodge for sexton adjoining. The building is to stand at the entrance of the graveyard by the side of the main central roadway into the grounds, and the entrance gates are to form part of the scheme. The chapel is to be 30ft. long inside, exclusive of altar space, which may be in a small chancel or apse. Width of chapel, 20ft. inside. Provide a vestry 10ft. square, with fireplace. At the west end over the entrance a small gallery, affording space for a choir of three men and three boys, as well as a small organ, is to be included, with an external stair turret leading to same from vestry. Put a simple bell turret; chapel to be warmed with hot-water radiators. Lodge to comprise sitting-room (14 by 12), kitchen (10 by 12), scullery and offices, and two bedrooms. Style Geometrical Gothic, materials stone and brick, roof tiles, pair of gates of wood hung on stone piers 10ft. apart. Put a small gate 4ft. wide on one side next lodge. Scale 8ft. to the inch. Plans, two elevations, section, and sketch." The first two designs are illustrated to-day, and it will thus be seen how the winners in the contest have worked out the problem. We are perfectly well aware that neither of their designs are perfect, and it is not unlikely that those who have friends amongst the competitors may think other designs in which they are interested more worthy of selection. This is inevitable in every competition, and correspondents are reminded that we have had the advantage of seeing all the plans sent in, every one of which has had due consideration.

"Fiddler" overstates the importance of his design in scale and proportions by the perspective sketch which figures in the centre of his sheet, making it look too big and too much like a church. Tricks of this kind are too evident to be actually misleading to technical readers and judges; but it is quite possible that the author himself may be deceived by his own figment. The design in execution would not look half the size indicated by this sketch, and the fault which we note chiefly in the design is intensified by this perspective. The idea embodied in the facade seems to belong to a much larger structure, the narthex-like porch and the turret staircase tower leading on to the transept, occupied as a vestry, make up a composition better adapted to the west front of an ordinary church, though by reason of the breadth and simplicity of the parts introduced, "Fiddler" has avoided the faults conspicuous in other less dignified designs, for, at any rate, his chapel is neither fussy nor toy-like in general effect. In point of fact there are few buildings of any class throughout the country more unsatisfactory in their design than cemetery chapels. They are either cold, bald, and hideous, or overdone with trivial details and meaningless features as florid as you like, generally done in Bath stone and Kentish rag, while for the style "Gothic" is not the word for it. "Fiddler's" design avoids these failings, and gives us an equally unassuming cottage or lodge; and who shall describe the horrors to be seen any day in the way of lodges to cemeteries? In his plan "Fiddler" has overlooked one point, and that is the altar, for in a Church of England burial chapel an altar is necessary, and the reading pew for the priest should be placed on one side if such a convenience is provided. A sacrum without an altar is meaningless; but it is only an oversight in detail of which we complain, seeing that the chancel with an altar space is provided. The way to the vestry cuts into the seating room needlessly—a fault avoided by "Red Rover." The direct entrance is good, and the tier space seems suitable. No plan of the gallery is given. The lodge plan is fairly convenient, though the doors open awkwardly on to the fireplaces both upstairs and down. The entrance gates and piers are simple and in keeping with the buildings. The position of the hot-water radiators is not indicated on the chapel plan, as they should have been. "The Red Rover" draws his studies in too rough and patchy a style, making them look flash and overdone. We have quieted them down in the little reproduction given herewith. He will understand what we mean, and will

see how unsatisfactory the perspective sketch is. The chapel itself is more ordinary, and the apse is a mistake, tending to cut up a small building without materially increasing its utility. The arcaded interior narthex under the gallery is too ambitious, and the porch is out of proportion to the main building. The staircase lights in the turret are too numerous for exterior effect, and if light be insisted on as the reason, then it would have been better to put a row of lights in one place horizontally instead of raking them up in this fashion on every face. The turret itself is too conspicuous, and we prefer a simpler treatment for the bell. The side windows to the chapel are pretty, but do not accord with lancet lights at the west end. "Tyne" bids fair to be a somewhat original designer, and clearly has endeavoured to avoid the stereotyped style of Burial Board architecture. He falls, however, into other errors almost equally objectionable in his desire to secure a freshness of feature. Thus two ugly thin and deeply projecting buttresses break forward from his western gable over the vestibule and gallery above it, and support a bell between them on a beam 6ft. or so long. In elevation the effect is not so bad, but in perspective the crudity of the device is most conspicuous. The high-shouldered gallery walls, too, with the lights crowded up to the ceiling level, are very ugly. As to the plan, no space is left for the tier inside the chapel, and the doors are so badly placed as to render it almost impossible to get a body in. Outside the chapel a sort of mortuary is provided, marked "Space for Bier," so that we presume "Tyne" intends that the body is to stand in this adjacent building while the funeral service is going on inside the chapel—a proposal which, of course, is quite contrary to the Church of England form of service. The semicircular arch to the bay of the lodge is very ugly, and the perspective sketch is not good. The bathroom in the lodge was not asked for, and it is absurdly narrow and inconvenient. "Wallaby" adopts a fairly pure type of architecture, though the horseshoe-like American semicircular arches to the lodge front are out of keeping and scale with the rest of the work. His plan, notwithstanding the ugly apse, which, to make it worse, is stone-groined, may be said to fairly answer its purpose, though in points of detail grave faults can be found, as, for example, the ladder-way down from the gallery, or the reckless manner in which the living-room and kitchen doors are arranged. There are five doors in the kitchen, two windows, and a fireplace. The parlour is nearly as bad. This competitor takes great pains with his drawings, and will improve if he goes on trying, for he is a good worker. Our remark may seem somewhat invidious, seeing that so many contributors are equally worthy of praise, and we wish to acknowledge industry all round. "Myth" deserves commendation, but he is too fond of florid detail, and his carriage porch, necessarily a big feature, is made needlessly large and out of scale with the rest of the building by the great solid gable over the grand arch. The chapel plan is very singular, being L-shaped, or rather square, with the altar and "chancel"—called here an "apse"—carried out on one side in the far angle. The arrangement is radically wrong, and anything but effective. A perspective is wanting again. "North Star" is always worthy of note, but never so good as we could wish, which is the more to be regretted because there is so much merit in his work. The architectural features of his design this time look thin, an effect heightened by his drawings, and the importance of the chapel is lessened by the altar space being carried out like a miniature chancel, instead of keeping one ridge line for the roof and width for the plan from end to end. The verandah along the front is not a bad feature, and the lodge rooms are contrived all on one floor. His architecture is fairly good, but a section is wanting to show how the gallery and roof were to have been managed. "Niger" is next best, but he intends to leave the corpse in the porch during the service, and shows it so, providing no room inside. The first of his thoughts seem to have been devoted to the gallery, and how to invent a solid-looking and fetching sort of front to it, dodging in a central pier in the plan, and squeezing in the staircase up to it outside under the buttress, which helps to carry the bell turret. He forgets to show where the organ is to stand, and avoids points of this kind by giving no gallery plan. "Syak" seems to deserve the next position; but we do not like his plan with two doorways—they are so

meaningless and so inconvenient, while very little space is left for the coffin to stand in. The vestry door is too public, and the stair turret up to the gallery is too small. The general effect of this design is not a happy one. "West Anglian" has a much more practical plan, which he shows with care, sparing no pains to do it justice, view, block plan, and all complete. These are important points of merit in his favour. We do not like his architecture; it is so all-overish, no breadth anywhere, though we are bound to say that the building is quite equal to the general run of such buildings. "Bunya" in not a few points corresponds with the last-named, though he gives us an apsidal-ended chapel, and crowds up the space with seats for mourners, so that the front row would look on to the coffin, leaving no room whatever for the bearers. On the whole, he is not so good as "West Anglian," but his perspective view is better perhaps. "Signum" delights in florid work, and draws it out in brown without much care, his tracery being very faulty. There is something, however, in his design which shows ability and ingenuity, which on another occasion may be more successful. "Streona" has greatly improved if this be the same competitor as before has used this motto. His plan is practical, and his section is good, with the radiators shown on in the former, and a boiler space under the vestry. The exterior treatment affords little to complain of, even if we are unable to describe it as very good—indeed, if the truth must be told, it savours of the commonplace. "A. G." in a circle deserves the same remark; but his plan is not so good as the last. The door at the side and the regulation chancel spoil it, while the relative positions of the lodge and the chapel are unfortunate, and look crowded without any reason. The perspective is nearly a good drawing, and it shows care. "Nox" draws in a gingerly fashion and with a flash effect. His elevation would look better in execution, though we cannot say we admire it. The plan is not so bad, in spite of points of detail wanting in study. There is no w.c. for the use of the chaplain, which clearly is an oversight. "Red Rover" failed, too, in this respect. "Lord G." has a curious notion of the fitness of things, and this design is quite "Grimthorpean" by reason of its incongruity. The wheel-like windows along the side are ugly, and the extinguisher-capped bell-turret is also ugly, likewise the semicircular apse. The gallery front is not objectionable, and the drawings show considerable merit, as well as an endeavour to draw with spirit, if not good taste. "Dr. Jekyll" makes his sheets too inky, and back-lines too much. His chapel would be very dark with no side windows: otherwise the plan is rather a good one. The lodge plan is very cramped and poor. The bird's-eye view of the chapel is too big, though it is evident "Dr. J." will do better another time. "Renaissance" brings us down to the regulation sort of cemetery chapel, with arcaded rows of lights, low side windows, lofty high-pitched roofs, apsidal chancels, and pierced buttresses. Why not study a better type of work than this? The author ought to do more satisfactory work, for his view is rather well delineated. "Multum in Parvo" does strike out with the idea evidently of arriving at something fresh, but he fails in fitness and proportion. The fenestration of the chapel is very ungainly and ill-arranged. "So and So" intends also to do a new thing, and in a way succeeds. For the present we must ask him to try again. "Coaly Tyne" draws his perspective badly: careless is not the word, but his plan shows originality and some study. "Skull and Cross Bones" sends rather a pleasing south elevation with an archway porch connecting the chapel with the lodge, and a very grand castle-like gateway outside with piers like keep towers. The plan is not better nor worse than many more. "I Try": we are sure of it; only try again. "Sarchedon" gives us a fairly good group, but the chapel looks pinched up and over-windowed. The front elevation is the best. "K. W. T." is the next design, with a plan over which some care has been taken, the radiators being shown, and the chapel is seated properly. The little chancel is ugly enough, and we think the vestry very cramped. "Argus" follows with a neatly-drawn sheet, having a chapel with too many doors at the west end. The architecture shown is fairly good of its kind, which we cannot say of the design by "Glaucus," whose plan is equally poor. The other designs



are thus arranged in order of merit:—"Menelaus," "Paul Jones," "Coverac," "Y" in a circle, "Dot," "First Attempt," "A" in a circle, "Mac," "Vyrawy," "Country Bumpkin," "Reference," "Q. E. D.," and "Corinthian."

#### THE EXAMINATION IN ARCHITECTURE.

THE fortnightly meeting of the Architectural Association was held on Friday evening, Mr. Leonard Stokes, the President, in the chair.

An exhaustive paper was read by Mr. Arthur Cates, Vice-President R.I.B.A., on "Examination in Architecture in the Past, the Present, and the Future," as an introduction to a discussion on the subject. Mr. Cates explained that much discussion on the desirability or otherwise of establishing a diploma for architects took place in France in 1854 and 1855, and the subject was brought before the members of the A.A. in the latter year by the late Mr. J. H. Chamberlain, of Birmingham, and Mr. Alfred Bailey, the president for that year. A memorial from the Association was subsequently presented to the Royal Institute of British Architects asking for the "establishment of an examination which should eventually serve as the basis for the issue of such a diploma as should certify that the holder thereof was fully qualified to practise as an architect." It was not, however, till June, 1860, that the Institute decided in favour of the establishment of a voluntary examination, and this came into force two years later. This voluntary examination was in force for 19 years—from the beginning of 1863 till 1881, during which period 47 candidates passed the preliminary examination, 37 the proficiency examination, and 3—R. R. Baynes, R. Phené Spiers, and T. H. Watson—the Class of Distinction. This voluntary examination did not satisfy the requirements of the day, and gradually failed to command any interest in the student class. In 1877 the R.I.B.A. decided that after May, 1881, all persons elected as Associates should be required to pass an examination before their election. Since March, 1882, fourteen qualifying examinations had been held in London, two in Manchester, and one each in Glasgow, Leeds, and Liverpool—nineteen examinations in all. At these examinations 310 candidates had passed, and twenty-three relegated to their studies were entitled to come up again without further payment. Thus, in nineteen years (1863-81) the number of candidates passed in the voluntary examination class of proficiency was only thirty-seven. In eight years (1882-89) the numbers passed in the obligatory examination were 310. The number of candidates who passed in each year was: 1882 twenty-one, 1883 nine, 1884 twenty-one, 1885 seventeen, 1886 thirty-nine, 1887 forty-four, 1888 eighty, 1889 seventy-nine. The steady increase, as the examination had become better known and appreciated, was most satisfactory. The system of relegation, by which candidates who, while not failing entirely, had not succeeded in obtaining a sufficient number of marks to pass, were permitted to come up at a future examination, either for the whole, or for that particular section in which they had failed to satisfy the examiners, had been most successful, and so advantageous to the candidates that it will be continued in the progressive examinations recently established. Until the "final" of the progressive examinations comes into force, in not less than three years' time, the qualifying examination as at present conducted will be continued. The experience gained in the past eight years, much conference with the younger candidates, and careful study of the answers to the questions set, made it evident that in the interests of the students it would be desirable to establish a more elementary examination, which would secure that they were well grounded in the first principles of the subjects to be dealt with before proceeding to more advanced studies. In May, 1887, at the meeting of the General Conference of Architects on "Education," after the reading and discussion of various papers tending to this end, the following resolutions were unanimously adopted: "1. That it is desirable that the guidance and direction of the education of those entering the architectural profession should be undertaken by the Royal Institute of British Architects. 2. That to realise this end the Institute should prepare a scheme of a complete system of examination. 3. That such system should comprise: 1st, Preliminary, for

pupils entering the profession, as a test of general knowledge—those passing this to be 'Probationers R.I.B.A.' 2nd, Intermediate, for pupils in their third year or earlier, for the general principles of art and construction—those passing this to be 'Students R.I.B.A.' 3rd, Final, pass examination to qualify for A.R.I.B.A., at 23 years of age or earlier." The three resolutions having been referred to the Council, the Institute, by resolutions passed 8th April, 1889, established a system of progressive examinations: 1. Preliminary; 2. Intermediate; 3. Final or Qualifying. The preliminary examination was to test the general knowledge of aspirants entering, or who had just entered, the profession. The first preliminary was held in November last, and was satisfactory. Out of 107 candidates who were admitted, 44 were declared exempt, 43 passed, and 23 were relegated to their studies. The programme of subjects included in the examination was very clear; they were all of a simple elementary character, but some of the candidates appeared to have thought it unnecessary to trouble themselves to acquire any accurate knowledge on some of the subjects, and in consequence were sent back. When well-established, this preliminary examination would, he believed, influence the concluding portion of the school education of youths destined to enter the profession, and thus prepare them with a good foundation for their further studies. The probationers now registered would in not less than two years, on submitting satisfactory "testimonies of study," be admitted to the intermediate examination, the successful passing of which would qualify the student for registration as a student R.I.B.A. Not less than two years after having passed the intermediate, the student would be admitted to the final examination, to qualify for candidature as Associate of R.I.B.A. This final examination would cover very much the same ground as the present examination in architecture; but with the preliminary training necessitated by the intermediate examination, the results, so far as regards the attainments of the candidates, would probably be even more satisfactory than at present. Some adequate provision would for a few years be made to meet the cases of architects in practice, whom it would not be reasonable to require to pass the two previous examinations, and from whom it would be equally unreasonable to require full testimonies of study. The details of the programme of the progressive examinations had been arranged with a desire that the student, in whatever part of the country he might be, should be guided in a sound course of study; but should be left quite free as to the sources from which he might obtain his knowledge, all baneful academical influences being avoided, and the natural abilities and proclivities of the student allowed free play, consistent with the acquisition of sound elementary knowledge. The lines on which the programme had been founded had been indicated by the deficiencies in elementary knowledge evinced by candidates at the obligatory examination. It was, therefore, hoped that students following this course with care would lay a sound foundation for those more advanced studies required to secure a pass in the final. The work set out for the aspirant to enable him to pass the intermediate might appear formidable on paper, but really did not demand any particular exertion from an ordinary student. Continuous and well-directed application by home or class study after office hours would be essential to attain success; but much, especially the completed testimonies of study and the necessary preliminary work, should be carried out in the office, under the eye of the architect master. Such master would greatly benefit by the improved intelligence of the pupil and the more advanced knowledge he brought to bear on the active work of the office, and might be rewarded for the loss of the services of such pupil as an office-help by the conviction that he was in some degree fulfilling the obligation he undertook when he accepted the responsibility of taking the future of the pupil into his hands.

Mr. J. A. GORCH proposed a vote of thanks to Mr. Cates for his valuable paper, remarking that no greater service could be rendered to young men entering the profession than to put such a paper as that just read into their hands, showing what they would be required to learn. Mr. Cates would admit, with him, that the present examination was not all that was required; but he trusted that the experience gained by the board of examiners would enable them to evolve

some still better system in the future. He entirely agreed with Mr. Cates that principals should afford facilities to pupils to prepare for passing the examinations, and further thought that opportunities ought to be given students for acquiring a knowledge of their profession other than that provided in the office. As for assistants, but little compulsion would be needed to induce them to enter into examinations, as their feeling was to go in for every opportunity of improvement that presented itself.

Mr. H. D. APPLETON, ex-president, seconded the motion of thanks. A great difficulty in the way of bringing students together in small provincial towns was the extreme jealousy country architects had lest their pupils should come in contact with those in other men's offices. He thought, however, this was a groundless fear, for students had too much *esprit de corps* to allow information as to what went on in their office leaking out; but the feeling among country architects undoubtedly stood in the way of the formation of branch associations in the smaller towns. Another difficulty which the Association met with in endeavouring to affiliate with itself provincial branches was that many of these preferred to be federated, if at all, with the Institute. Nevertheless, he believed something might be done in this way. He criticised in detail some of the subjects set at the preliminary examinations, remarking that the student was expected to make too many sketches of the Orders, for instance, in the time allowed.

Mr. JOHN SLATER said a committee of the Institute had come to certain conclusions as to the examinations, which could not be stated until they had been put before that body. Some candidates had in the past supposed that they could entirely ignore one or more of the subjects named for the preliminary examination. If an impression existed that they could evade some subjects by doing well in others he wished to correct it, as candidates must undergo examination in all the subjects named. A very great deal of the success of a pupil at the preliminary, and, indeed, subsequent, examinations depended on the influence of his employer, and he, therefore, held with Mr. Gorch, that it was absolutely essential for the pupil's principal to give his student time in office hours for preparation; but this being conceded, all would be in vain, unless the student made a stern individual effort to succeed. He was sorry to hear Mr. Appleton state that so much professional jealousy existed in country towns lest assistants and pupils should meet together; it was a short-sighted policy on the part of principals to discourage mutual intercourse between assistants, for it must tend to benefit young men all round to discuss questions of practice together.

Mr. H. O. CRESSWELL regarded the examination scheme set forth by Mr. Cates as eminently satisfactory, and thought the Association could with confidence leave it in the hands of the Institute. But they had to consider the question of education, and if they were as a body to continue the education of students, they ought to be backed up by the Institute. If afternoon classes were recommended by the committee, it was to be hoped that the council and members of the Institute would exercise their influence in the direction of getting principals to allow their pupils to attend them during office hours.

Mr. A. BERESFORD PIRE referred to all that had been done by Mr. Cates to establish and insure the success of the examination system, but added that, in his opinion, the great mistake of the system had been the exaltation of the Institute rather than to fit a man to become a good architect. The aim should be to awaken enthusiasm, to seek to kindle the divine afflatus in the student, and not to offer, as the main inducement to pass, to append certain letters to the student's name. Enthusiasm was the quality which ought to be expected of the student; but there were few traces of enthusiasm in the programme before them. It was possible to develop the natural faculties of the student, and to train him in the analysis of the beauties of such a building as the Parthenon, and this should be the aim of the examination, and not merely to inquire into the exact number of its columns, their height and distance from each other, and the minute measurements of the steps and doors. The student should as early as possible set to work at measuring buildings, instead of deferring this training till the last, for instruction in detail drawing was most essential to the future architect. The effect of drawing moulding



quarter full-size only, as required for the Institute examination, was disastrous to the learner. Mr. Pite criticised many features of the programme in detail.

Mr. W. MILLARD thought a scheme of education should have preceded the establishment of an examination system. The Institute had shirked its duty of educating the pupil; but the time seemed to be coming when the Association would not be able to continue unaided its amateur attempt at voluntary teaching. He thought a great reform in the examination would be to place candidates in the order of merit, instead of arranging the names of successful men in alphabetical order; they ought to be able to distinguish between those who just satisfied the examiners and those who came out highest. Such a classification would be an encouragement to students to acquit themselves well.

Mr. R. NEEDHAM WILSON concurred in the last speaker's remarks as to the desirability of substituting a list of candidates arranged in order of merit for the present alphabetical one. At present there was no inducement to take high honours or to do otherwise than cram.

Mr. COLE A. ADAMS said no man in this country had done more to promote the interests of architectural students, and to advance architectural education in England, than had Mr. Cates, and they all rejoiced to see that he had almost recovered from his recent severe illness. Now that the examination scheme was fairly launched, it brought in its train the education of students. The advantages possessed by pupils in the present day were enormous compared with those of the past, and it lay with each individual to improve the present opportunities to the full. Still, the responsibility rested on the architect to train his pupil, and delicate moral pressure should be brought to bear by the Institute upon principals to grant all facilities for improvement. He thought that principals might make arrangements to allow their pupils to join afternoon classes, if these could be established. As to the examinations, he was sorry Mr. Aitchison's proposals had not been adopted by the examining body, and he feared that the examinations dealt rather with mere names and dates, which were less to an architect than the practical knowledge of how to design a building. Mr. Appleton had referred to the difficulties pupils in provincial towns met with, owing to the obstacles put in the way of meeting each other by some principals, and by the absence of that mutual contact by which enthusiasm was evoked. Possibly if some such plan could be adopted in the profession as that which prevailed among solicitors, by which the pupils of country architects could be transferred for a period to the offices of London "agents," where they could enjoy the advantages of the Association classes and common room, the difficulty would be overcome.

Mr. T. M. RICKMAN, as one of those who helped to draw up the memorial of 1855, congratulated Mr. Cates on the success of the examination movement. Those who prepared that manual were not students, but assistants and clerks to architects, and books were not then so numerous as now. If the young men would come forward for the examination they might rely on the older ones to do all they could to assist them.

Mr. ARTHUR EARLE considered that the time had arrived when the Association should resolve itself into a regular school of training for architectural students, and suggested that if Mr. Cates could organise this departure he would have achieved a crowning point to his life, for which future students would be grateful.

Mr. T. W. GOLDSMITH criticised the examination scheme in detail, denying that it tended to the consideration of history, of dates and names, rather than of the art of construction. The Association was, he considered, no longer able to cope with the requirements of the day in education. In any reforms in architectural education, afternoon classes should be an essential part.

Mr. F. R. FARROW endorsed the suggestion that a classified list of those who passed the examinations, giving the marks gained, should be published.

Mr. CATES, in reply to the vote of thanks, which was carried amid applause, said the criticism which had been directed against the examination programme had been mainly directed against details. While he concurred in many of the suggestions made, he did not see how they were to introduce the element of "enthusiasm"

into an examination; but he had no doubt that the suggestions that had been received would have full consideration from the board of examiners. An examination could not be said either to discourage or encourage youthful enthusiasm. He regretted to hear of the professional jealousies existing in country towns, which prevented young men from meeting together, and he believed that if students would combine they would easily get all they wanted in this respect. Students must not look to the establishment of a college of architecture to carry them through difficulties; these could best be overcome by individual application, energy, and perseverance. He had not seen any instances of "cramming" in pupils prepared by the architects who prepared candidates for the examinations.

#### ARTIFICIAL ASPHALTE.

MANY attempts have been made to produce artificial asphalt with the hardness and toughness of the natural rock; but although some excellent substitutes have been obtained in the shape of tar pavement, no one seems to have hit upon anything cheaper and better than natural asphalt. Mr. J. Erslev, of Copenhagen, has, however, taken out letters patent for improvements in the manufacture of artificial asphalt, which are described as follows:—

Artificial asphalt, as is well known, cannot, as heretofore made, withstand great differences in temperature; for example, under the action of the sun it becomes soft and even liquid, while under the influence of cold it becomes brittle and cracks. For this reason it can only be used for floorings in places which are not submitted to extremes of temperature; but it cannot be used in the open air for pavements, streets, or roads, only natural asphalt being capable of standing the wear and weather. From a hygienic point of view asphalt-paving is an absolute protection, as it is not liable to harbour or develop bacilli, which are the cause of many epidemic diseases, and on this account alone it would be a great advantage if asphalt could be used instead of ordinary paving; but natural asphalt is so costly that it cannot be employed in all cases. After numerous experiments, the patentee says he has succeeded in producing an artificial asphalt which possesses all the good qualities of natural asphalt without its defects. According to his invention, he prepares artificial asphalt in the following manner:—

In a suitable metal pot he melts a mixture of coal-tar (*pyrooleum lithanthracis*) and resin (*resina pini flava*) in about the following proportions:—viz., 80 to 90 parts of resin to 20 to 10 parts of coal-tar. After the mass is thoroughly melted he mixes therewith 100 parts of pulverised sand or silicious earth or ordinary dry clay (argillaceous earth), or any other suitable finely-sifted earth or chalk, in a completely pulverised form, together with 200 to 400 parts of rough gravel. After the whole mass is melted together, it is formed into blocks in a mould, so as to facilitate transport. The asphalt thus prepared is employed in the same way as natural asphalt. It will be found to be absolutely proof against all temperatures as well as against blows. It will not yield under a heavy pressure or load, and it will not crack under a powerful blow; it will not be affected by hot water, and can be exposed to steam without affecting any change in its condition. Moreover the artificial asphalt makes better connection with the bed underneath it than natural asphalt, and thus prevents damp and water from lodging between the asphalt and the bed. The connection is nevertheless not strong enough to prevent the asphalt from being broken up without destroying the bed. It will withstand the action of acids, and will wear longer than natural asphalt. It is, therefore, evident that it is in every respect superior, as regards quality, to natural asphalt; it is besides much cheaper than any known paving material, and is only half the price of natural asphalt.

The annual meeting of the Yorkshire Centre of the National Association of Sanitary Inspectors was held in Leeds on Saturday, the president (Mr. T. Pridgin Teale, F.R.S.) in the chair. The medical officer of health for Leeds (Dr. J. S. Cameron) read a paper on "The Use and Abuse of Disinfectants." In the morning between forty and fifty members of the association had visited the Burmanoffs Potteries, the Corporation destructor, and the Leeds Sanitary Engineering Works.

## Building Intelligence.

SALFORD.—The new memorial pulpit in the Church of the Holy Name, Oxford-street, Salford, was inaugurated on Sunday. Rising from a base of white and blue veined marble, with thereon an upper base of alabaster (of which, except where superseded by marbles, the rest of the pulpit is composed), the pulpit rests on a series of black and gold alternating with black and white shafts, with moulded bases and carved capitals. The spaces are filled in with open panels of alabaster. Above the caps are two rows of flowing carvings. Slightly below the floor level are five pointed panels intended for mosaics, inclosed by pointed arches supported on columns of bluish stalactite and Irish green marble. The pulpit is approached by a flight of eight steps of Forest of Dean stone, the rises being filled in by deep red and gold coloured encaustic tiles. The balustrade is composed of alabaster arcading. The columns used here are of brocatella, sanguine jasper, and Iberian agate. The work is in the Decorated style. The pulpit is surmounted by an oak sounding-board, flat underneath. The work has been executed by Mr. A. B. Wall, sculptor, of Cheltenham, from the designs of Mr. J. S. Hansom, architect, South Kensington. Mr. Hansom's father was the builder of the church. The five panels of mosaic are intended to contain busts of five of the English martyrs of the Reformation, and of these two are in position.

#### COMPETITIONS.

CLECKHEATON.—We understand that in the limited competition among six architects for the new town hall at Cleckheaton, the design of Messrs. Mawson, of Bradford, has been selected.

MELBOURNE, AUSTRALIA.—A short time ago Mr. Howard Spensley invited competitive designs for enlarging the Royal Arcade, Bourke-street, by adding an annexe to run from Elizabeth-street, and joining the present arcade about the centre. A number of designs were submitted from the Colonies, and also from London; and, after careful consideration, the choice fell upon the design bearing the motto "Arcadia," which was awarded first premium, and was prepared by Mr. J. W. Lockwood, architect, of 472, Chancery-lane, Melbourne. The second premium fell to the lot of "Orient," by Mr. John E. Still, architect, of 50, Finsbury-square, London, E.C. It is intended to proceed with the erection of the building immediately.

NEWPORT, MON.—At Saturday's meeting of the Newport Board of Guardians the plans of Mr. B. Lawrence, signed "Economy," were accepted for the new House of Refuge. The cost is estimated at £1,900.

In our report last week of Mr. A. Fisher's paper on "British Art," read before the Society of Architects, the lecturer was made to say, on p. 89, near the foot of third column: "Out of every pound granted by Government for art education, 15s. is spent on its administration"; whereas it should have read: "Out of the amount granted by Government for art education the greater portion is spent on its administration." Our report was set up from advance proofs, and the attention of our representative at the lecture was not called to the modification.

A meeting of the heritors of Haddington parish was held on Saturday to consider the present state of the Abbey Church. The Earl of Wemyss presided. A report was submitted from Messrs. Hay and Henderson, architects, Edinburgh, in which it was stated that the church was not at present in a fitting state for public worship. Accompanying the report were plans embracing the partial and also the complete restoration of the Abbey. The restoration of the nave was estimated to cost £14,450, and this contemplated the removal of the present galleries. To provide the requisite number of sittings, it is proposed by the architects to renovate the transept, which would cost £6,500 additional. Plans were also submitted for the restoration of the chancel, at a cost of £12,000, the total estimated cost of the restoration being £22,750. The meeting agreed to print and circulate the report of the architects; but its consideration was delayed.

A new Congregational mission church to seat 360 persons is about to be erected in Hampton-road, Southport, from plans prepared by Mr. C. Sydney Ingham, of Manchester and Southport, at a cost of about £1,000.



# ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**MANCHESTER ARCHITECTURAL ASSOCIATION.**—The last general meeting was held at the Diocesan Buildings on the 21st inst., Mr. J. H. Woodhouse, the president, in the chair. Mr. F. R. L. Edwards read a paper entitled "Prospective: a Twentieth-Century Architect." The paper was narrative in form, and showed a well-known outskirt of Manchester as a complete wreck, the result of the jerry-building demon's play. The "Twentieth-Century Architect" relates to a young aspirant; how nearly a century ago previous the younger architectural societies were sufficiently far-seeing to band themselves together after futile attempts were made to obtain legislation to restrain charlatans (who had crept into the profession somehow) from practising their dishonest work. The result of this movement was the foundation of what existed in that year of 1870—an architectural republic. It had obtained legislation and the confidence of the public, which the charlatans of the previous century had destroyed. The general council of the Republic controlled the architectural matters of the country, which had been formerly left in the hands of corporate bodies, who stuck tenaciously to useless by-laws. He then described the education of the student and workman of that century. Messrs. Mould, Hodgson, Hind, Stelfox, and Woodhouse criticised the paper.

**YORK ARCHITECTURAL ASSOCIATION.**—At the monthly meeting of this society, held on Thursday night, Mr. N. R. Yeomans in the chair, Mr. G. Benson, A.R.I.B.A., read a paper entitled "About Normandy," giving an account of a three weeks' ramble made by architectural students in that district. Leaving Southampton, St. Malo was first visited, then the picturesquely-situated Dinan, followed by Dol, which possesses a cathedral dedicated to St. Sampson, who, about the end of the 5th century, was Bishop of York, and subsequently went to Brittany, becoming Bishop of Dol, where he was buried. Avranches, Coutances, St. Lo, Bayeux, and Caen were all visited. Lisieux, with its half-timbered houses, offers great attractions to artists. The ancient houses, churches, and other edifices of Evreux, Rouen, and Nantes were also described. The lecture was illustrated by numerous photographs.

## CHIPS.

At a vestry meeting held at All Saints', Penarth, last week, plans by Mr. Coates Carter, of Cardiff, were adopted for a new church to be built on the site of the present one.

Dr. Schliemann, it will be recollected, recently offered to Capt. Bötticher to settle the discussion between them as to the real nature of the ruins at Hissarlik by a fresh examination on the spot. This examination took place in December, Dr. Schliemann being accompanied by Dr. Dörpfeld. There were also present, as arbitrators, Professor George Niemann, of the Vienna Academy, and Major Steffen, of the Prussian Artillery. During the examination, Capt. Bötticher withdrew his charge that Dr. Schliemann had tampered with the remains, and the two arbitrators have now signed a formal document to the effect that, in their opinion, the remains are not those of a necropolis, as alleged by Capt. Bötticher, but of an inhabited town, including a temple and halls.

The parish church of Salcombe, Devon, is about to be restored at a cost of £1,000, from plans and in accordance with a report by Mr. G. H. Fellowes Prynne, of London.

The engineer for the projected works of sewerage and water supply at Towyn, North Wales (Mr. Collingwood, of Rhyl), set the contractors to work last week. Mr. Morgan, contractor for the water, commenced at the reservoir, about three miles from Towyn, and Mr. John Jones began the sewerage works at Morfa Cadfan.

Plans for the extension of Warrington Infirmary, prepared by Mr. Williams Owen, of that town, have been provisionally adopted.

A new Masonic hall at Crediton, Devon, was opened on Friday. It is Domestic Gothic in character, is built of brick, with Bath stone dressings, and cost £750. Mr. Berry was the builder.

A wing, which is to serve for the present as chapel and school, has been opened at Providence Wesleyan Chapel, Queen's-road, Halifax. The new premises comprise a large assembly-room, eight classrooms, infants' room, newsroom, reading-room, &c. Mr. James Farrar, of Halifax, is the architect. It is intended to erect a large chapel on a site adjoining.

## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., and LVI., may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—H. and K.—H. L. B.—T. L. and Son—B. B. and E.—G. E. H.—H. M.—B. F. S. Co.—J. S.

ENQUIRER.—(The trouble is a common one, due to draught. The most effective cure, and the cheapest, is a Boyle's chimney cowl.)

## "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"The Red Rover," "Cosmopolitan," "Cyclist," "Wallaby," "Skull and Cross Bones," "Dr. Jekyll," "Country Bumpkin," "Initium," "Fiddler," "P. R. G.," "Eth," "A" in a circle, "Mac," "Y" in a circle, "Lord G.," "Renaissance," "Coombe," "Horse Shoe," "Salt Water," "Vyrnwy."

W. H. SIMPSON. (Thanks; we are always glad of suggestions, and will bear yours in mind.)—F. C. D. (Anyone can join, and there are no fees for the club.)—SHRIMPSCUR. (It will be of little use becoming a member if you do not work steadily at the subjects set every month. You alone will be the gainer by such industry.)—PUPIL. (Yes, Mr. W. H. Railton was once a hard-working member of our club, and several others now well known belonged to it in years gone by.)

## Correspondence.

### BOOTLE POLICE-COURTS COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—On looking through the list of tenders published in your issue of last week, I notice that a contract has been let for the erection of police-courts, &c., at Bootle, for an amount far exceeding the limit named in the conditions issued to competing architects. A clause in said conditions stipulates that "the cost of the buildings including means of heating, ventilating, lighting, boundary walls, railings, areas, pavement of yards, areas, &c., the necessary joiner's fixtures, together with architect's commission, but not including portable furniture, &c., must not exceed the sum of £8,000."

Now, I see by your list that the author of the accepted design gave his estimate as £8,400, and that the lowest of 20 tenders received was £11,678, and this, after some discussion, has been accepted by the town council.

Of course, I do not expect that this decision can now be altered; but I think such unfair pro-

ceedings should not be allowed to pass unnoticed, especially just now, when there is beginning to be manifest a desire to place such competitions on a perfectly fair and equitable basis.

I am of the opinion that in this case many of the competitors would have "thrown a tower in," and made other improvements in their designs, had they have known that an increase on the stipulated cost of 50 per cent. would not be objected to.

Trusting that some explanation will be forthcoming,—I am, &c., H. G.

## CARRIAGEWAY PAVING.

SIR,—It is to be hoped that the City Commissioners of Sewers will not too readily accede to the request of the H.A.P.S. that wood may be substituted for asphalt. I have already ventured the suggestion that the fault lies quite as much, at any rate, with improper shoeing and reverberating wheels; but while horse owners are looking nearer home for one great cause of accidents, it would not be inopportune if paving authorities everywhere cast about for some better substitute for asphalt than wood.

You were so good in a former issue as to insert my proposition for the substitution of sandstone for granite, and my object in the present letter is to cite one instance from past experience of the result of a trial of wood paving in a leading thoroughfare of London in 1840-4, when the traffic was not nearly so heavy as now, and possibly, also, the nerves of residents were not in so shattered a condition.

Is it too much to expect that the present generation will take warning from past mistakes?

Just the same extraordinary advantages had been claimed for wood as now advanced on its behalf, and in 1840 the Marylebone Vestry had 4,000 yards laid in Oxford-street, and its advocates stated: "That it is unnecessary to enlarge upon the precision with which it can be laid down and taken up, the strength of its construction, its extraordinary durability, absence of all noise, freedom of traction, diminution of mud in wet and dust in dry weather, and the increased facility of their removal, its salubrity as regards the health of the public; its superior cheapness over all kinds of roads. The only tangible objection against it is its slipperiness, although it must be self-evident that any kind of road, the nature of which is hard, and where the greasy mud of London is allowed to be brought upon it, must inevitably be attended with this evil; but if the mud be removed the pavement would not be slippery, &c. So much for the flourish of trumpets. Now for the fiasco.

At a meeting of the vestry of St. Marylebone held on the 12th October, 1844, Mr. Scacio (surveyor) reported: "He had minutely examined the 4,000 yards of wood paving laid by the Metropolitan Company between Wells-street and Rathbone-place, and found the surface rough and uneven, with many holes in it. The fir blocks were worn down from 6in to 4½in., and in places to 3in.; while the elm blocks were worn generally from 6in. to 3in. It was difficult to get a whole block out, it was all so worn."

Mr. Harbut said: "The first cost had been £2,100, and it had cost £210 per annum for three years to keep it repaired, equalling £2,710, or 3s. 6d. per yard per annum. If the same space had been paved with granite, it would have cost 600 per cent. less than wood. The repair of 'Macadam' only cost 1s. 11d. per yard, and this rubbish had cost 3s. 6d." The report was adopted, and copy sent to the Metropolitan Company, with notice to put the road in efficient repair forthwith. (Specimens were laid on the table.)

Comment is surely needless, and yet there is wood in possession again in 1890!

Need we turn to the City for corroboration of this West-end experience? One instance will suffice.

In September, 1846, the City Sewers resolved "That the wood paving in Cheapside do remain till next spring, and then taken up and replaced with granite in the same manner as Fleet-street."

Now that granite has been replaced in its turn by asphalt, what will they substitute for the latter to suit Col. Colville's lumbering cars? I fancy it is pretty safe to predict that it will not be wood.—I am, &c.,

Hampstead, Jan. 14.

E. W. HUDSON.

P.S.—May I offer a remark or two on the recent letters to the Times? Sir R. Rawlinson reminds us that the concrete bed is the actual road; but surely he does not mean us to info-



hat the best cement-concrete base will ever make pine, or any wood, wear equally. Will any two adjacent blocks ever wear in the same degree?—one cut near the heart, and another from the outside of the tree; and if all were to be cut from the outside, how long would the wood wear? I leave the salubrity of wood for the aculeity to discuss, but was glad to see Mr. Forbes's letter anent horseshoes and the asphalted oads of Washington, though I believe it is not suitable for our Metropolis; but respecting the modern shoe, he has many naturalists with him. Mr. Muir advocates granite, with the setts placed diagonally. It seems to me of little or no advantage. With well-made "setts" (and they are not generally so), traction would be just as easy with rectangular courses. I venture to doubt if granite can ever be made free from noise, lay it as we may. Why not give sandstone, which is not so sonorous, a trial?—E. W. H.

#### VANDALISM AT DADLINGTON CHURCH, LEICESTERSHIRE.

Sir,—Archæologists, and everyone who takes pride and delight in our village churches, will earn, with mingled feelings of disgust, shame, and regret, that this quaint, old, square, wood belfry, covered with oak shingle (I believe, unique in Leicestershire), has disappeared, and a fourth-rate fancy-tiled villa turret type of thing put up in its place. The curious old windows, which did duty for a clerestory, have been ruthlessly bricked up with red bricks, and other vagaries are contemplated with the old wood porch, "if the funds hold out." Surely some steps ought to be taken to stay the destroyer's hand. No architect has been called in.

From a personal inspection of this old belfry in August last, I have no hesitation in saying that, at a comparatively small outlay, it would have done duty for centuries.

The chancel was faithfully repaired, and partly rebuilt, two or three years since under Mr. Ewan Christian, architect to the Ecclesiastical Commissioners.—I am, &c.,  
Hinckley, Jan. 21, 1890. H.

#### "HAYWARD (DISTRICT SURVEYOR) v. SANDON."

Sir,—In some remarks as regards this matter which you published on the 10th inst., I wish to point out some misleading statements, which I beg you to correct.

It is stated that "the summons was dismissed"; yet that could scarcely be, as no summons has issued but the one heard on Oct. 4, 1889, when the magistrate decided in favour of the district surveyor, giving him also costs in the case. Also, it is stated that my solicitor gave me certain advice which he actually did not give. Why anyone should write to you, professing to now and publish what passed between "my solicitor" and myself, I am at a loss to conceive; though in justice to Messrs. Sandon's adviser, I am led to believe this statement did not emanate from him.

What actually happened was this:—Messrs. Sandon, being dissatisfied with the magistrate's decision and the order that he made on Oct. 4, that they should pay the district surveyor the pecified fees, endeavoured to get a case stated or the superior Courts. Failing to obtain this in their own way, it was discussed in the magistrate's own private room, and "dismissed," if that is the word, and so the matter remained *in statu quo*.

As I made no demand for costs, of course none were given.

Since then the matter has been settled by Messrs. Sandon paying me what I have chosen to accept in satisfaction of my fees. But be it quite understood that the decision of the Bowditch Court confirming that of all other Courts in favour of the district surveyor's contention is still unshaken, and that Clause 27 of the Act remains to be read as it always has been, and Messrs. Sandon's contention has only confirmed a meaning to be just what it says in its several clauses.—I am, &c.,  
C. H. HAYWARD.  
47, Museum-street, W.C., Jan. 22.

#### ERRATUM—"CARPENTRY AND JOINERY."

Sir,—There was a slight mistake in Fig. 189 of the last article on "Carpentry and Joinery"—viz., the line of the bottom of the sill of the sash should be a continued level across the gutter, instead of following the semicircular line of the gutter, making impossible for the sash to be opened.—I am, &c.,  
THE WRITER OF THE ARTICLE.

## Intercommunication.

### QUESTIONS.

[10212.]—**Speaking Tubes.**—Will some reader kindly tell me how long a speaking-tube may be? How far is one capable of speaking through an inch tube so as to be heard distinctly?—Geo. B.

[10213.]—**Decoration.**—Will some of your readers be good enough to give me the names of some of the best books treating upon "the architectural use of colour in decoration," &c.?—V. C.

### REPLIES.

[10204.]—**Crushing Weight of Stone.**—For the information of "J. H." and "J. W.," we give the following results of tests of three 6in. cubes of Monk's Fark Bath stone conducted by Kirkaldy:—

Test 3361	crushed at	210.9 tons,
" 3382	"	181.0 "
" 3383	"	172.6 "

being an average of 188 tons per square foot.—HAYWARD AND WOOSTER, Walcot-street, Bath.

[10205.]—**Surrey Churches.**—Lingfield Church (dedicated to SS. Peter and Paul) is a large "Perpendicular" building with a fine range of aisle windows. It possesses some good brasses and altar tombs belonging to the Cobham and other families, also some interesting carved "miserere" stalls in the choir. Adjoining the churchyard are some very quaint cottages. There is a fine old house in the village (1617) built of stone, much restored, but worth a visit. It is illustrated in the A. A. Sketchbook. Edenbridge Church (SS. Peter and Paul) has some very good decorated caps to the columns of the nave arcade, and several brasses. Hever Church (St. Peter) contains a fine Perpendicular altar tomb and brass, much decayed, of Sir Thomas Bullen, 1538. A rubbing of the brass may now be seen in the Tudor exhibition in Regent-street. Hever Castle, formerly the residence of the Boleyn family, originally built in the reign of Edward III., is a Tudor house with an interior courtyard, and surrounded by a moat. The long gallery or ball-room has an ornamented stucco ceiling, and the walls are covered with good oak panelling divided by small Ionic capped pilasters. There is also good work to be found at East Grinstead, and Chiddingstone has some most interesting houses in the village.—A. C. W.

[10206.]—**Strains.**—With "Como's" permission, I will answer his question by using the formula for breaking weight given by "Stoney"—viz.,  $BW = \frac{4adS}{l}$ .

Here  $BW$  = breaking weight

$\frac{BW}{6}$  = safe load for timber

$a$  = sectional area of beam

$l$  = depth in inches

$l$  = length

$S$  = constant or modulus of rupture, which for Baltic fir = 12cwts.

Applying "Como's" example—

$$90 = \frac{4 \times 12 \times a \times d}{240} \therefore 90 \times 240 = 48ad \\ \therefore ad = \frac{90 \times 240}{48} = 450 \text{sq.in.}$$

Now let "Como" assume any quantity for  $a$ , say 50, then  $d = 9$ , and the breadth will be  $\frac{50}{9} = 5.5$   $\therefore$  the size of beam required is 9in. by 5.5in.—Geo. B.

[10207.]—**Bridges with Skew Arches.**—Messrs. Crosby Lockwood and Son publish two books on this subject, "Oblique Arches" and "Oblique Bridges," which might assist "J. M. L."—H. L.

[10207.]—**Bridges with Skew Arches.**—Consult or study Buck's "Oblique Bridges," published by Lockwood and Sons, or any elementary work on masonry, such as Dobson's "Masonry and Stone-cutting."—G. H. G.

[10208.]—**Perspective.**—Many books on perspective are published. Chapman's "Introduction to Perspective," or the manual used by the Department of Science and Art may be studied. I should advise "Diligent" to join an art class.—G. H. G.

[10208.]—**Perspective.**—I think Burchett's "Perspective" is one of the best books; there are articles in Cassell's "Technical Educator," also Perspective for Beginners in "Weale's Series." If "Diligent" could get some friend to give him a few lessons, he would learn very quickly.—H. L.

[10210.]—**Ventilation.**—"M." cannot do better than read "Warming and Ventilation," by Sir Douglas Galton in "Our Homes" (Cassell and Co.), and many articles during recent years in the columns of the BUILDING NEWS.—H. L.

[10211.]—**Party-Wall.**—It will be rather difficult to compel B. to remove his pilaster after 25 years, and I suggest a friendly compromise, especially as the frontage is so valuable to A. Is it not possible that the wall originally belonged entirely to B's house, and that A's house was built against it—a very common thing?—H. L.

[10211.]—**Party-Wall.**—A. cannot now compel B. to remove his pilaster if it supports anything; but if it is merely an ornament he may at least represent the facts to B., who would no doubt see the justice of A's requirements. 20 years' enjoyment is necessary to acquire a right to a projection, such as the eaves of a house over the adjoining land, and this term would give B. a right to his pilaster.—G. H. G.

[10211.]—**Party-Wall.**—I do not think that B. can have any claim of right to more than his own moiety of party-wall unless any agreement with regard to the same has been arrived at between existing or previous owners. Failing this, A. should be perfectly justified in removing the encroaching portion of pilaster.—R. WATSON.

## Our Office Table.

THE death is announced of Mr. George F. Durand, vice-president of the Canadian Society of Architects, which occurred at London, Ontario, recently. Mr. Durand was young in the profession, being only 39 years old, but was very widely and favourably known among architects and the public, both in Canada and elsewhere. He was a native of London, Ont., but after spending a short time in the office of the city engineer there, he went to Albany, N.Y., where he was employed by Mr. Thomas Fuller as his chief assistant in the work on the new Capitol, which was then in Mr. Fuller's hands. When Mr. Fuller was superseded, Mr. Durand left Albany with him, and, after a year spent in Maine, with a granite company, he returned to his native city, where he soon found constant and profitable employment, having for several years built a large part of the most important structures in Western Ontario.

THE *Leeds Express* recently attacked the action of the committee of the town council of that borough in ordering the walls of Kirkstall Abbey to be stripped of the covering of ivy. Mr. John Tweedale, F.R.I.B.A., has replied, pointing out that this is an exhibition of misapplied sentiment, for "that rare old plant, the ivy green" has worked its way into the joints of the masonry, opening them out and levering the stones out of position, while stems of the parasite three and four inches in diameter thread their way through the wall, exercising an immense and growing power for evil. Anyone can, as Mr. Tweedale remarks, cultivate ivy on the walls of his own house, and when tired of the cult can cut it down; but Leeds possesses but one Kirkstall Abbey, and the committee would be false to their trust if they did not take steps for its preservation.

AN archæological congress was opened at Moscow on Monday in celebration of the 25th anniversary of the local Archæological Society. In the proceedings, which will be continued until the 5th Feb., delegates from every learned society in Russia and many German and French corresponding members will take part. The Moscow section of the Russian Imperial Historical Museum, which will be maintained under the auspices of the Society, was formally opened on the 8th inst. by the Governor-General, Prince Von Dolgoroukoff. The exhibits include a variety of antiquities from the Caucasus—the spoils of many tombs and tumuli, over 3,000 stone and glass ornaments, enamelled jewelry of the 4th or 5th century, from Kalonga, Merovingian gold ornaments, ancient Icons or holy images, early silver plate, and some antique garments and china.

### MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Academy. "Roman Architecture," No. 1, by Prof. Geo. Aitchison, A.R.A. 8 p.m.

Surveyors' Institution. "Landed Incomes," by H. H. Smith, F.S.I. 8 p.m.  
Society of Arts. "The Electro-Magnet," Cantor Lecture No. 2, by Prof. Silvanus P. Thompson. 8 p.m.

TUESDAY.—St. Paul's Ecclesiastical Society. Annual Dinner. First Avenue Hotel. 7 p.m.  
Society of Architects. "Electricity in the Dwelling," by E. Percival Allam. 7.30 p.m.

Society of Arts. "Relation of the Fine Arts to the Applied Arts," by E. C. Robins, F.S.A. 8 p.m.

Institution of Civil Engineers. Discussion on "Recent Dock Extensions at Liverpool," and paper on "Bars at the Mouths of Tidal Estuaries," by W. H. Wheeler. 8 p.m.

WEDNESDAY.—Society of Arts. "The Utilisation of Blast Furnace Slag," by Gilbert Redgrave. 8 p.m.

THURSDAY.—Royal Academy. "Roman Architecture," No. 2, by Prof. Geo. Aitchison, A.R.A. 8 p.m.

FRIDAY.—Architectural Association. "Free Libraries," by E. W. Mountford. 7.30 p.m.  
Royal Institution. "Smokeless Explosives," by Sir Frederick Abel. 9 p.m.

Architectural Association, 9, Conduit-street, W.—January 31. "Free Libraries," by E. W. Mountford, Esq. 7.30 p.m.

FRED. R. FARROW.  
ERNEST S. GALE. } Hon. Secs.

At the last meeting of the West Hartlepool town council the salary of the borough engineer, Mr. J. W. Brown, A.M.I.C.E., F.G.S., was, by a large majority, increased from £400 to £500 per annum.



## LEGAL INTELLIGENCE.

**THE LONDON SCHOOL BOARD AND ITS CONTRACTORS.**—**JOHNSON V. HELBY AND JOHNSON V. HAZELL, WATSON, AND VINEY.**—These cases were heard on Saturday, Monday, and Tuesday before Mr. Justice Field and a special jury as a consolidated action; the plaintiff, Mr. William Johnson, builder and contractor, Wandsworth Common, suing Mr. Helby, a member of the London School Board, and the printers of the Board, to recover damages in the case of the first defendant for slander, and in the case of the latter for libel. The defendants pleaded privilege and denied malice, and Mr. Helby counter-claimed for libel. In the course of the sittings of a special committee of the board Mr. Helby said the question of "retention money" depended upon the character of the man, and added, "We know that Mr. Johnson is a man without any means at all, and ten years ago he was a carpenter." He further said he took it that the committee would not give a job of £10,000 to a contractor who ten years ago was working at his trade of carpenter with his own hands. The plaintiff, a contractor, who was said to be originally a plasterer and a self-made man, stated that there was no foundation for the statement that he was a man without means. For the defence it was stated that the defendant acted without any malice, and in the interest of the public in the course of his duty as a member of the committee, and that the occasion was privileged. The words of which defendant complained were contained in letters to the chairman and secretary to the board, and imputed to him animus against the plaintiff in consequence of business disagreements. In the end the jury found a verdict for plaintiff, awarding him £200 damages against Mr. Helby, and £2 damages against Messrs. Hazell, Watson, and Viney as the printers.

A new church is being built at Lockerby, Hants. It is Gothic in style, and will be built of stonework, with red brick for internal walls. It will have a tower containing a peal of bells and a spire. Messrs. Goddard and Son, of Farnham, are the builders.

The Purification Commissioners for the Water of Leith, Edinburgh, have approved the working plans and specifications for sewers in the landward district, prepared by Messrs. Leslie and Reid, of Edinburgh.

## Trade News.

## WAGES MOVEMENTS.

**DARTMOUTH.**—The journeymen carpenters and masons of Dartmouth, Devon, held a meeting on the 18th inst., and passed a resolution asking the master builders to give a 10-hour day with 6 hours on Saturday. The master builders on the 22nd replied by having a dinner among themselves, and, it is understood, will grant the men's request. Messrs. Simpson, Strickland, and Co.'s engineering works and manufactory for Kingdom's patent launch engines have opened up trade in this season. The hour system is expected to begin on Feb. 18, if not before.

## CHIPS.

New co-operative stores at the junction of High-street with Roxburgh-street, Galashiels, are now ready for occupation. The block has a frontage to High-street and Roxburgh-street of 181ft., and is four stories high. There is a court in the centre, around which all the shops, back-shops, workshops, and store-rooms are placed. The engine-room is in the south-east corner, and a gas engine of 7H.P. works the hoist and supplies the motive power for driving the baking and other machinery and the ventilating fan. The total cost of site, buildings, and fittings amounts to about £14,000. The architects and builders are Messrs. J. and J. Hall, Galashiels.

The Carmelite Priory at the west end of the town of Queensferry, which for a period of about 250 years has been used only as a burying-place for members of the family of Dundas of Dundas, to whom it belongs, is about to be put in a condition to fit it for a place of worship in connection with the Episcopal Church Mission at South Queensferry. The restoration is to be carried out under the supervision of Mr. Kinross, architect, of George-street, Edinburgh.

The Centenary Wesleyan Chapel in Trelowarren-street, Camborne, was reopened last week after renovation and improvement, effected at a cost of £1,100. Mr. Oliver Caldwell, of Penzance, was the architect, and Mr. James Rouse, of Camborne, was the builder.

The Richmond Select Vestry have unanimously approved the introduction of a Bill into Parliament for the construction of a lock and foot-bridge on the Thames in the neighbourhood. This decision will have to be confirmed by the ratepayers in public meeting assembled before any final action is taken.

On the 21st inst. the foundation-stone of the new Masonic hall in course of erection in Duncombe-street, Kingsbridge, for the Duncombe Lodge, No. 1486, was laid by the W.M. Bro. H. D. Adkins. The builder is Bro. Geo. Hooper, of Kingsbridge; the plans having been prepared by Bro. R. Watson, in the office of Mr. W. M. Tolit, architect, of Totnes and Kingsbridge.

On the 8th inst. the Main Roads and Bridge Committee of the Glamorganshire County Council met to interview the following ten gentlemen for the appointment of county surveyor:—G. B. Carlton, Beckenham; W. Santo Crimp, Wimbledon; J. Dormer, Armagh; T. Lloyd Edwards, Aberdare; F. J. Harvey, Merthyr Tydvil; S. A. Hutchins, Cardiganshire; J. Parker, Hereford; John Price, Toxteth Park; R. J. Thomas, Carnarvonshire; and G. Watheys, Llanelly. The committee reduced the number to five, as follows:—John Price, F. J. Harvey, S. A. Hutchins, T. Lloyd Edwards, and R. J. Thomas. These gentlemen attended upon the County Council on the 16th inst., with the result that Mr. T. Lloyd Edwards, of Aberdare, a local candidate, was elected. There were 104 candidates for the office, the salary offered being £600 a year, with an additional allowance of £150 towards travelling expenses, &c.

The bronze bas-relief panel memorial of the late Mr. R. Peacock, M.P., is now completed. The panel will be placed in the outer wall of the organ loft at the Brookfield Unitarian Church, Hyde-road, Gorton, which was erected at a cost of £12,000 by Mr. Peacock. The designer of the panel is Mr. J. Cassidy, of Barton Arcade, and the Coalbrookdale Company have made the castings.

At a general assembly of Royal Academicians and Associates, held on Tuesday evening, Mr. Ernest Albert Waterlow, painter, was elected an Associate.

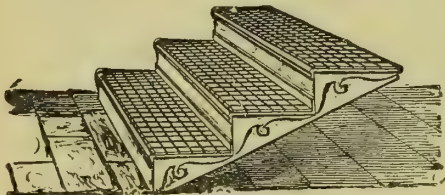
Mr. John James Downes, of 11, The Parade, Lewisham High-road, architect and surveyor, has been appointed to the management of Mrs. Wilson's estate at Eltham.

## HAWKSLEY'S PATENT TREADS.

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## IN USE AT

Railway Stations.	Broadstone, Dublin	Ealing Terminus	Kenilworth	Monkwearmouth	Slough	Westminster	Dublin Castle	Schools, &c.	Stratford, Col.
Accrington	Burdett Road	Earl's Court	Kensal Green	Moorgate Street	Soho	Whitechurch	Police Barracks	Belfast Method-Stratford, Sal.	grave Road
Acton Green	Bursough	Edgware Road	Kentish Town	Monument	South Bromley	Whitechapel	Eastney	ist College	way Place
Aldersgate street	Burton	Failsforth	Kilburn	Newcastle-	South Kensington	Whitefield	Fleetwood	Battersea, St. Sutton	
Alldgate	Junction	Farringdon	Kilsby	under-Lyme	Southport	Whitley	Fulwood	Mary's Church St. Jude's	Tayport
Althorp Park	Bury	Street	King's Cross	New Cross	Speke	Willenhall	Hamilton, Glas-	Birmingham	Torrington
Altrincham	Borough Road	Fenchurch	King William	Newport	Spring Grove	Bridge	gow	Cowper Street	Upon Cross
Aston	Mersey Tunnel	Street	Street	Newton Heath	Stechford	Willesden	Hulme	Clapham	Wandsworth
Ash Street,	Canonbury	Finchley Road	Langley Green	North Brentford	Stepney	Wood Green	Knightsbridge	Forest Gate	Hospitals.
Stockport	Camden Road	Firby	Latimer Road	North Bridge	Stoke	Wormwood	Leicester, Glen	Harway Place	Belfast County
Birmingham,	Chalk Farm	Forest Gate	Leamington	Northampton	Stourbridge	Scrubbs	Parva	Harrow	Lunatic Asy-
New Street	Charing Cross	Forest Road	Leman Street	(Castle Station)	Stratford	Worsley	Manchester	Haverstock Hill	lum
Banbury	Cheetham Hill	Level Crossing	Leyland	Nottingham	Sudbury	Wolverhampton	Newcastle-on-	Orphan Work-	Greenwich In-
Barnsley	Junction	Fulham	Leyton	Oldbury	Sunderland	Wolverton	Tyne	School	firm
Barnsley	Chequerbent	Gedley	Leytonstone	Old Ford	Sutton		Normanton	Jamaica Level	firm
Batley	Clayton	Gloucester Road	Lichfield	Oldham (Mumps)	Sutton Coldfield		Northampton	Leyton, Gram-Guy's Hospital	Lincolnshire
Bedminster	Clifton	Gower Street	Limehouse	Paddington	Temple		Norwich	mar School	County Asylum
Bescot Junction	Clitheroe	Grantham	Little Ealing	Parsons Green	Thornton		Portsea	Leyton, Church	Middlesex
Birmingham	Crews	Greenwich	Little Ealing	Patricroft	Torquay		Portsmouth	Road	County Lunatic
Bishopsgate	Crooked Billet	Hackney	Liverpool Road,	Penzance	Tower of London		Preston	Newhaven	Asylum
Blackfriars	Level Crossing	Haggerston	Manchester Street	Pickle Bridge	Tring		Regent's Park	North Bow	Netley Hospital
Blackfriars	Cross Lane	Hammersmith	Liverpool Street	Pleasance	Tynemouth		Salford	Old Ford	Peterborough
Bridge	Crumpsall	Heaton Park	Llandudno	Plymouth	Victoria Park		Shorncliffe	Poplar, Byron &	Infirmary
Blake Street, Sut-	Cullercoates	Heaton Park	Loudoun Road	Portsmouth	Waltham Green		Trim	Bright Streets	Rubery Asylum
ton Coldfield	Cannon Street	Heaton Park	Ludgate Hill	Prestwich	Wallsend		Worcester	Southsea, Church Path	Northfield
Blatchley	Dalston	Highbury	Mark Lane	Radecliffe	Walsall		Woolwich	Southsea, Omega St.	Thomas's
Bolton	Dauhill	Hollinwood	Maidstone	Road	Waterloo		Dublin, Beggars'	Street	Hospital
Bolts Bridge	Daybrook	Hollyhead	Manchester, Ex-	Salisbury Road	Waterloo		Bush		
Bombay, India	Denholme	Homerton	change	Shadwell	Liverpool		Dublin, Island		
Bow	Dryden	Horley	Manchester	Sheffield	Weaste		Bridge		
Bowdon Central	Drighlington	Hounslow	Manchester	Shoreditch	Werneth, Old-		Dublin, Ship		
Brick Lane	Dudley	Hounslow Bar-	Road	Sloane Square	Werneth, Old-		Street		
Bristol	Dundee	racks	Mansion House	Snow Hill, Bir-	Westbourne		Dublin Royal		
Broadfield	Dundee	Keighley	Millhill	mingham	West End Lane		Barracks		
Broad Street	Ealing Common	Kemble Junction	Milverton						

Descriptive Circulars, with Prices, sent on application.







THE BUILDING NEWS, JAN. 24. 1890.









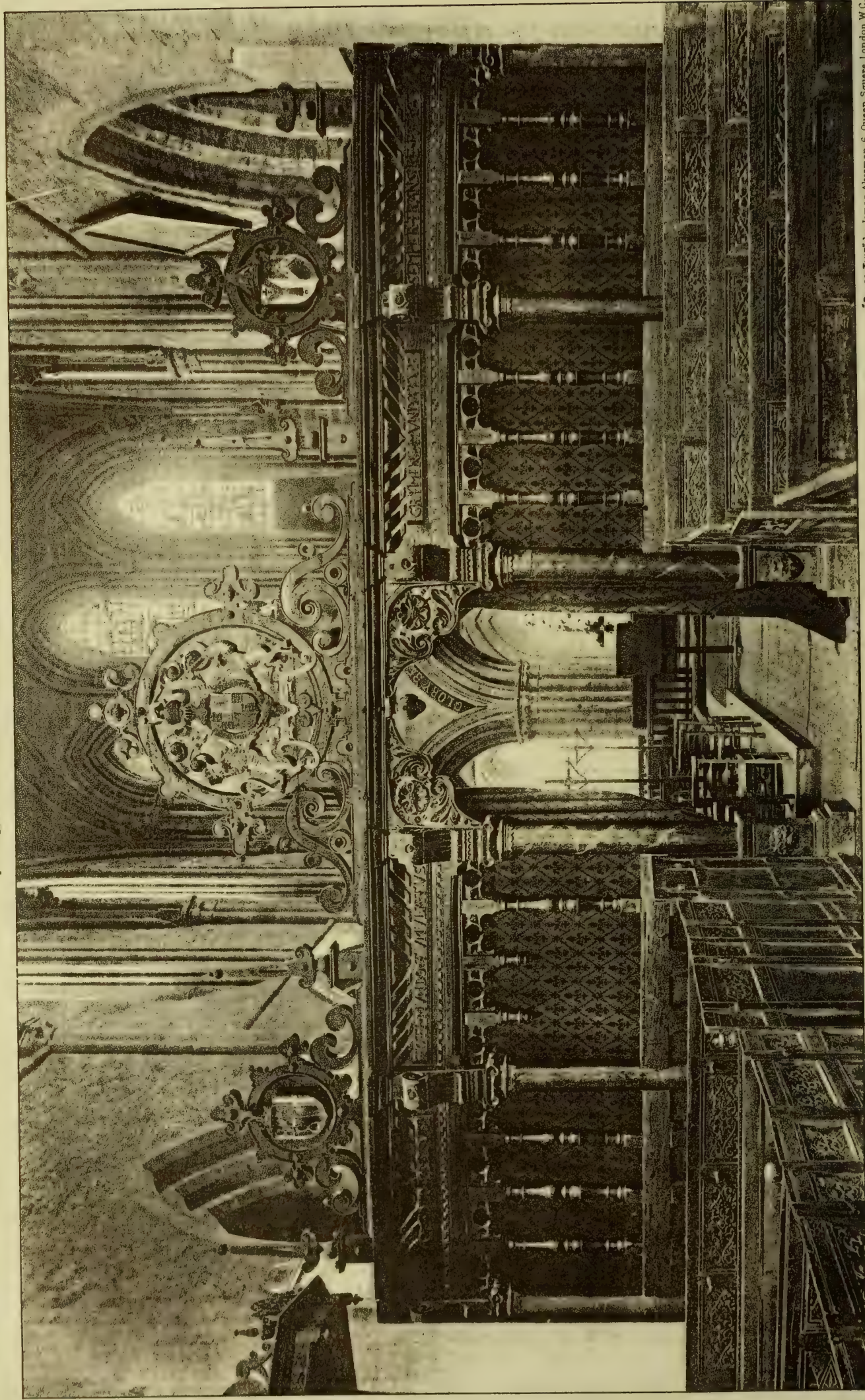








THE BUILDING NEWS, JAN. 24, 1890



PHOTOGRAPHED BY POULTON & SON.

THE SCREEN, ABBEY DORE CHURCH.

'Photo-Tint' by James Akerman, 6, Queen Square, London, W.C.







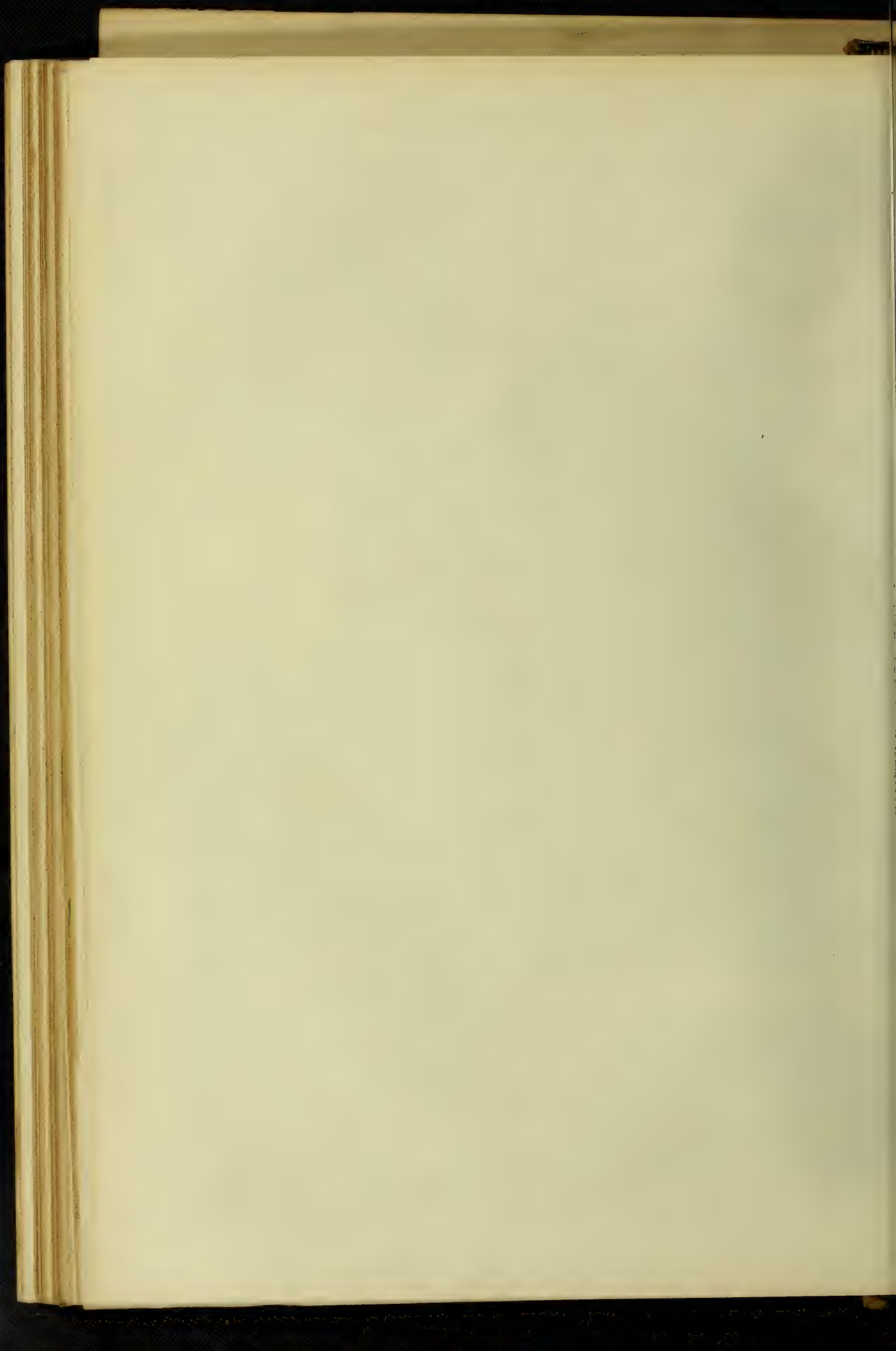






THE RALEIGH TEMPERANCE HOTEL AND NEW POST OFFICE DARTMOUTH: E. H. BACK, ARCHITECT.









BND C

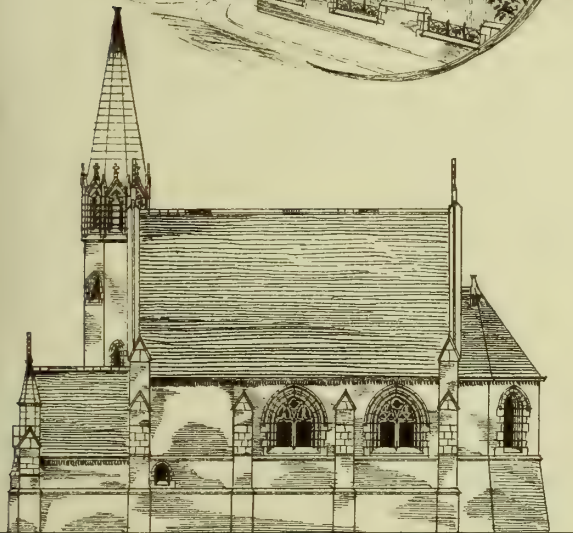
A Cemetery Church & Lodge by



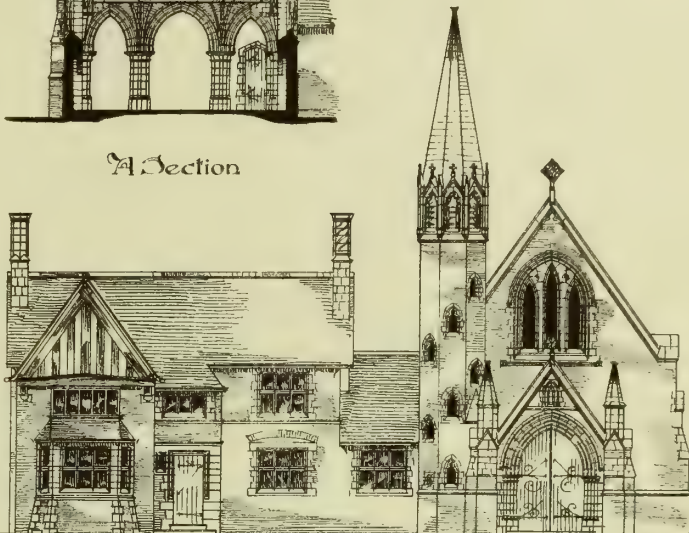
THE RED ROVER



A Section



Side Elevation of Church



Main Elevation to Drive

Scale of Feet

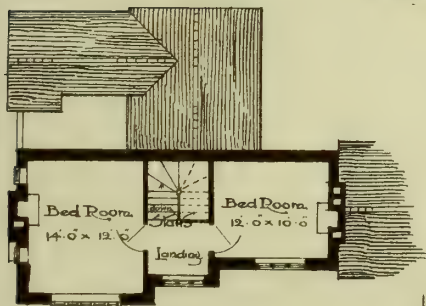
BND C

A Cemetery Church & Lodge by

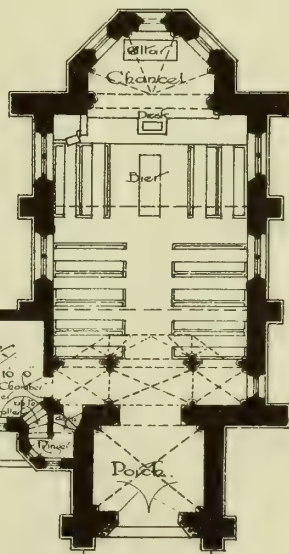
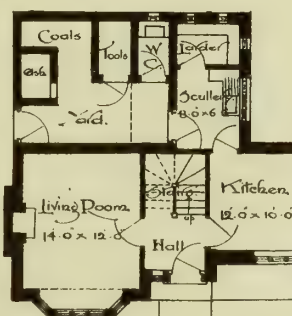


THE RED ROVER

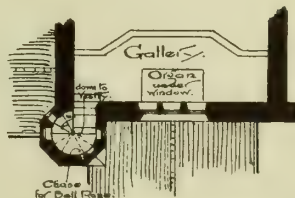
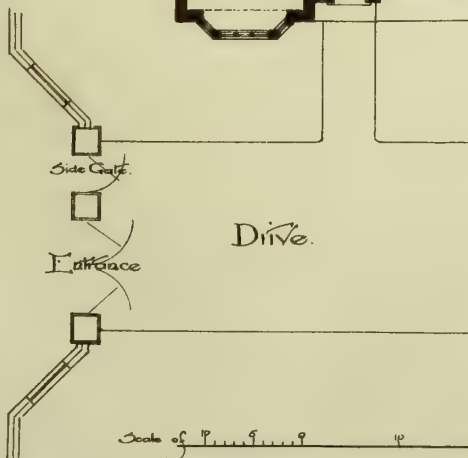
DESIGN PLACED SECOND



1st Floor Plan.



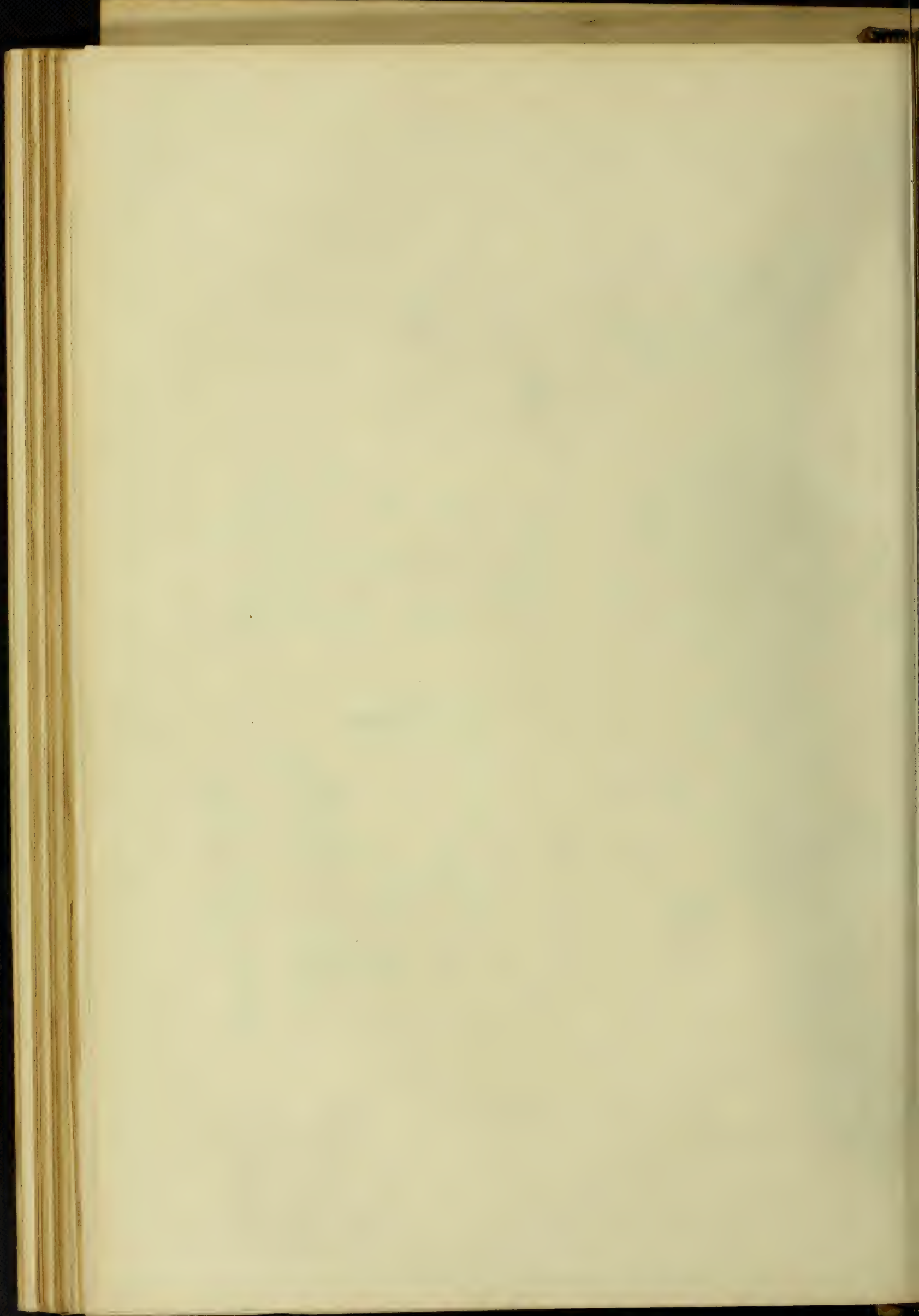
Elevation of Entrance Gates.



Plan of Gallery

Scale of Feet

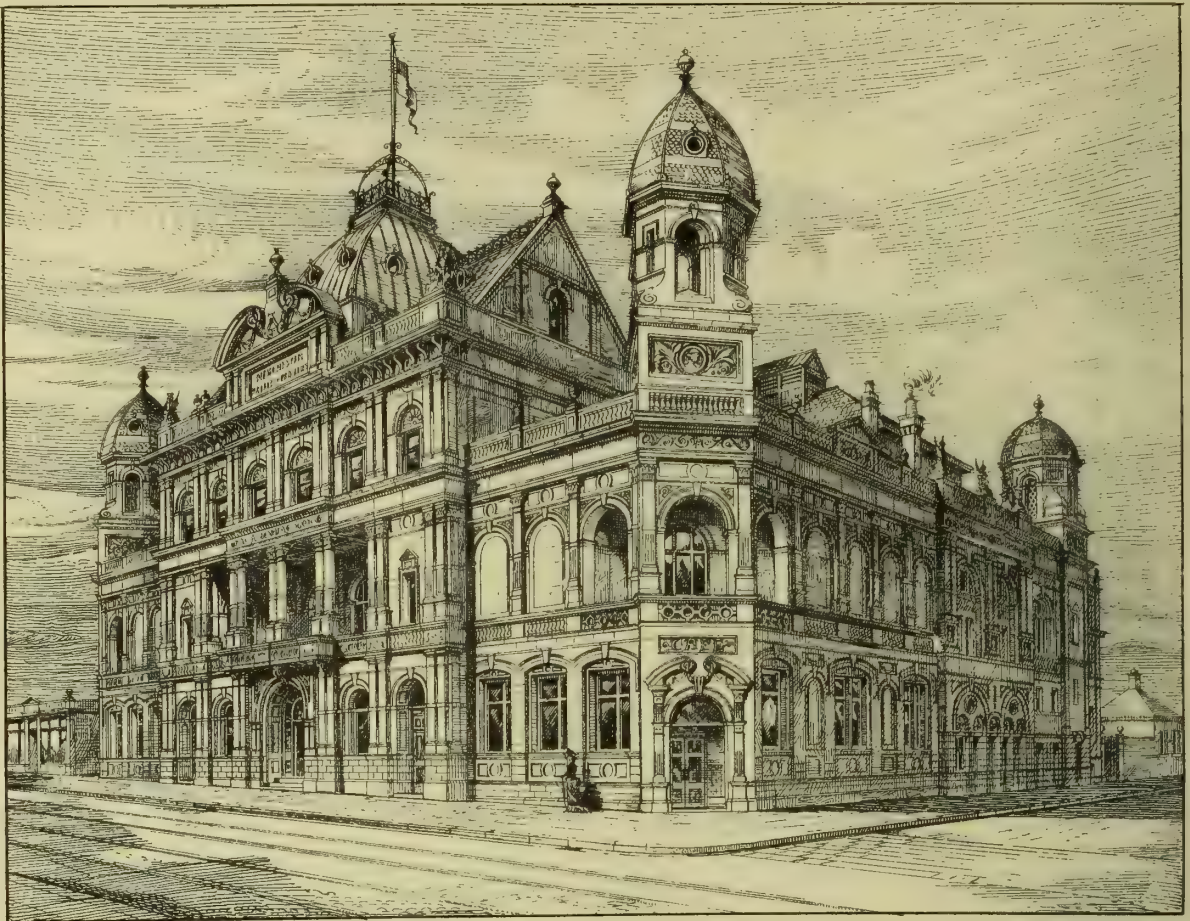






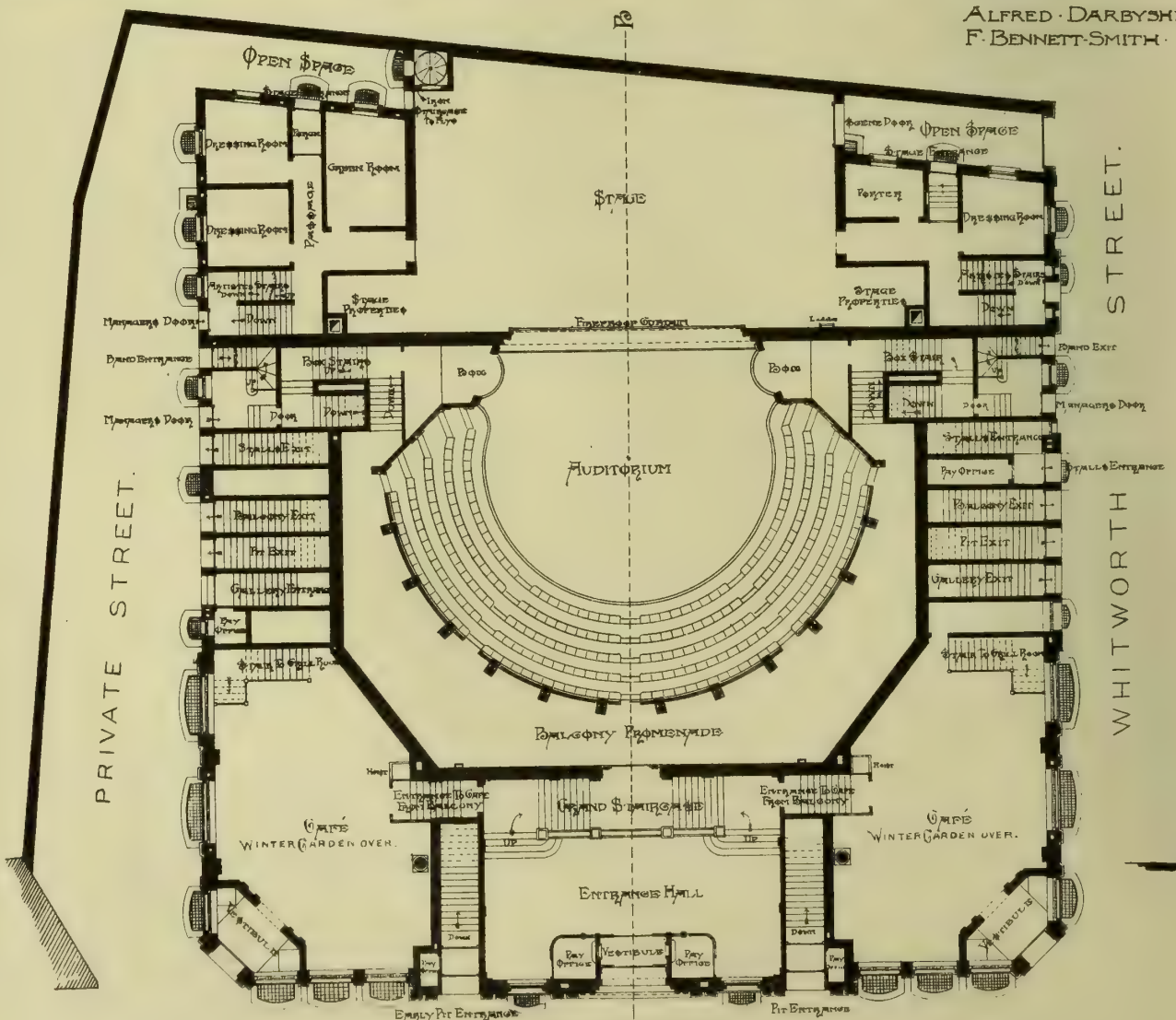






PERUM LIND

ALFRED DARBYSHIRE · FRMR  
F. BENNETT SMITH · ARCHT



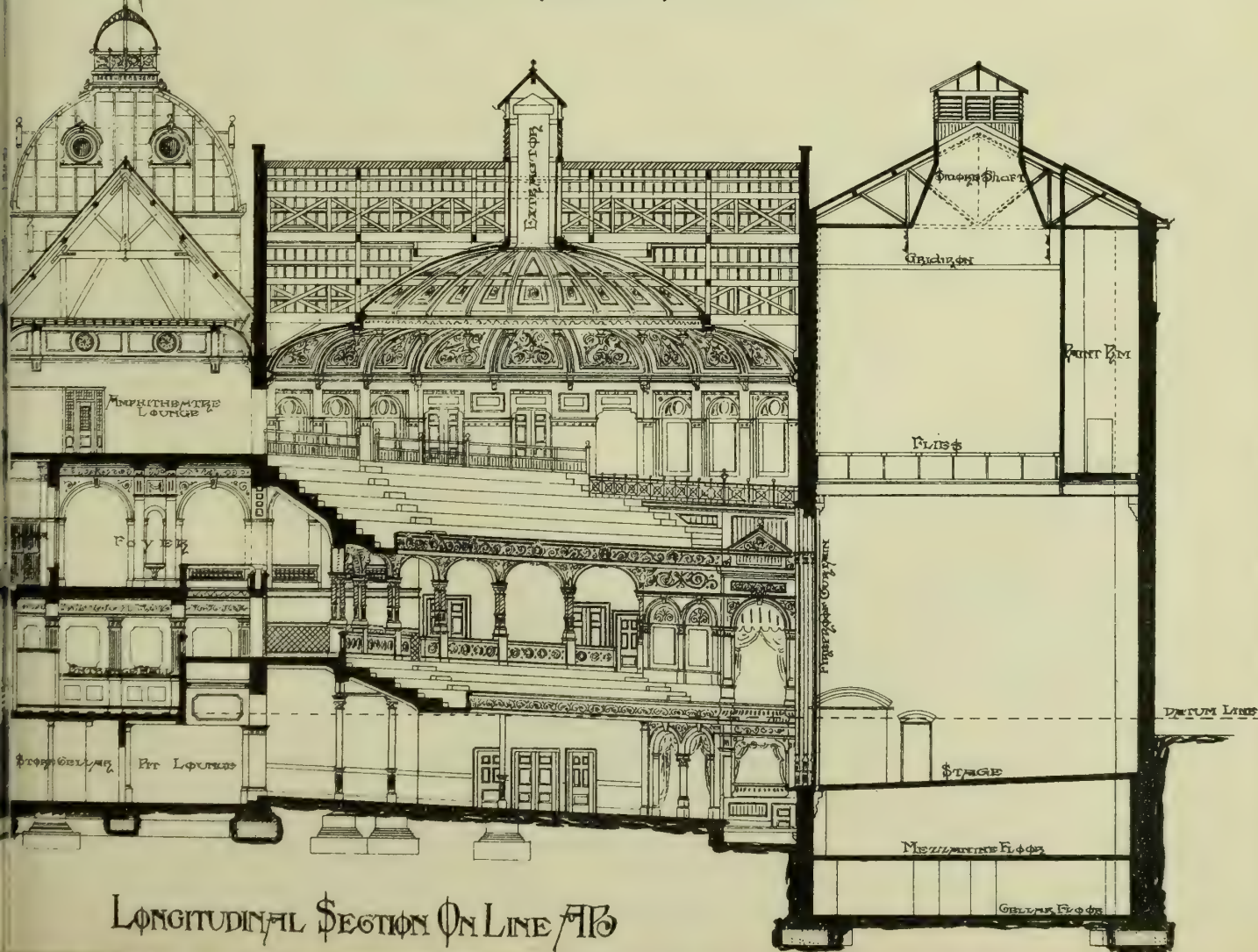
PERUM LIND  
OXFORD ST

GROUND AND CIRCLE PLAN  
OXFORD STREET.



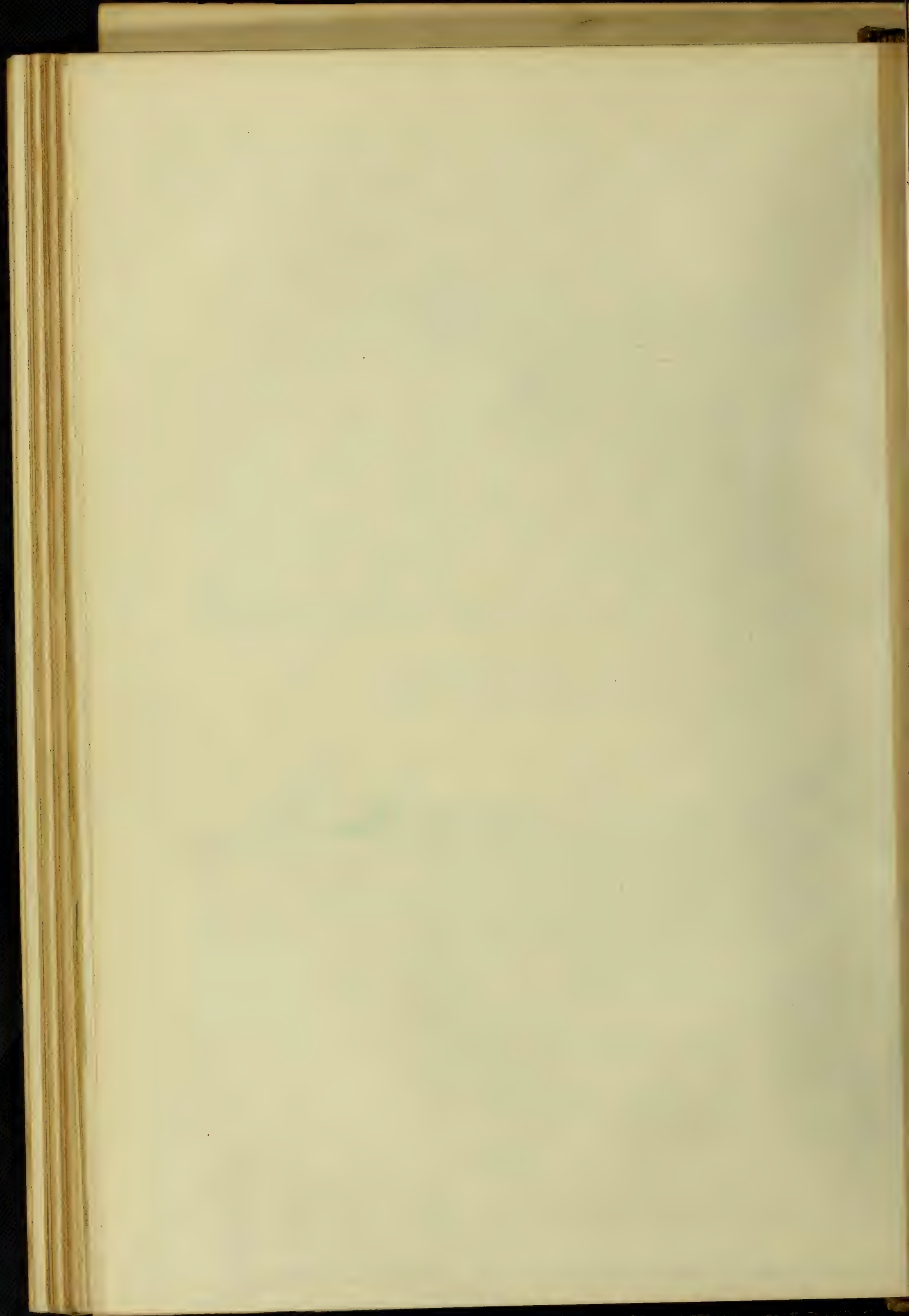
WESTER PALACE

OF VARIETIES



LONGITUDINAL SECTION ON LINE AB







# THE BUILDING NEWS

## AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1830.

FRIDAY, JANUARY 31, 1890.

### PARTY-WALLS AND ADJOINING OWNERS.

THE rights and obligations of those who are joint-owners of party-walls are so explicitly stated in the Metropolitan Building Acts that one would scarcely imagine how differences are likely to occur, were we not to bear in mind the number of building operations going on in London, together with the complex and nice questions that are brought up for magisterial decision. A building owner takes down his premises between two other houses, and in so doing disturbs seriously the wall on one side or the other. He has a right to pull down and rebuild it if it is so far defective as to make it desirable, with the consent of the adjoining owners; but in many cases this consent is withheld, or the structure is pronounced dangerous, and provisions of the Dangerous Structures clauses apply. In either case the adjoining owner suffers inconvenience or damage, and there can be no wonder that a disagreement should arise. It often happens that the building owner, in taking down any portion of the party structure, such as jambs, causes cracks or settlements to arise in the adjoining premises, or the foundations may be undermined by excavation, and the owner of these premises naturally looks to the builder for recompense. A constant source of litigation can be readily apprehended in this way, notwithstanding a learned lawyer (Mr. Justice Kay) declared the other day in a case brought before him ("Charles v. Gover") that London architects and contractors went to work as if there were no such Act as the Metropolitan Building Act in existence, and they did not take the slightest pains to act in accordance with it. In the case to which these remarks were applied an owner utilised a defective party-wall which had been condemned under the Dangerous Structures clauses. The charge upon architects and builders is uncalled for when we consider the nature and complication of the cases likely to arise. That a great many rotten party-walls are built upon or utilised there can be little doubt. The statutory rights of adjoining owners are not always exercised or enforced, and the utmost vigilance of the district surveyor is necessary in order to make sure that a defective wall is not built on to or raised. The sound half of the wall often has to bear all the weight and strain of the increased height. Chimney jambs and breasts are often pulled down on one side, which considerably weakens the structure attached to them, and no substitution is made. The foundations are frequently tampered with. Adjoining owners are often remiss, and if the district surveyor is not watchful, much damage may be done to their property.

One of the dangers to which the adjoining owner is exposed is the right given to the builder of "cutting away any footing, or any chimney breasts, jambs, or flues projecting from any party-wall in order to erect an external wall, or for any other purpose." Though the condition immediately follows of "making good," it is not so fully complied with. The act of cutting away and breaking the bond shakes the work of the party-wall, and if the wall has partly received its support from the footings and jambs, their removal is a serious disturbance. The Act does not give the adjoining owner the means of ascertaining the actual nature of the case; his only security is to employ a surveyor to

see that his neighbour really carries out the intention of the law. We have known a party-wall practically destroyed as a solid homogeneous structure of division by holes and chases cut into it for beams and partitions—a right which the builder can exercise under the 82nd section.

The complacent neighbour, assuming that the builder will do all right, does not interfere, but afterwards discovers that his walls are much shaken and cracked, and that the end of a timber beam has been thrust through, regardless of the proximity of a flue. At the moment these cuttings were made and the work concealed, the surveyor was not present. Not infrequently, a party-wall is found to have considerably overhung the neighbour's ground, owing, perhaps, to excavations in the basement, and the Building Act allows the building owner to "cut away or take down" such parts as overhang in order to erect an upright wall. Here also the neighbour may suffer damage through no fault of his own, as in nine cases out of ten the wall has declined owing to improper underpinning or excavation on the other side, and the right of support has been acquired by lapse of time.

Other questions regarding party-walls in respect of ownership are frequently perplexing. The wall may belong entirely to one of the two owners of adjoining land subject to an easement of uses belonging to the other owner; it may have been erected on land belonging to both owners in equal moieties as tenants in common; or the wall may be erected in two halves divided longitudinally, in which case one owner has a right to cut down the half on his own land. In the first case it is evidently unjust that the owner of wall should be subjected to the inconveniences of a building owner who wishes to cut down his half of the wall, or of correcting the verticality of the wall; in the second instance there is a legal right of partition, the owners are tenants in common, and this applies to the greater number of party-walls. Each owner has his remedy against the other for any injury done to his portion. In the third case cited above, where there is a longitudinal division, each party can pull down the portion of the wall standing on his own ground, unless there are circumstances from which a grant of an easement conferring a right of support can be implied.

These legal dicta are necessary to be borne in mind when one owner, in making alterations, finds it necessary to interfere with his neighbour's portion. When one portion of a party-wall cannot stand without the support of the other half, as in the case of a wall overhanging, there is certainly a difficulty in deciding what course ought to be pursued. If both premises at one time have been in the hands of the same owner, a strong presumption may be held that a right of support was conferred on the adjoining neighbour. A question of some doubt arises in a case such as that stated by a correspondent in our Intercommunication Column. A. desires to rebuild his premises; but it is found that the adjoining owner, B., has a pilaster which encroaches on A.'s moiety of the party-wall to the extent of some inches. Can A. compel B. to remove his pilaster, which has been in existence over twenty years? Here we have a common incident. B. probably has a right to the party-wall which may have been built on his own land, and A.'s house may have been built against it. If so, of course A. cannot compel B. to remove the pilaster. If the wall belongs to both owners as tenants in common, B. has still an easement which cannot be easily set aside; an original owner of B.'s house may have also been owner of A.'s house, in which case a right of support was conferred on the neighbour, or both owners may have come to an agreement. Let us take another instance: A building owner pulls down his house, and in doing so

has been obliged to take down a chimney belonging to his neighbour, and which received support from it. The wall is only half a brick thick, and is exposed to the weather, and below piers and arches carry the upper portion, making recesses in the building owner's house. Is the building owner liable to rebuild his neighbour's wall and make good the damage? Certainly, as a building owner cannot remove a wall that has been used as a party-wall for so many years without injuring his neighbour, and he is certainly liable for the support of the chimney as a party structure. The owner of the adjoining premises having acquired a right of support is entitled to a restitution. A similar principle of law or common fairness can be applied to other circumstances in which acquired rights are at stake; but in many of these professional advice and friendly negotiations between the parties may do more than litigation.

### CO-OPERATION OF THE PROFESSION AND TRADES.

WE have always thought that if a meeting-ground could be established between architects, artificers, and craftsmen connected with building, great facilities would be offered to each class, and many of the obstacles removed which now interpose in the carrying out of designs. Let us take for example the requirements of an architect. He is engaged to design and prepare contract plans for, say, a theatre, in which it is desirable that the most approved appliances should be introduced in the way of stage construction and fittings, electric-lighting, ventilation, fire-resisting construction, unflammable materials, and decorations. His experience may have been hardly sufficient to acquaint him with these points, or, what is more probable, he may be perfectly ignorant of new methods and inventions. An hour's intercourse with an expert in these questions, or an inspection of an exhibition of specialties, would enable him to sit down and complete his drawings and specifications with composure; it would supply him with the practical information he wanted, and which no treatise or guide could give him. An interchange of views of this kind is what the young professional architect is most in need of. None of the architectural societies have as yet furnished their members with a meeting ground of this description, a sort of exchange in which the views of professional and practical men can be discussed for their mutual advantage. Reading papers and discussing them are valuable means of imparting and acquiring knowledge; but they do not supply the wants of a man who requires to know something definite, to discover someone who would undertake any special work, or to see something that will suit his ideas, and that he can specify. A library of reference books is valuable, but, as a practical correspondent said the other day, the hunting up of any question is too laborious, and, as we all know, many of the details we require are not treated in books: they are matters which the authors appear to think beneath their notice; in other instances, owing to the ever-increasing number of "book-makers" and compilers, the subjects are treated too superficially to be of any value to the architect.

The idea of an exchange is not new; we have plenty of exchanges, from Stock Exchange to mercantile exchanges. In America and Australia the idea of a builders' exchange has taken a firm hold on the trade, as those at Sydney and Melbourne; at the latter city several meetings have been held for the purpose of establishing such an exchange. The object is to enable the builder to find what he wants; if he wants to see in the course of the day a blacksmith or a bell-hanger, he can do so by calling at the exchange. What the Sydney and Melbourne



builders are doing might be done in London and other large centres if only the architectural societies helped the movement. It would be desirable for architects, builders, manufacturers, and artisans' craftsmen of various industries to join in the establishment of an exchange of this description. The manufacturer, the patentee of new appliances and materials, the craftsman and the artist would become members, for each would be directly benefited. To sketch out a scheme for an exchange of this sort is not our intention here, but simply to indicate what benefits are likely to accrue to professional men, builders, and tradesmen.

One of the obvious disadvantages under which the architect works is his inability to obtain information on the shortest notice. He wants to know when preparing his plans or writing his specification the space or area occupied by dual desks in a schoolroom, or the length and width of a seat in the plan of a church or a theatre. To turn to published rules or to precedents would cost him, perhaps, a fruitless search of probably several hours. There are makers who could give him the exact dimensions at a moment's notice or models to which he might refer if he knew where to go to find them. How many architects wish to know how to build cavity walls and to specify the right number of cramps for a given area of wall; the number and distribution of flues for warm air; the kind of heating apparatus that should be specified, and what provisions should be made? Numerous queries arise in designing the details of terracotta, and of cast or wrought-iron, matters which are inadequately provided for and specified simply because the architect cannot refer to working drawings or books dealing with them, and is consequently obliged to describe them in a very general manner or leave them to the manufacturer or engineer. Special fittings for technical schools, laboratories, and museums are amongst the many things that ought to be known before proper detail drawings can be given. When we come to the purely technical requirements of building, the architect is in greater need of aid: he is obliged to have recourse to the trade circulars and descriptions of engineers, and is often compelled to specify apparatus and fittings without knowing which are the best for his purpose. A museum of appliances would enable him to see at once which of the several principles was most suited to his wants: he could there obtain their cost, and would be able to specify the particular form of apparatus with precision.

Hydraulic lifts, heating apparatus, electric lighting are three of the requirements of modern buildings; but the architect knows practically very little about either of them. There is no treatise published which gives him any rules or data to work upon, and even if such could be obtained, the practical experience of the manufacturer becomes indispensable. In making provision for a lift, it is essential that the architect should be placed in communication with the engineer before the former can complete his plans as to the necessary excavation or boring for cylinder, size of lift, &c. If he could be informed of the kind of lift and the conditions of successful working, it would be of much service to him. He ought to know something of the systems used and the requirements if he desires to avoid the mistakes that others have fallen into by not acquiring rudimentary facts in connection with the subject they are dealing with. To illustrate our meaning, the architect is often called upon by a client to advise him as to the fitting-up of a lift, and the power required. The adviser, knowing little of hydraulics or the laws of transmitted power, makes the mistake of thinking the power of the piston in the cylinder multiplied, whereas in point of fact, no more foot-pounds of

energy are given out than are supplied to the piston or ram, or 2,240ft.-lb. on the pump-plunger will only give 1ft.-ton on the piston. What is gained in power is lost in velocity. To take another question—that of electric lighting—some knowledge on the part of the architect is looked for. He cannot possibly advise, much less specify, till he knows the requirements, the probable cost, and details of lighting arc or incandescent lamps; the difference between connecting on the two systems, the number of "switches," the motor, dynamo, or batteries; the mode of connection, such as the "connecting in multiple" or "multiple series." These and other technical points of an electric-lighting installation must be learned, and no one but an electric engineer or a manufacturer can supply the necessary information. The electromotive force in "volts" or the quantity of "ampères" to give a certain candle-power light must be known before any idea of cost can be obtained. As to fittings, such as brackets, electroliers, and other appliances for lighting, recourse must be had to a well-stocked museum or showroom. The same want of information is found in various other trades; the architect, even if he provides for a separate contract, must have some particulars, he requires to know how the particular thing, say that of electric lighting, or revolving shutters, or lifts, or fireproof flooring, is usually managed or fitted. If he is for the first time planning a board schoolroom, a hospital ward, a laboratory, a brewery, or billiard-room, or even such ordinary buildings as a conservatory, a stable, a racket court, he requires to know the most desirable plan or proportions to follow, what rules of lighting and ventilation are to be observed, what fittings are necessary. Books will not help him, he must either see other buildings or good models, or must obtain particulars from someone versed in the construction of any of these structures. How many are the applicants for specific information of this sort may be seen by looking through the columns of our "Intercommunication." How to lay a spring ballroom floor, how to construct and heat a swimming-bath, how to build an oven, how to ventilate a room, how to improve its acoustics, how to plan a cabmen's shelter, are but a sample of questions put on specific subjects. Information must be gleaned from inspection, or application to those who have it to give. In these ways the exchange may be rendered helpful to the architect; but there would be a reciprocal benefit conferred. We have often noticed the evidences of a want of sympathy. The work of the manufacturer and tradesman may be excellent as a specimen of executive skill and workmanship, but not pleasing to the architect's mind. In exchanging their opinions and remarks, both would be deriving a benefit—the architect would be learning the technical requirements, the tradesman or craftsman the views of one who regarded the work from an art point of view. Better manufacture, improved workmanship, more tasteful productions would be the result of an interchange of thought between the manufacturer and the architect. For want of this co-operation we have to pay heavily for designs of a special class. Manufacturing firms can dictate the details of buildings, and are in a position, owing to their technical knowledge, to prevent or hinder any improvement that may be suggested. So long as designing of buildings is in the hands of professional men who will not study workshop methods and details, and the design and workmanship of fittings and details are in the hands of the manufacturer, there will be disunion and a working apart of the two classes. Castings of constructive and ornamental ironwork will continue in the market that cannot be justified from an architectural point of view; ready-made mouldings will offend against

correct taste, plaster castings, manufactured decoration, wrought-iron fittings and brass-work will be thrust upon architects and employers who are unable or unwilling to require anything more in accordance with the requirements.

Co-operation is desirable in other ways. There are numerous architects who would like to engage artists and craftsmen of repute; but who have no other means of doing so than through the contractor. Let us suppose an architect engaged in carrying out a design in which iron entered. He would not care probably to go to an engineer who was a specialist to prepare designs and give an estimate; but if he could consult anyone who had experience in executing such work it would be of service. He could depend on the details being carried out skilfully. Or in a scheme of decoration, an architect prefers to put the design in the hands of decorators of repute, men whose skill and artistic judgment can be fully depended on, who would carry out the details of ornamentation from his sketches, and prepare cartoons or models for inspection. For example, the decoration of a church, or the auditorium of a theatre, requires the engagement of artists who are ready to devote their time to the preparation of studies, and are able to suggest a scheme of colouring. The failure of these designs is partly due to the habit of leaving it to a contractor who employs his own men or sub-lets the works to others at a price which cannot insure success. To establish a relation between architects and art craftsmen, is one of the reforms we want, to place art in the position it once occupied; it is of little use to expect co-operation to follow from technical instruction and patronage of arts and crafts exhibitions—personal intercourse between the designer and the workman, between manufacturer and artist, employer and employed, is the only way of creating an understanding and of awakening a sympathy between them.

#### A GALLERY OF ARCHITECTURAL WATER COLOURS.

THIS week an exhibition has been opened in the galleries of Mr. McLean, in the Haymarket, of water-colour drawings, by Mr. Edward H. Bearn, illustrating German and Italian cathedral towns, and their picturesque streets and architecture. All those who have an eye to colour and enjoy its free use, coupled with an unrestricted artistic fancy, will appreciate the collection thus industriously brought together, and if there is one thing to be noticed, perhaps, more than another, it is the lively aptitude of this painter for his work (of which he seldom seems to tire). We cannot always feel that truth to nature is a primary consideration with him; he is clearly far from being a master of technique, and sometimes his imagination results in making the buildings he paints resemble stage-play architecture—judged, that is, from an architect's point of view. We greatly prefer his quieter studies, and No. 1, from Pistoja, if one of the least, is one of the most successful bits in the gallery. The Venetian Boats (No. 8) are boldly done in brilliant colours, and act as a clever foil to Sta. Maria della Salute, shown in the middle distance. Not that Mr. Bearn avoids drawing monumental architecture to a good large scale, for this same beautiful church is worthily painted in No. 26, a lovely study in yellows and blue, or in No. 19, where again this identical building in a Turner-like view illustrates the lines:

"Column, tower, and dome and spire  
Shine like obelisks of fire."

Amalfi Cathedral, with the great range of steps rising in front of the western portals, is another picture which pleases us, and the Campanile of the Palazzo Pubblico at Siena



crowns a good study of Italian street life with some characteristic and well-drawn oxen in the foreground. The melting tones embodied in the "Fruit Stall, Castellamare" (No. 21) are exquisite in point of colour, but any mere realism is clearly not intended. The Market-place at Ratisbon at once furnishes a very grand subject, with the great cathedral spires coming with lordly grace in the middle picture, and the familiar fountain in the centre of this busy scene. The Grosse Ring Platz, Prague, and another on the Old Bridge, in the same place, are to be reckoned among the best, brightest, as well as most soft and true, of this painter's productions here shown. The after-glow on the Lagoons of Venice is also full of tone, and gives an exquisite sunset effect, and the same may be said of his view overlooking the river at Rome, with St. Peter's, the Fortress, and the Bridge, for, although the subject has been done to death before, so to speak, this study gives so refined a touch to nature as to render the painter's picture even fresh, and certainly welcome. Another exhibit of the same order of merit may here, too, be noted—viz., No. 54, under the lines:

"And the crimson pall of eve may fall  
From the depth of heaven above."

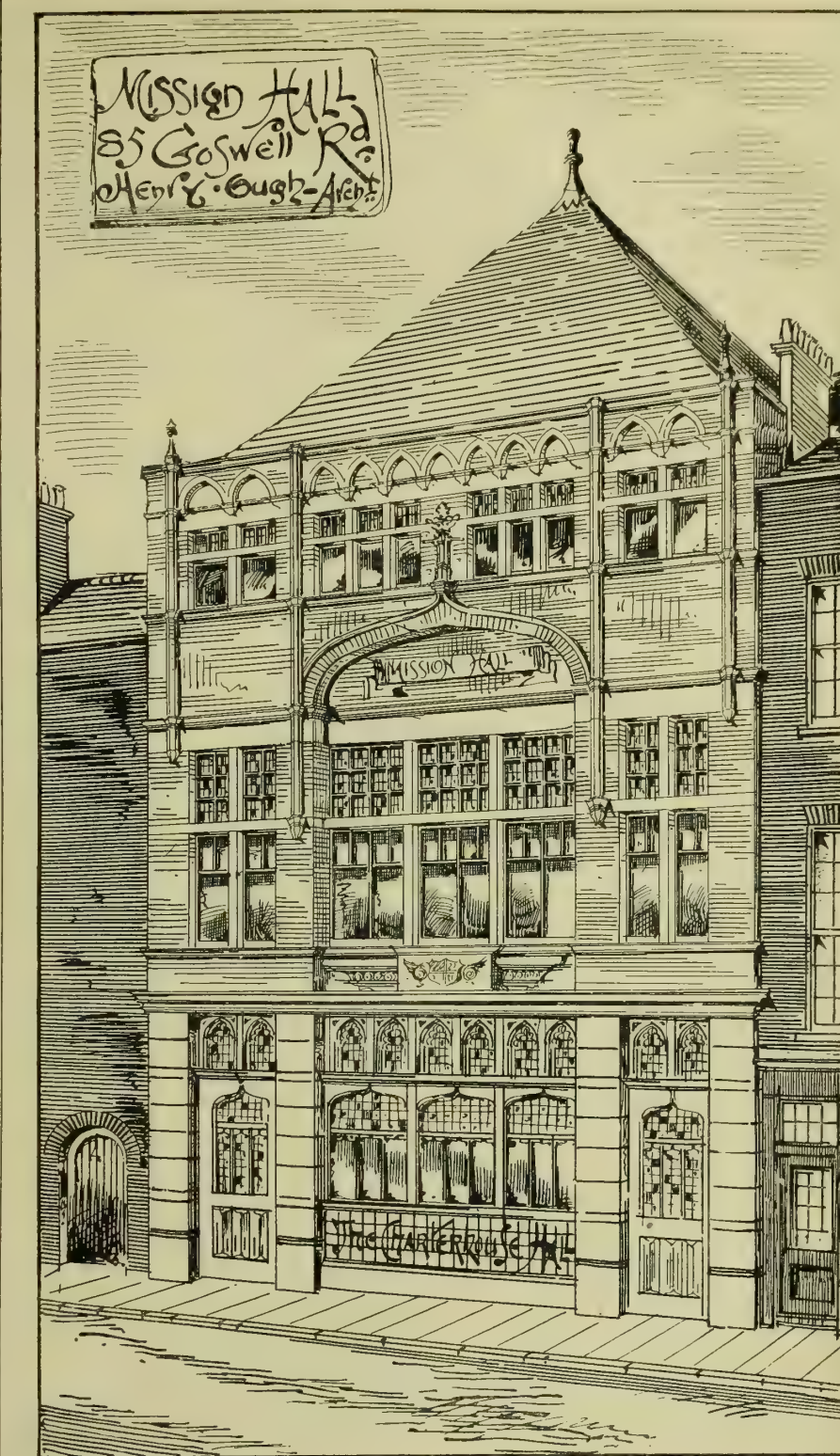
Heidelberg Castle, the Spanish House, Ghent, the showy drawing of Augsburg Cathedral, Views in Nuremberg, and others in Venice, serve to give variety and illustrate the painter's love of his work. The exhibition to the architect certainly is worthy of a visit.

#### MISSION HALL, GOSWELL-ROAD.

THE illustration shows the elevation of this hall, which it is proposed to erect for the mission work in connection with St. Paul's, Clerkenwell. The elevation is to be executed in red brick with terracotta dressings, the internal construction to be of fireproof material for floors and staircases. In the basement will be lavatories and stores, and a large kitchen for preparing teas, &c. The architect is Mr. Henry Ough, of 16, Austin Friars, E.C., and the lowest tender in a limited competition was that of Messrs. Wall Bros., of Kentish Town.

#### ROMAN ARCHITECTURE.\*

THE magnificent public buildings of Ancient Rome attracted the attention and excited the admiration of mankind from the time of their erection. Nearly all the Roman writers have mentioned them with affection or pride, from Plautus (254 to 184 B.C.) to Ammianus Marcellinus (370 to 390 A.D.), who was the best of the Roman writers, and he tells us of the admiration excited in Constantine the Great by the sight of the following buildings in Rome: The Temple of the Tarpeian Jove, the Baths big as provinces, the mass of the Colosseum, the shape and doming of the Pantheon, the Temple of the City, the Forum of Peace, the Theatre of Pompey, the Odeum, and the Stadium, and the astonishment he showed at the sight of Trajan's Forum. On the irruption of the barbarians, most, if not all, of the public buildings were plundered and partly destroyed. The Popes were, however, enabled to save some by consecrating them as churches, for the barbarians seemed to have had some respect for places of worship in use, though the Scythians burnt the Temple of Diana at Ephesus in the 3rd century (A.D. 260). The Pantheon was dedicated to the Virgin and Martyrs in the early part of the 7th century by Boniface IV. (608-615), and it has thus been preserved to the present day. The Gothic King, Theodoric, as early as the 5th century (455-526), repaired some of the buildings that had fallen into decay—notably the Baths; but the successive irruption of hordes of savages, whose whole delight was slaughter and destruction, converted whole tracts of the Roman territory into wildernesses, thus almost annihilating industry and commerce, and so cutting off the resources by which the public buildings were supported



and repaired. The change, too, of faith, of circumstances, of habits, and modes of thought, caused the abandonment of many of them, and those so abandoned were used as quarries; the burnt bricks and the stonework, the columns, and the costly marbles were used in the construction or in the adornment of new buildings. The absence of commerce made the very iron cramps so valuable that it was found worth while to cut through solid stonework to obtain them; but what was even more destructive was the conversion of the stone and marble into lime,\* which is generally wanted where human life exists. We know that the Mausoleum was made into lime by the Knights of Rhodes, even so late as the 15th century. Roman architecture has claims upon our attention, not only for its intrinsic merits, but as a continuation of Greek

architecture, though with the addition of the arch, the vault, and the dome, and was in fact mainly designed by Greek architects, who were slaves or freedmen; but it has an even greater interest as being the mother of the Byzantine, the Romanesque, the Saracenic, and we may almost say of the Gothic. The grand ruins themselves attracted attention as soon as the barbarians had settled down to peaceful avocations. Scholars, too, sought to identify the ruins of the ancient buildings with those described by the Latin authors. Taste and patriotism both combined to make men antiquarians; they grieved over the daily destruction of beautiful things, and they saw that each beautiful thing destroyed, each column burnt into lime, each building ruined for its brick facing, was lessening the evidence of Rome's former greatness. Cola di Rienzi, the Tribune of the people (1313-1354), was one of the most prominent of the early antiquaries. As soon as the new buildings of grandeur and importance were required amongst the settled towns of Italy

\* A Lecture delivered by Professor GEORGE AITCHISON, A.R.A., B.A., and V.P.R.I.B.A., before the students of the Royal Academy, January 27th, 1890, being the first of a course of six addresses on the subject.

\* Pirro Ligorio says that some large marble cornices and an infinite number of statues found in the Temple of Faustina were broken up and burnt into lime. Prof. Middleton "MSS. notes by Pirro Ligorio," Society of Antiquaries, 1889.



architects were attracted to the Roman ruins, and endeavoured to extort from them their secrets. All architects have read in Vasari of the time spent by Brunelleschi in measuring and studying the Roman ruins, when he was solving the problem of how to dome the Cathedral of Florence, and Donatello was his companion in these studies. Brunelleschi was born in 1377, and died in 1444; in 1453 Constantinople fell, and a fresh impetus was given to the Renaissance by the influx of books, MSS., and works of art, as well as by the scholars, artists, and skilled workmen who had escaped from it. In the high tide of the Renaissance architects flocked to Rome from every part of the Christian world, to measure and study the remains of Roman architecture, while a new light was thrown on the remains by the treatise of Vitruvius, as new lights were thrown on Vitruvius by their study. Vitruvius' book probably held its place as the teacher of architecture throughout the Middle Ages. Galiani, in the preface to his Vitruvius of 1758, tells us from Panormita that Alfonso the Magnanimous, King of Arragon, wishing to restore the new Castle of Naples, had no recourse to others, but to Vitruvius, and because Panormita gave him his Vitruvius, which was without ornament or boards, the king reprehended him, saying that so important a book did not deserve to remain uncovered itself, from which we learn so well how to cover ourselves,\* and at once ordered him to have it nicely bound. Professor Cockerell, in his pamphlet "On the Architectural Works of William of Wykeham" (8vo, London, 1846, page 33), erroneously supposes that it was Alfonso III. (whom he calls the Philosopher), who lived about 1284. It was Alfonso V., who reigned from 1416 to 1458, and whose sayings Beccadelli (called Panormita, from his being born at Palermo) recorded, and which were published in 1485. In this same note Professor Cockerell says: "The evidences of the estimation in which Vitruvius was held in the Middle Ages abound. The citation of his name in the earliest and most authentic documents of the Freemasons is seldom wanting. The church in the Castle of Nuremberg, built by Barbarossa in 1158, and the Fraunkirk, in the centre of that great city, probably of later date, are exact illustrations of the 'Temple in Antis' of Vitruvius, as given by Caesariano (Lib. iii., fol. 52). . . . In fact, it appears that in the Middle Ages, scarcely less than now, it was the intention and aim of the architects on all occasions to establish their rules upon Vitruvian authority; and the illustrations given in the plates of Caesariano may be adduced as sufficient evidence of this traditional respect for the father of architectural legislation." Vitruvius' book was first printed in Rome c. 1486, edited by Sulpicius, and was re-edited and illustrated with woodcuts by Fra Giocondo in 1511, who tells us in one of his books that he shed tears over the destruction of the buildings and works of ancient art that took place in his day. Amongst the Italian architects we have a succession of those who published drawings of some of the ruins of Roman buildings; L. B. Alberti, Sebastian Serlio, who is supposed to have published in his book the drawings of Baldassare Peruzzi, Palladio, Antonio Labacco, Vignola, V. Scamozzi, and others, up to the present century, in which Canina published his "Edifices of Ancient Rome," in six volumes (1848-56), and doubtless there is a vast mass of unpublished drawings. Thirty folio vols. of Pirro Ligorio's "L'Antichita di Roma" are amongst the Royal Archives at Turin. In the 17th century France took up the task, and we have the "Edifices of Ancient Rome" by A. Desgodetz (1682). England at last followed, and Taylor and Cressy's book on the architectural antiquities of Rome was published in 1821-1822. I have not mentioned the monographs on Roman buildings, which are numberless. We all know that every book on architecture, and most of those on any of the building trades up to the middle of the last century, had illustrations of the Roman orders, or of the paraphrases of them by the eminent Italian architects, and many books on architecture, even to this day, contain

them. Looking at the affluence of information we possess on the architecture of the public buildings of Rome, it seemed to me to be more useful to speak of the private houses. Under the head of private houses I include those in town and country as well as those in the capital. I shall try and touch on some of the palaces, as they are but glorified houses. Roughly speaking, the Roman house must necessarily have been the model from which most of the houses of the Western world have been derived, not to speak of the cloisters of cathedrals and abbey churches which, with their gardens, are supposed to have been copied from the atrium of the Roman house. In England the Roman villa was different to that in Italy; the atrium became the forecourt, the rooms at the end and part of the two sides sometimes having a verandah next the court, the open space was the compluvium or impluvium on an extended scale; but in Spain the general arrangement of the Roman house is still adhered to. It is interesting to know something of the type from which most subsequent civilised house-building took its rise, more especially when that wonderful people, the Romans, had, within a short time after its death struggle with Carthage, virtually conquered the whole of those countries which surround the Mediterranean, and had thus become acquainted with the houses and palaces of Greece, Illyria, Epirus, Macedonia, Thrace, Asia Minor, Syria, Palestine, Egypt, and Numidia. The Romans were of all people the readiest to adopt all they considered excellent, and we cannot suppose that they did not seize on each particular form or arrangement that recommended itself to them in the houses and palaces of those countries. We know from Plutarch that Pompey copied his theatre from the one at Mitylene in the Island of Lesbos. In reading the descriptions of the villas of Cicero, of Trimalchio, and of Pliny the Younger, we see the care that was taken to secure proper aspects and delightful views, silence in bedrooms, quietness, and pleasant prospects in studies, and to provide libraries, picture galleries, baths, and tennis courts. We learn how the houses were kept warm. If we were without any express statements of their being warmed, we could see the provisions for warming them in the ruins of the Roman villas in our own country. We have again the precise instructions of Vitruvius for proportioning the separate parts of houses. This subject is greatly neglected in the present day, although it is vitally important if we wish to make our rooms captivate the eye. I recollect hearing Professor Cockerell praise the library of University College, London, which Professor Donaldson had just built, and say it was elegantly proportioned, and showed the ripe study that had been bestowed on it. He added that young men were often excellent in ornament, but rarely attained excellence in proportion, as they had not as yet been duly impressed by its importance. We in England, too, greatly neglect that training which is got by the restoration on paper of ancient buildings. Although the younger Pliny's descriptions of his villas are said to be the most favourite exercises for architects, I only recollect a single published restoration by an Englishman, that by R. Castell in his "Villas of the Ancients." For though the Roman house in the learned Newton's Vitruvius has evidently been inspired by Pliny's Laurentine villa, it is not a restoration of it. The restoration of one or both of these villas has exercised the ingenuity, and displayed the knowledge of Italians and Frenchmen. Why were the Italians of the Renaissance the best architects, and why are the French now? Mainly because the former were and the latter are better trained than the architects of the rest of the Christian world. Let us take an analogous case, the invincibility of the Roman legions. We are apt to take for granted that the Roman legions were invincible, because the Romans were a fighting, determined, and well-disciplined people; but Polybius, who was a Greek and a hostage, and had, therefore, no particular reason to love the Romans, explains to us that the Roman legions were largely composed of other nationalities, and that their invincibility arose from the discipline, and not from the men; and that great master of the art of war, Marshal Saxe, makes a similar remark about the men of his day. We are too apt to omit the complete training obtained by the restoration of ancient buildings, until the problems of actual practice come before us, so that we only get perfectly trained after being engaged in a large practice, whereas we ought

to come to our first building in a well-trained state. We saw in the Paris Exhibition of last year a series of magnificent restorations of Greek and Roman buildings—the Acropolis of Athens, the Parthenon, the Theseum, the Temple of Demeter at Eleusis, the Temple at Olympia, the Palace of the Caesars at Rome, Diocletian's Baths, a portion of Hadrian's Villa at Tivoli, the Pantheon, the Temple of Concord, and the Arch of Titus. Many of the sets comprise the plans and elevations of the ruins as they now exist, as well as the restorations, and some of the drawings must be at least 15ft. long, with every detail of the construction drawn, and the colour decorations restored, and this not by very young students, but by men who would here be in practice. M. Paulin's restoration of Diocletian's Baths is admirable, and has an artistic grace that was probably wanting in the original, while some of the mosaic has that dignity of colour that befits a grand public building; this is especially notable in that with the white ground. This practice of restoration has often been as much objected to by the French public as it has been neglected here; but what does M. Chas. Garnier reply to the objectors who say "What is the use of it?" "Why, unjust and churlish souls, it is useful for the history and palpitating life of the arts; it serves to compare the past with the present, and it serves above all (for that is its end) the artist who has worked! Do you think the time he has passed in measuring those fragments, in interrogating those ruins, in assigning them their place and their employment—do you believe that this time has been lost to the artist? He has familiarised himself with the first notions of art and construction; he has lived the life of other times; he has brought together the history of men and of stones; he has learned to study, to compare, to reason, which he must do later when he builds for you; he has, in short, the alphabet of architecture. Whatever may be his ideas in the future, he will know how to express them. If his colleagues have already done similar work, is that a reason why he should not do them? If my neighbour at college has translated Virgil or Cicero, is that a reason why I should not in my turn? Does the education of one man give education to another. Do not laugh at these ignorant attacks? It is noble self-denial to study one's art in youth in the hope of becoming later a master in one's turn."\* To plan well is an important part of the architect's duties, though not the most important, and it means grouping rooms of the requisite size and shape in a convenient manner and with the least loss of space. The Roman architects were excellent planners, and we learn something of this by restoration; besides, the exercise of adapting plans to other requirements than those of the present day gives additional breadth to the architect's mind; and we have, too, in some Roman buildings vast rooms that are unusual in England. Hitherto I have been speaking about fulfilling the programme in planning; but there is another object we have to attain in important buildings—for want of a better word I may call it noble planning—when the rooms have to be elegantly or majestically proportioned, to be diversified in shape and size, and so contrasted as to set one another off to the best advantage. This sort of planning is mostly required in buildings of State, where beauty, dignity, and magnificence are chiefly aimed at; and what applies to planning is equally true of other parts of the tremendous and complex profession that we follow. We must have deeply studied noble planning, as well as that which is merely suitable, if we are to be successful in making noble plans; so must we study dignified proportion, and exercise ourselves in producing it on paper, if we want our buildings or our rooms to be dignified. No one was a more diligent student of the antique, nor restored more ancient buildings, than Palladio, and he was one of the few who succeeded in attaining the dignity and fine proportions of Roman architecture. To compose well presupposes a study of the art of composition, practice in that art, as well as natural genius; and the same study and the same genius are required for all the different æsthetic branches of our art. Nothing can be a better study for grace and refinement than Greek mouldings, only they are not suited to our climate. We in England, therefore, also want to study Gothic mouldings for their effects of light and shade,

\* Cum incivem illam arcem Neapolitanam instaurare instituit, Vitruvii librum qui de Architectura inscribitur, affert ad se jussit. Allatus est, quando quidem impromptu erat Vitruvius meus ille quidem, sine ornatu aliquo, sine Assensibus: quem rex simul atque inspexit, non deesse hunc potissimum librum qui nos quomodo contemur, tam belle doceat, defectum incedere, eumque mihi perquam politè ac subito cooperiri mandavit. (Lib. I, par. 44, Antonii Panormite, dictis et factis Alphonsi regis Aragonum).

\* M. C. Garnier, "A Travers les Arts," 8vo. Paris, 1869.



so that our mouldings may have the grace and refinement of the former, and the effects of light and shade that are obtained by the latter. I have always been struck in London by the variety and originality of the buildings; but in too many instances the architecture lacks knowledge, taste, and care. In the introductory lecture of a course, some digression may, I think, be allowed, as it has to point out the general objects we should all have in view, and how some of these may be obtained by the studies recommended, while the subsequent lectures keep more closely to the subject of those studies. M. Caesar Daly published a pamphlet on "High Studies in Architecture," which has been largely circulated among architects. He accuses all the various French schools of not devoting any serious attention to this subject. As the French schools are very like our own, I may give his enumeration of them. The Paris School of Fine Arts, the architectural schools of Paris and the provinces, the school of Rome and of the diplomaed, the diocesan—i.e., Gothic, which he says knows most about the history of the styles that it cries up; the Independents, and the "Don't care a d—" school. I do not think this is the time to discuss all his propositions, but there are two or three which will, I think, be both interesting and instructive—namely, the programmes for the Bordin and Duc prizes. That for the first is:—"To seek if there be a common æsthetic law, applicable to the monuments of the great epochs of art, and from this point of view to study the monuments of the Egyptians, Greeks, Romans, and those of the Middle Ages, of the Renaissance, and of modern times to the end of the 18th century." This study is not without its use. A clever and indefatigable student might possibly discover laws that have hitherto been overlooked; but one can scarcely hope that one law can be discovered that would insure success in every building, no matter what was its style; we should then have discovered the philosopher's stone of architecture. M. C. Daly says: "Englishmen are practical." So I think, without going so far afield. Those who aim high may be recommended to take the best of each of the different sorts of buildings in the style which each one affects, obtain their size, and then carefully calculate the general proportions for the general effect, and the particular proportions for the particular parts. I have mentioned here before that Sir C. Barry's Reform Club was designed, so far as general proportions go, on an average of those found in the principal Italian palaces, and it is certainly one of the finest proportioned buildings in England, if not in Europe. There can, I think, be little doubt that the Greeks, Romans, Byzantines, Saracens, and Mediaevals had some rules for the due proportioning of their buildings. M. Caesar Daly ventures to say that "architecture is a social expression." I say "ventures" because, as far as we can see, different nations at different epochs had but one chance—i.e., the style in vogue—though there must have been some passion in each nation, or in the architects as a body, to produce those modifications whose ultimate developments we call styles, and those peculiarities we call schools. At each epoch there must have been a taste for some particular characteristic—i.e., for massiveness, exquisiteness, or magnificence, for height or for width, for complexity or for simplicity, as well as a marked liking for particular features, such as the pediment or gable, the arch, the vault, the dome, or the tower, though the arch was an economic invention, and the vault was a preservative from fire. Cicero thought there must be pediments in Elysium; Procopius is never weary of praising the dome of Sta. Sophia, "pendent by subtle magic." But who can say now that there is a predominant admiration for any particular form of architecture? The programme of Joseph Louis Duc's prize is as follows:—"To determine by special studies the style of modern architecture." In the ordinary sense one would say that it is every style and no style; but there can be no doubt that every modern building which is not a copy, and few are copies, has a 19th-century air about it. We cannot imagine Ictinus or Mucielés saying of one of our Grecian buildings, This is Greek. Cossutius or Vitruvius would not say of our Roman buildings, These are Roman; nor would Villard de Honnecourt, or William of Wykeham, say of our modern churches or cathedrals, These are Gothic. They would all probably say, These are not our Architecture; but I cannot admit that this flavour amounts to a style—it is only fish, flesh, and fowl

with 19th-century sauce. For the architecture of to-day to claim the designation of a new style, it must have adopted new forms by reason of new wants or new materials, or it must have embodied in its buildings the aspiration of the people, so that each building is so permeated by it as to give them all a family likeness; but, alas! the people had no aspiration to embody. Eclecticism itself would constitute a new style if all pillaged the same things and arranged them more or less in the same manner. I gather from M. Caesar Daly that Duc expected that the competitors should attempt to show the new style in their designs. No man can create a new style, though, if he be a great genius with a strong personality, he may considerably modify the existing one. As far as we can now see, styles gradually grew up; certain things, or certain new forms, were wanted, and in striving to get these some parts had to be modified. We see in the Roman baths how the entablatures were cut through by the large arches, and were thus obliged to be mitred round each column. The long entablature perished, and with it the prevalence of horizontal lines connecting the columns, and in its place are isolated columns with a scrap of entablature over each, so that the prevailing principle was verticality. In Diocletian's Palace (probably built about A.D. 305) we see that the architects had got tired of sham lintels, and, where they could, used round arches in their place. The architects found, too, that mitred entablatures on isolated columns were in the way where arcading was used, so, when it could be managed, the arches were made to spring either directly from the caps of the columns or from blocks on them. Small colonnades or arcades, when used as decoration only, were carried on corbels, while the traditional ornament was still carried out to the best of their ability. In 532 A.D., some 200 years later, Justinian had Sta. Sophia built; then all traces of entablature over the columns had gone, and it had taken its place over the arcades. The capitals take a new form, and are enriched with a new scheme of ornament, and the dome rests on pendentives. Anthemius of Tralles was doubtless the great architect of his day; the possessor of the current traditions and practices, and had without doubt used pendentives before on a small scale. The Koptic architect who built the brick mosque for Touloun in the 9th century, 876 A.D., at Cairo, was merely possessed of the Byzantine traditions, as carried on in Egypt, and possibly was the inventor of the small arches that take the place of pendentives in the dome. His successors gradually worked out these arches into the form of stalactites that were so much affected, until at last we get the Alhambra and the Alcazar, which scarcely bear any resemblance to Byzantine work. The Romanesque architects, who eventually developed Gothic, went to the Crusades, saw the principal buildings in Rome, Constantinople, Asia Minor, Syria, and Palestine, and either from being prisoners themselves, or from intercourse with Saracen architects who had been taken prisoners, became possessed of the geometry, so much cultivated by the Saracens, and also adopted their methods of design, particularly in producing effects by the constant repetition of parts. So I think we may say that new styles are developed in the course of ages, from the introduction of new methods of construction, new ideals, and, to some extent, through the love of new forms of ornament. In the present day iron, in the form of cast iron, wrought iron, and steel, is insensibly affecting architecture—I mean stone and brick architecture—for scarcely any large building solves all its problems without the use of iron. As far as buildings of cast-iron go, there have been no great achievements yet, within the pale of architecture, and as far as wrought iron and steel go, none. I do not say that nothing has been attempted, but no success has as yet been achieved, and for these reasons, that it has hitherto been too costly to mould wrought iron and steel, and buildings have not been big enough to use the ready-made forms as units of enrichment, nor have artistic gifts been found in the engineers. When good effects have been attained, they have been attained by chance. I do not complain of this, because, in most engineering structure, the main difficulty has been to do them at all. I think we cannot help noticing that there has been an effort at the Paris Exhibition to try what can be done with these materials so as to bring them within the pale of architecture. A witty English architect described the Eiffel

Tower as "a factory chimney in lace,"\* but this is an engineering work, its claim to our admiration is rather founded on the solution of a problem in construction, that was looked on as insoluble, than as the solution of one in beauty; this was at most considered to be of slight importance. The treatment of cast-iron at the Exhibition buildings at Paris, in the shape of columns, has been so successfully achieved as to make the columns perfectly harmonise with the decorated wall they carry; for we have now become so well acquainted with the strength of cast iron as to tolerate its bulk being small, in proportion to the weight it has to carry, and in this case the contrast is agreeable. I cannot too much praise those flanks of the Exhibition buildings where cast iron has been used for support in association with mouldings, sculpture, mosaic and colour; but when it was wanted to bring wrought iron within the pale it defied solution. All honour to the attempt! The wrought-iron stanchions, filled with terracotta, only suggest that the terracotta has been thus packed in iron crates for travelling by rail. In the domes the ribs are unobjectionable, by reason of their slowness; they are mere cobwebs. M. Dieulafoy's spoils of Darius's Palace have taken root and blossomed, for the external domes of the Exhibition in coloured and enamelled bricks are a lovely invention—I think it may be called an invention, in spite of its traditional use in Persia. The adoption of coloured and enamelled bricks for the roofs of vaulted and domed structures, possibly even of ordinary pitched roofs, would add much to the beauty of modern cities. I think I am not singular in looking on the Royal Academy as being desirous of encouraging the higher studies. It does not so much profess to teach that alone by which the student may get an honourable living, as to try to fit him for the highest employment—i.e., the designing of grand public and private monuments, monuments that by their durability and beauty may give a notion of the magnificence and taste of this day to succeeding generations—may, whose very ruins may speak of the greatness of our time, and give lessons in taste, planning, and construction to future architects, when even our language has become the province of a few scholars. No architect should forget that some ruins still excite our admiration, though the written language of their builders is incomprehensible. I may instance the Pelasgic and the Etruscan. I think I may here interpolate a maxim: Never allow your indignation or despondency to prevent you from still doing your best when you have been thwarted in your favourite schemes—always think of Wren. Your indignation and despair will end with your life, even if they last so long, while your building may last for centuries; let not the future cultivated student of your building say, "The architect of this was not steadfast to the end." I will now give you a slight sketch of what we know about the Roman houses and palaces, and of what we may gain by the study of them. Most of the private houses of the Romans have been utterly destroyed, except those in Herculaneum and Pompeii, and we may at present exclude the former from our consideration, as so few have been excavated. It was only after the publication of Sir W. Gell's "Pompeiana," at the end of the first quarter of the present century, that much was known about the houses of the Romans except to those who had seen the excavations. Since his day many splendid monographs have appeared on the subject; the works of Zahn, Müller, Mau, and Niccolini have become textbooks. The plan of Hadrian's Villa, near Tivoli, taken by Pirro Ligorio, was published in 1751 by Contini, and Contini himself published another in 1768. Robert Adam in 1764 published his restoration of the Emperor Diocletian's Palace at Spalatro,† in Dalmatia. Guattani gives the Palace of Augustus on the Palatine in his work of the "Un-edited Antique Monuments" in 1784, and Constantine Thon and Vincenzo Ballanti gave their restorations of the Palace of the Cæsars in 1828, though but a part of Nero's golden house is included. Plans of the Palace of the Cæsars since the recent excavations were published in the *Revue Archéologique* by M. Deglane, in 1888. Mr. Charles Lucas told the editor, M. A. Levy, that I was about to lecture on the subject, and out of compliment to the Royal Academy he presented

\* Mr. J. J. Stevenson.

† Spalato is the modern name; but Adam calls it Spalatro.



me with a copy. As regards the palaces, though the ruins of the few I mention remain, we are even more at fault in them, than in the baths; we have no knowledge of what the rooms were used for; we learn, however, from Epictetus that some of the sumptuary trades were probably carried on in the palace of the Cæsars, for he tells of Epaphroditus' slave, the cobbler, who got a place as Nero's shoe-maker. Guattani gives us plans of the two stories of Augustus' house, which was of a very moderate size. Suetonius tells us it was originally the house of Hortensius the orator, who was married to Cato's wife; but it was probably altered and enlarged, if not rebuilt by Augustus. I cannot say what authority there is for identifying it with Augustus. The front rooms on the ground floor have a Byzantine air about their plans, and Guattani says the shapes are unique. In looking at the plan, we cannot help speculating in which room it was that Augustus gave his fancy-dress supper party, where he and his guests personated the gods and goddesses of Olympus, greatly to the scandal of the good people of Rome. Tiberius and Caligula built larger palaces alongside this, and Nero extended his golden house from the Circus Maximus to what is now the Theatridion of Titus's Baths. I do not know what it cost; but the Emperor Otho gave three millions sterling to finish it, the Colosseum being built on part of it by Vespasian. Domitian added to the Palace one of his own, mainly consisting of state rooms. Hadrian also built a palace, and Septimius Severus, a portion of which was so lofty as to be commonly called the Septizonium, although something of that name existed near the place when Titus was born.\* Hadrian's Villa, near Tivoli, is of immense extent; but was a sort of model of all the celebrated buildings and places he had seen, as well as a palace for himself. Diocletian's Palace, or rather Villa—for he was an ex-Emperor when he lived in it—was of moderate size for those days; it only covers about 9½ acres, and holds about half the modern town of Spalatro. It is mainly interesting on account of its being a point of transition between Roman and Byzantine. We are as ignorant of the uses of its rooms and halls as the uses of the rooms in other palaces. Should I find time, I will touch on the palaces hereafter. As these lectures are useless for architects if they do not give indications of studies that may further them in the exercise of their profession, I think it will be well to say something of the advantages that I think may be gained by the study of Roman houses, villas, and palaces, and their restoration. I have told you what I think may be gained by the study of Roman plans. Confining myself now to the private houses and villas, let us see what these can teach us. Not long ago the President pointed out the distinction between the present day and the days in which Pompeii flourished, that while all our utensils are merely utilitarian and all alike, everything in Pompeii, down to the meanest vessel used in the kitchen, was a work of art, and that the bulk of those used for the same purpose were different.† Even to familiarise ourselves with the utensils would be a considerable gain; but in studying the architecture we have, I think, a double advantage: we find that an entirely different method was adopted for public and for private buildings. For example, the architects of Pompeii would never have reproduced a Doric temple on a small scale for a porter's lodge, as was done here a few generations ago. The architects, too, were much freer in their treatment of well-known parts in private houses than where these were to be used in public buildings. We see, too, at Pompeii every building nearly complete, the mosaic pavements on the floors, and in conjunction with the painted architecture and decoration, the places where there was water and where fountains played, the pedestals or niches for vases and statues, and, in fact, nearly everything as it existed in the first century of our era, except the people, the awnings, the coverings, the carpets, the couch covers, and the curtains; and how splendid these last were we read of in Martial and Petronius. We are too apt to picture Roman buildings as white, and peopled with white-togaed Romans; but very early in the Empire the white toga was rather the exception than the rule, and as each considerable person travelled through the city in his sedan chair, he was attended by hosts of slaves of all colours,

and as richly equipped as their master's purse would allow. Public buildings, too, were less white than we imagine they were; they were rich with coloured marbles, precious stones, bronze, silver, and gold, and with gorgeously coloured and embroidered hangings. We are apt to fancy from the remains of public buildings that strict uniformity was the rule in the capitals of columns and in other ornament, while in private houses we see the capitals at least full of variety and invention. We think, too, that the architects of the Early Italian Renaissance were gifted with an affluence of invention scarcely met with before or since, while in reality almost everything in Renaissance days was paraphrased from Roman remains when it was not directly copied from them. You have only to look at the remains in the Vatican Museum and in the Roman villas to convince yourselves of it. All the arabesques of Raffaele and his school were at least inspired by those found in the chambers of Nero's golden house, below the Baths of Titus; and the stucco designs of the Villa Madama were copied from Hadrian's Villa. In studying the Roman houses and palaces, and still more in restoring them, we become acquainted with the Roman method of planning, with the proportions adopted, with the manner of finishing the work, with the scheme of their sculptured enrichments, with the scheme of the colour and of the colour decoration, and while studying these, we should naturally avail ourselves of all the hints that might be got from the shape and ornamentation of the furniture and utensils. I would ask if the fact of being steeped in this artistic medium is not likely to improve you artistically, and give you both a greater capability of doing artistic work, and a greater desire to see your employers use it? Is not the absence of artistic surroundings the great want that the artist has to encounter in England?

#### BOOKS RECEIVED.

THE Edinburgh Architectural Association have just issued the first part of a volume of *Transactions*, in the form of a paper-covered book of 50 pages, containing short notices of the various buildings visited during the session 1888-9. It is illustrated by page wood engravings of Neidpath and Drochill Castles and by several plans. The 31st annual report of the Council, which is appended to the volume, states that 30 names have been added to the roll of members, while three died, and 23 have resigned or withdrawn, leaving 297 names on the list. As an experiment the *Transactions* promise well, and will be valued by members, but an index would be a desirable and is indeed a necessary addition. — *Sewer Ventilation and Sewage Treatment*, by R. HARRIS REEVES (London: Sinclair, Tweedie, and Co.), is, the author frankly states, expressly written to bring his system before the public. This system of deodorisation by chemicals and ventilation of sewer air has been tried at Tottenham and Frome, and the writer claims for the trials satisfactory results, but he does not state the principle upon which he works, nor the chemicals used, neither does he quote the approximate cost per head or per thousand gallons.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E. Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

#### BRICK-MOULDING MACHINES FOR THE PLASTIC PROCESS.

THE brick-moulding machines usually employed in the plastic process of making are known under the general title of "wire-cutting machines," so called because the stream of clay, after it has passed from the machine, is cut into lengths suitable for bricks by means of a series of wires. These machines are made of different sizes, types, or combinations to suit the varying circumstances of manufacture, and are known as four, three, two, and one-process machines, according to the number of operations combined in and performed by one machine. The modus operandi of a four-process machine may be briefly described as follows:—(1) Hoisting the clay, (2) crushing the clay, (3) pugging the clay, (4) moulding the clay into bricks. Operations No. 1 and 2 are often performed by separate machines, as

described elsewhere. In this case the moulding machines are known as three or two-process machines. In a four-process combination machine the clay is hoisted by means of a chain and suitable winding gear drawing a truck up an incline to a platform above the crushing rollers, which are placed at the top of the machine.

The clay which has already been weathered or prepared, is shot from the truck into the crushing rollers, through which it passes into a pug-mill usually working horizontally, in which it is thoroughly tempered and is finally forced in a continuous stream through a die of the size and shape of the brick required. The stream of clay is then received on a brick-cutting table, and cut into lengths by the wires already spoken of. The bricks are then removed on boards or bearing-off barrows to the drying sheds, from which they pass to the burning kilns.

The principle on which all wire-cutting moulding machines are constructed is very similar; they, however, vary considerably in constructional details. The pug-mills are arranged both horizontally and vertically, as convenience may dictate, and are usually fitted with single or double Archimedean screw-blades for feeding the clay onwards. The chief difficulty found, however, is to keep up a constant and even stream of clay to completely fill the die; in fact the die and its feeding are without doubt the most important points about the machine, and considerable ingenuity has been exercised by makers in overcoming these difficulties, and we propose to give descriptions of several of the most approved forms of dies. The ordinary screw-pug feed is the most common, and to get the required pressure on the clay to force it through the gradually tapering chamber and die, it is necessary to fit a propeller or one blade of the screw feed at the extreme end of the pug-mill shaft. Another plan is to force the clay through the die by means of compressing rollers.

In some of the earlier machines, the clay was forced by the pug-mill through a die with well-rounded corners—so rounded to reduce friction and permit of the easy passage of the clay. After the clay had passed the die, it was drawn through the vertical and two horizontal rollers which were driven and squared its edges, and passed it in a continuous stream to the cutting table, where it was divided into bricks by means of knives or wires. In this case the clay was drawn instead of being forced through the roller, which acted practically as a rotating die.

To insure the passage of a constant and even stream of clay through an ordinary fixed die, pistons have also been employed. In one machine a piston, driven by a screw and bevel gearing, forces the clay through a die sufficiently long to form several bricks, and this is divided longitudinally and transversely by a series of knives.

An arrangement used in America is to form the pug-mill feeding screw and die in a horizontal line and of conical shape, the end of the screw being made with a gradually increasing depth of thread up to the die, the chamber just before the die being roughened to prevent the revolution of the clay. After passing the die the clay is delivered on the endless apron to a knife worked by a flywheel, arranged to make its cut and divide the clay at regular intervals into bricks. A second apron running at an increased speed is used to carry the bricks away.

It need hardly be said that whatever form of feed or die be used, it is of the utmost importance, in order to secure a successful result, that the clay be fed into the machine constantly and evenly, any irregularity in this respect very soon showing itself in the quality and quantity of the bricks turned out. The clay, too, must be thoroughly homogeneous, and neither too stiff nor too soft: the amount of water to be added to effect this result can only be ascertained by experiment, as some clays require very little, and others a good deal.

Our illustration, Fig. 5, represents a four-process brickmaking machine, from the designs of Messrs. John Whitehead and Co., of Preston, a firm who have devoted many years to perfecting machinery especially adapted to the plastic system of making. The four operations combined in the machine are: (1) hoisting the clay, (2) crushing, (3) pugging, (4) brickmaking, or moulding.

The hoisting gear is arranged to bring the clay up an incline to the crushing rollers, and is fitted with a clutch and lever for throwing in or out of work, and friction belt and brake to regulate the speed of the empty waggon down the

\* Suet. "Titus," cap. I.

† Presidential Address of Sir F. Leighton, Bart., Art Congress, Liverpool, 1888.



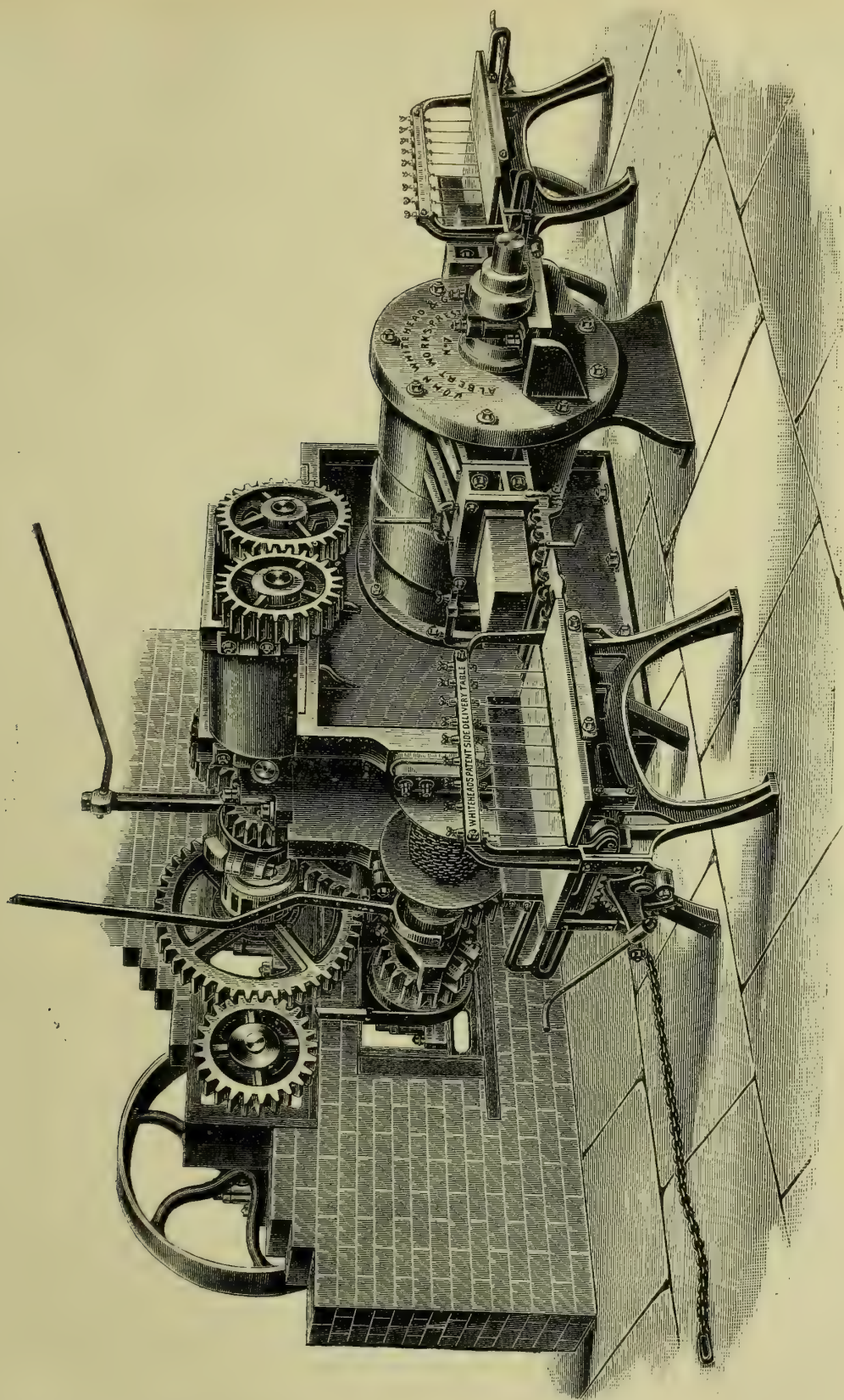


Fig. 5.

incline. The crushing rollers are thrown in and out of gear by means of a sliding clutch and lever, and are fitted with wrought-iron slide plates and adjustable steel scrapers. A self-acting friction belt, to prevent breakage of wheels, in case of the accidental introduction of uncrushable materials, is also fitted.

The machine illustrated is a double-delivery one, and, after passing through the crushing rolls, the clay enters the pug-mill, where it is reduced to one consistency, and forced onwards in a continuous stream through the dies on to the wire-cutting tables, where it is cut into bricks. The pug-mill is made in two parts, flanged and bolted together, so that the upper part may be readily removed for the adjustment or repair of

the pug-mill shaft and blades. We shall have something to say with reference to the cutting table elsewhere. By changing the linings of the dies, bricks with ornamental moulds, bull-nose, bevelled and other shapes, may be produced as readily as plain bricks, and by substituting pipe dies drainage pipes also. Taken altogether, this machine bears evidence of great care in designing, and must be pronounced a very favourable specimen of its class.

Mr. W. H. Radford, C.E., of Nottingham, has been instructed to prepare plans for intercepting sewers and sewage precipitation tanks at Oundle. Mr. Radford was recently the successful competitor for a scheme of waterworks for that town.

The annual meeting of the Royal Scottish Society of Painters in Water-Colours has been held at Edinburgh. Mr. Francis Powell, R.W.S., was re-elected president, Mr. William M. Taggart, R.S.A., vice-president, and Mr. Hamilton Maxwell, treasurer. Mr. J. Wright Robt. was appointed secretary in place of Mr. Smith (one of the founders of the society), who has resigned, and was elected honorary member.

New stalls of teak, and a reredos, altar, and super-altar in oak, together with a piscina in English alabaster, have been added to the fittings attached to the Home of the Good Shepherd in Uxbridge-road, W. The works have been executed by Mr. Harry Hems, of Exeter, from designs by Mr. Thomas Garratt, of Shepherd's Bush, the original architect of the chapel.



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## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.

SEE descriptions on page 186.

## ROYAL ACADEMY PRIZE CARTOON FOR DECORATION.

This double-page plate represents the full-size cartoon of the central group of figures from the Royal Academy prize design for the decoration of a public building, by Miss Gertrude Demain Hammond, of Clapham, who has been commissioned to carry out the work by the Royal Academy of Arts. The commission to execute such prize designs has only been given three times, and Miss Hammond is to be congratulated as the first lady student to be thus honoured, both the previous commissions having been given to men. The subject of her admirable design represents a vine harvest festival in honour of Bacchus, and it has the inscription "Evoc Bacche Io! Io! Evoc! Iacche!" As to the general scheme of colour, it might be called a combination of white and warm yellows and greyish pinks, the whole against a grey, partly shadowed, marble wall and pillars, with a soft, yet brilliant blue sky seen between. We shall, at an early day, publish a double-page illustration of the whole composition, which we described and praised when reviewing the whole of the Royal Academy prize designs on the occasion of the award last month.

## NEW PALACE HOTEL, PRINCE'S-STREET, EDINBURGH.

This building was opened in June last, and consists of considerable alterations on, and additions to, the late Caledonian Hotel, which entered from Castle-street. The portions between the oriels up to the level of the third floor are what remain of the old walls, and the shops also are old. It is to be regretted that several causes at the time operated to prevent the entire removal of the old front walls and the enlargement of the building by bringing forward the line of the new ones. The arrangement of the rooms on the upper floors follows that of the first floor, nearly all of them being arranged to let *en suite*, and all have double doors between. The stone used for exteriors is from Prudhome Quarry, Northumberland, and for stairs from Hailes Quarry, near Edinburgh. The passenger lift has been fitted up by the American Elevator Company, London; it works by hydraulic pressure, and gives great satisfaction. The architect is Mr. J. Macintyre Henry, 13, Frederick-street, Edinburgh, and the builders were Messrs. W. and D. McGregor. The total cost of the work has been between £11,000 and £12,000.

## THE "HOGARTH" CHIFFONIER AND "HADDON" CHIMNEYPIECE.

The first of these pieces of cabinetwork is being made just now for a house at Chiswick, near

where the great painter used to live. It is intended for a dining-room, the lower part being contrived for glass and cruets, &c., in daily use, and the large, deep drawer in the centre for the table-cloth and serviettes. The middle glazed cupboard above is well lighted for the display of old china and works of art; the side cupboards, with shifting shelves, are for books. The top has a flush top for placing large vases upon, as shown in the sketch. The simple lines adopted in this article of furniture are intentionally severe. The material is mahogany, with ivory knobs to the drawer. The piece stands on ball castors. The "Haddon" mantel, made in oak, explains itself. It has a cupboard for pipes and the like over the chimney-shelf. A marble slip inside the woodwork incloses the tiles round the grate. It has been placed in Messrs. Smith and Sons' premises, in Conduit-street, W. Both the above were designed by Mr. Maurice B. Adams, for Messrs. Foster and Cooper, of Nottingham, who have carried them out from the architect's full-size details.

## BRISTOL POST-OFFICE.

The head Post-office at Bristol has recently been doubled in size to meet the growing requirements of the service. We give an illustration of the elevation as now extended. The work has been carried out in the same style as that of the original building, the materials used being Portland stone for the cornices, copings, and strings, Bath stone for the ashlar, and Cornish granite for the plinths. The new block contains, on the basement floor, accommodation for the R.E. telegraph mechanics, store-rooms, boiler-room, &c. The ground floor is occupied by the large public office, in which all branches of the business are dealt with. On the first floor there are cloak-rooms and dining-rooms for the large staff of employees, and also minor offices occupied by the correspondence department. The instrument room occupies the whole of the second floor over both blocks, and at the back there is an annexe devoted to sanitary offices, kitchens, cloak-rooms, &c. The extension has been carried out under circumstances of great difficulty, consequent upon the necessity for avoiding interruption of the postal and telegraph services while the work was in progress. The contractor is Mr. A. J. Beaven, of Bedminster, the fittings being supplied by Mr. Jno. Reed, of Sutton Harbour, Plymouth. The fireproof construction is by Messrs. Dennett and Ingle.

## THE ALEXANDRA ARCADE, SWANSEA

THIS building, comprising some sixty-six shops, with offices and dwelling-houses, has been carried out from the designs of Mr. Edward Bath, architect, Swansea, at a cost of about £18,000. The Arcade connects High-street with Alexandra-road. The High-street elevation at present consists of three shops and dwelling-houses, and that of Alexandra-road of nine shops, dwelling-houses, and offices. The width of the arcade is 15ft. on the ground floor; but the first-floor shops have been set back so as to allow for a balcony or promenade round, 6ft. wide, which is connected with three bridges. The height of the Arcade is 35ft. A back entrance has been arranged for each shop. The conditions of the lease required the buildings to be as far as practicable fireproof, and the whole of the Arcade, shop-fronts, and roofs is constructed entirely of iron, while the roofs over the shops are of flat fireproof material. The buildings are lighted throughout with electric light on the Crompton-Howell system. The contractor for the buildings was Mr. Henry Billings, of Swansea, and the ironwork was intrusted to Messrs. W. McFarlane and Co., Glasgow.

## PULPIT FOR HOLY TRINITY CHURCH, ABERYSTWITH.

THIS pulpit, of Perpendicular character, is constructed of Welsh oak. The plan of the upper part is in the form of a pentagon, and the base is of solid work. The cornice, moulding, and panels are decorated with foliage somewhat naturally treated, the panels being alternately filled with pierced carving, representing the vine and the oak, and each contains a shield displaying some sacred emblem. The carving and construction of the pulpit was carried out by Mr. Cavendish Lemon, sculptor, Aberystwith, and the architects are Messrs. Middleton, Prothero, and Phillott, of Cheltenham.

## HISTORIC TOWNS.\*

OF the handbooks edited by Professor E. A. Freeman and the Rev. William Hunt, M.A., in Messrs. Longman and Green's series already published, few can have greater interest to the student of the growth of English cities than the one on Winchester, written by the Dean of that city, G. W. Kitchin, D.D., F.S.A. The earlier history of Winchester, its Roman occupation, its state under the Danish rule, are but briefly sketched, Dr. Kitchin's narrative being mainly directed to give an outline of the city's growth to the time of Henry I., when it attained its highest position, and its decline towards modern times. Winchester under the Romans is borne testimony to by the coins, vases, tessellated pavements, and other products of the 3rd and 4th centuries, and also by the Roman masonry of Wolvesey. Venta-Belgarum, as the city was then called, became the capital of the south of England. Its plan was rectangular, its base to the river Itchin, having the present High-street, its main thoroughfare, bisected by another road from South-gate to North-gate. Through the latter the roads to Silchester, London, and Cirencester led through West-gate, one towards Sarum through South-gate, one to Clausentum. At the top of St. Catharine's-hill entrenchments which surrounded the castrum may be traced. We have mention of Cerdic and Cymric, the former of whom died in 554, and was buried at Winchester, which became capital of the West Saxon kingdom. Cenwalh built the first cathedral and monastery, but no vestige remains—no doubt, on the site of the old Roman church. As yet there was no Bishopstool. Under Egbert (802), Winchester made rapid progress, and his bones still repose in one of the chests in the choir-screen. We have notice of the Norse invasion. St. Swithun, of whom legends are told, did much for the city. He fortified the cathedral, and rebuilt much that is still handed down to his memory as a pious man of "laudable qualities." It was between 901 and 940 that Edward the Elder completed the New Minster between St. Swithun's Church and the High-street. After Ethelstan, St. Dunstan appears as a great founder of churches and monasteries. The monastic revival between 940-975 is sketched, references are made to the reforms of Ethelwold, Bishop of Winchester, to Edgar's charter, the cathedral, the wonder-working St. Swithun, the popular translation of the saint and his miracles, the legend of the forty days of rain. The Danish invasion and reign of Cnut, 975-1035; the Norman conquest of Winchester, Williams' new palace, the new cathedral church of Walkelin, which was fourteen years in progress, are later events. Of the latter building the transepts of the present edifice and the walls and piers of the nave, encased by Wykeham, remain. The squat tower is a later Norman rebuilding, the original one of Walkelin having fallen in 1107. The ground plan and features of the Roman Lady-chapel also can be traced in the crypt below the beautiful later work of Hunton and Silkested. Dr. Kitchin briefly sketches the progress of the city under the Norman kings; a map of Norman Winchester being given, its condition as a Mediæval city, the days of Henry de Blois, the famous bishop (1129-1171), and its position under the Angevin kings. Later chapters, which we cannot notice here, treat of the disorderly scenes under Henry III., the swarms of Provençals who came over, and the later troubles of the city—all told by one who has made the subject a labour of love, and has constructed the narrative from original documents.

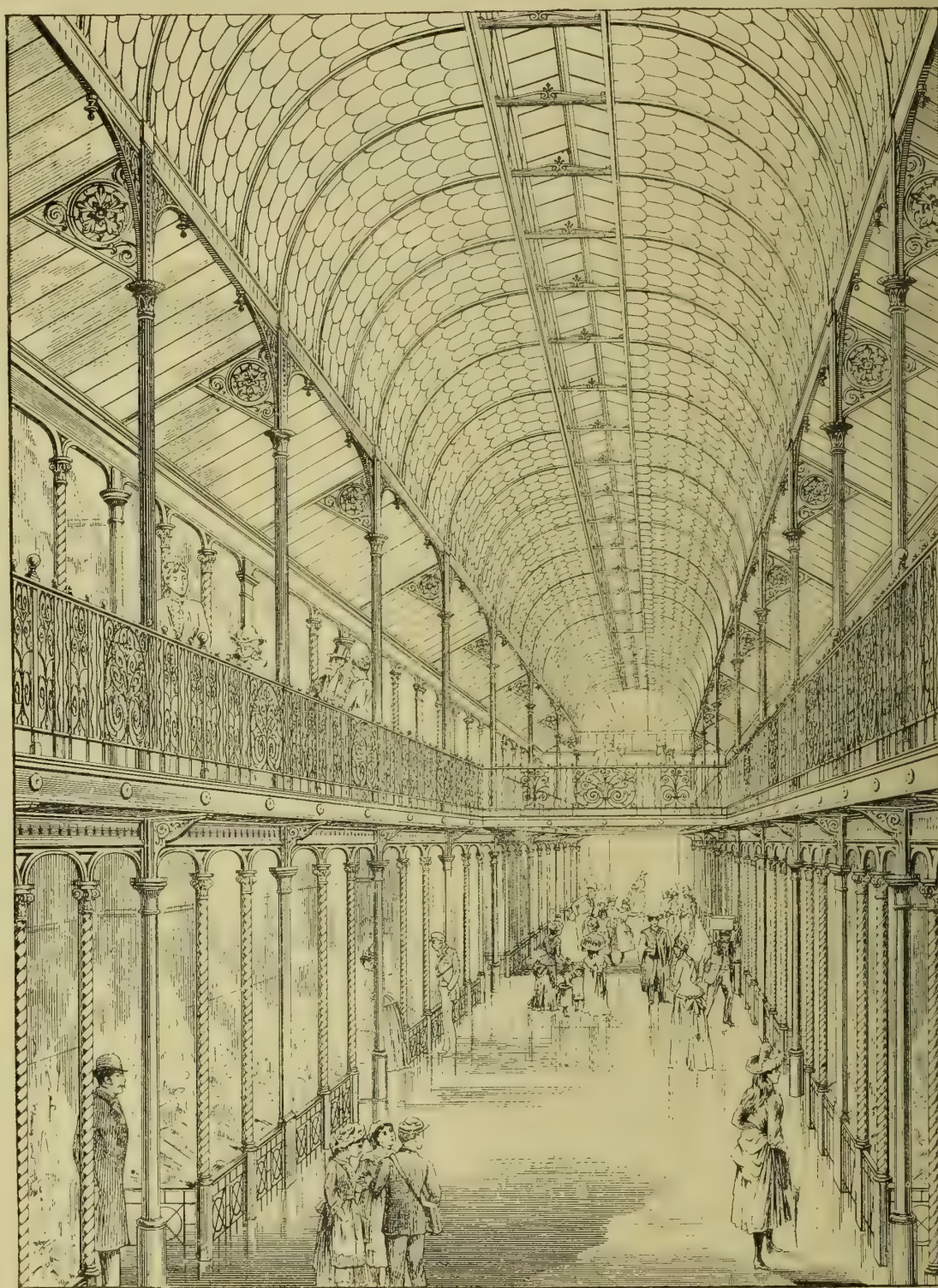
At Friday's meeting of the Middlesex County Council, a committee reported that plans for altering the Guildhall at Westminster, and converting it into a suitable sessions house and council chamber, had been considered. In the basement it was proposed to construct cells, jury rooms, witnesses' rooms, and offices, &c. On the ground floor there would be offices for the council's officials, robing-rooms, and two courts. On the first floor there would be a council chamber, 27ft. by 41ft.; also a library and writing-room, a large committee-room, and a magistrates' luncheon room. The committee recommended that they be empowered to have full plans with detailed elevations prepared. The recommendation was agreed to, the chairman stating that the council would not be bound to carry out the plans.

\* Winchester. By G. W. KITCHIN, D.D., F.S.A., Dean of Winchester. London: Longman, Green, and Co.









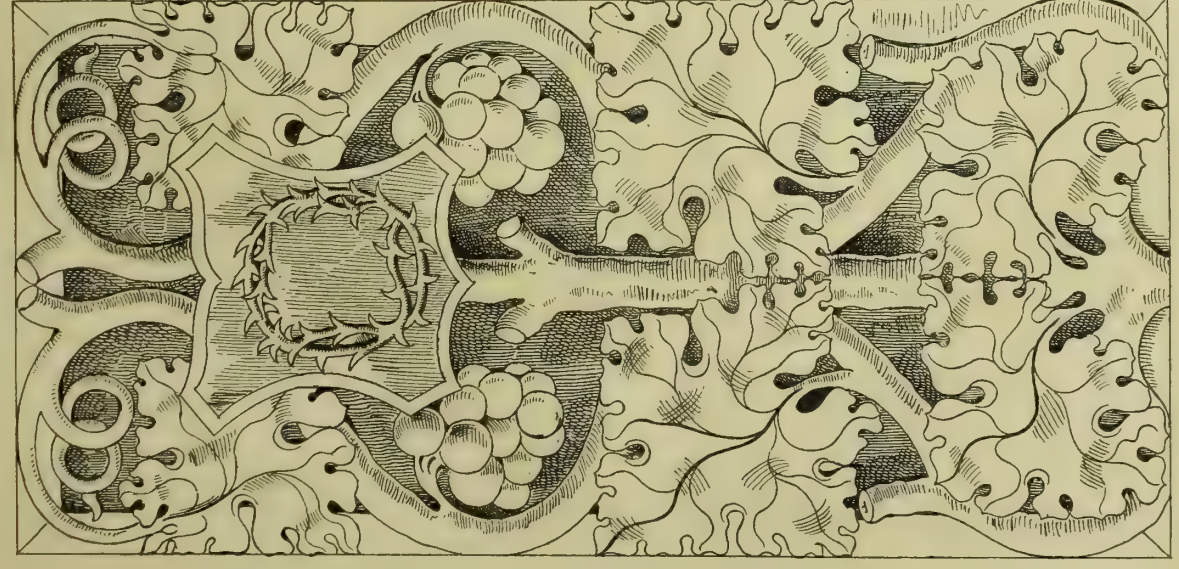
THE ALEXANDRA ARCADE, SWANSEA.  
INTERIOR VIEW.

EDWARD BATH,  
ARCHITECT

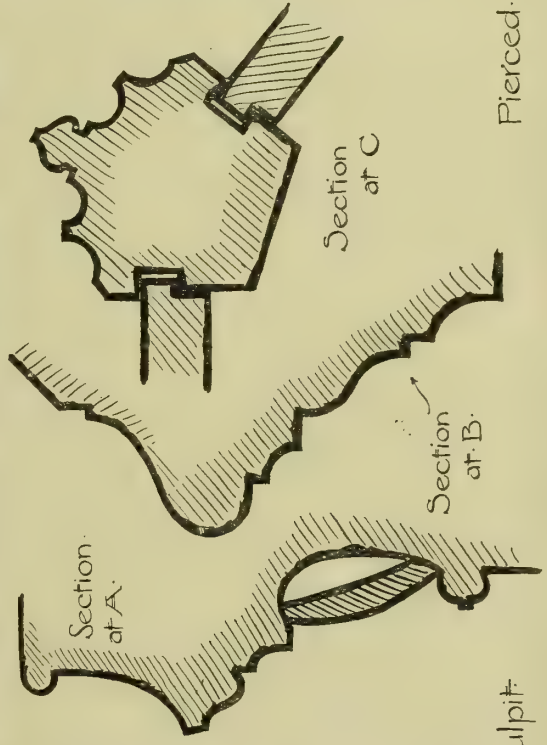
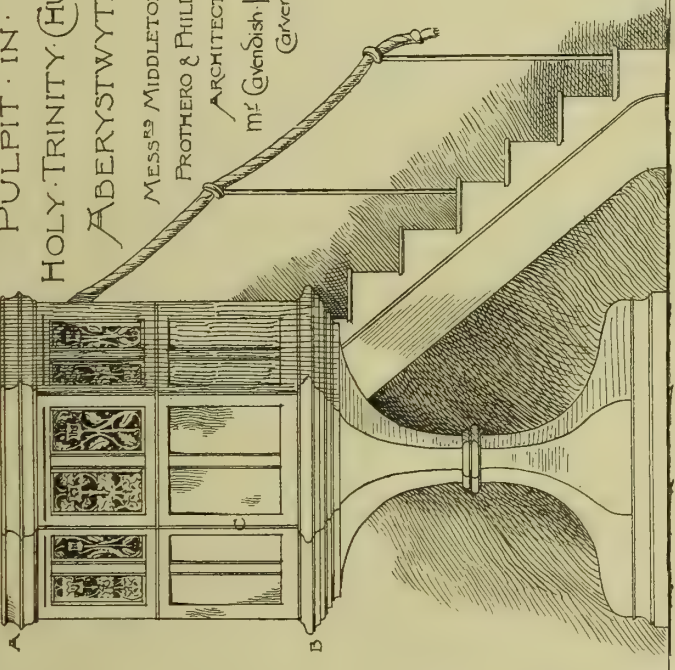


1" = 5 feet  
Scale to Pulpit

PULPIT IN  
HOLY TRINITY CHURCH  
ABERYSTWYTH  
MESSRS MIDDLETON  
PROTHERO & PHILLOTT  
ARCHITECTS  
Mr Gwendolyn  
Carver



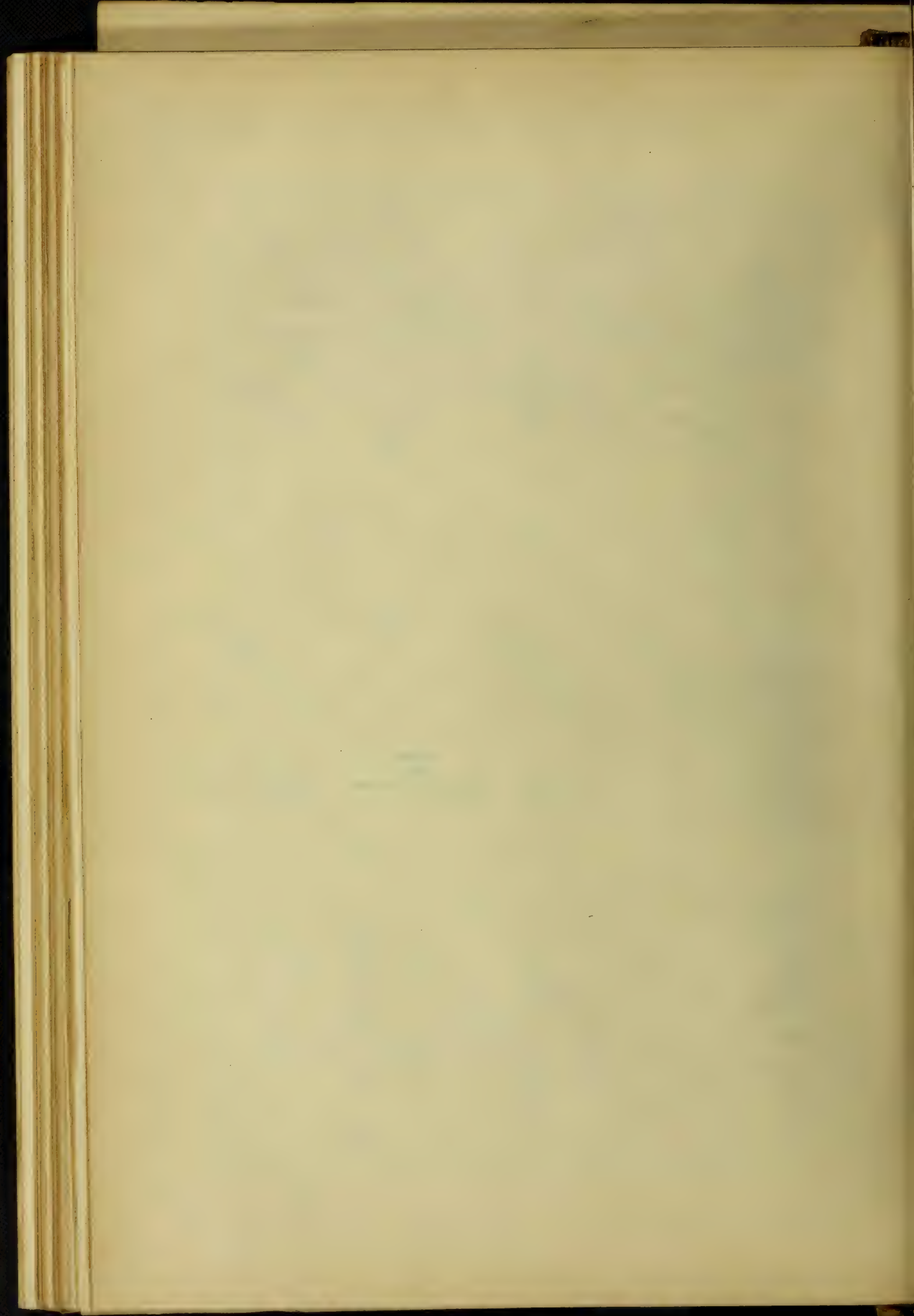
Pierced panel in top part of Pulpit



Pierced panel in top part of Pulpit

E. Chancellor del.







## WAYSIDE NOTES.

AN hôtel-de-ville for London, worthy of the great city, has been often acknowledged to be a desideratum—a genuine long-felt “want”; and in spite of the present unpromising outlook, there is no doubt that at some distant date an architectural feature of this nature will be very much in evidence in one or another of the more grandiose thoroughfares of our modern Babylon. There are, I suppose, plenty of persons who would undertake to prove that such a building, though all very well in theory, is in practice an impossibility. In a smaller city, they might say, divers different departments may be grouped together and housed under one roof; but in London each department is in itself so extensive as to require a separate building for its accommodation. As an architect, however, I turn a deaf ear to such arguments, and maintain that the members and officials of the County Council, at any rate, should be housed with becoming dignity.

The sooner some scheme for providing this building and supplying the long-felt want is matured the better for all parties concerned, not to mention the architectural profession. Year by year we are invited to compete for town halls and municipal buildings here, there, and everywhere; big Manchester, and smaller Manchesters of the North, get their palatial municipal offices; fair architectural compositions grace the smallest and least pretentious of towns in the British Isles, and still no call comes for such a building for the great metropolis with its odd 4,000,000 of inhabitants. The matter is talked of, but nothing comes to pass. Desultory discussions, such as that holden by the County Council at its two first meetings for the present session, though serving to keep the subject before the public, will do nothing to produce the wished-for municipal buildings; neither does the present council seem to have the heart to deliberately weigh the matter. By its action in patching up the old Spring-gardens nest, it has debarred itself from serious consideration of the whole subject. The truth would seem to be that before our municipal buildings are designed, let alone erected, there must be some degree of popular enthusiasm—a wide-spread and genuine enthusiasm, such as does not manifest itself to-day. Whether there ever will be this ecstasy among the worthy burghers of London-town remains to be seen. The architectural pessimist will shake his head dubiously. If it be impossible and against the nature of a congregation counted only by millions, then the Hôtel-de-ville of London will be ever in the *non est* state, or prove only some unworthy specimen of the architectural genus *Municipal Building* of which a decent provincial town would be ashamed. If, on the other hand, it is both possible and probable, then some day may be erected a building to which the London citizen may point with honest and manly pride.

In the matter of “wholesale contracts,” I agree with every word you say in your leader of last week. The interest of an architect increases two-fold on a work where, in place of a contractor anxious chiefly, and naturally enough, to make his contract “pay,” the works are executed, to all practical intents and purposes, by his clients. Architect, clerk of works, foreman, and workman alike show an added interest in their respective duties. I can only re-echo your hope that the system may increase in favour where important public works are concerned, for nothing would more largely conduce to good building and architecture, or prove so remedial of many of the deplorable results of undercutting among tenderers.

Fortunately, there is to be noticed a growing tendency to distrust the wholesale contracting system where extensive buildings are concerned. Often during the last few years the owners of many of the larger hotels have erected the buildings themselves, under a competent clerk of works, and the result has been satisfactory, not only to the proprietors, but to their architects. As a recent example, the Brighton Métropole may be instanced. There has been no wholesale contracting on this building, which is now approaching something like completion, as regards, at least, the general carcass. I noticed whilst at Brighton at the beginning of the week that the process of cleaning down and pointing has been commenced, and the extensive scaffolding will soon begin to dwindle away.

From what I have seen of this building, I should say it is as solid a piece of workmanship as one could desire, and a silent witness to the success of the system employed. On Monday morning, before returning to town, I sallied forth at an early hour intent on making an inspection of the new hotel, and, on the strength of this inspection, to moralise herein on “wholesale contracts” and the like. But the clerk of works was not upon the job—unless that job was his breakfast—and not even the fact of my being “Wayside Note” writer in ordinary to the “B. N.” could soften the heart of the inexorable door-keeper I encountered. So of the works executed, I saw but little. When the P.R.I.B.A. learns this, he will, I am sure, grieve, and leave particular instructions at the Métropole that the next time we repair to Brighton, admission to the works may not be denied us.

My contribution to the recent discussion on Mr. Cates’s paper anent the Institute exam., will be in the direction of adding weight to the desire for some system of classifying the examinees. I have often said that this is most necessary and desirable, and was very glad to see that, at the Association discussion, the question was brought forward by Mr. W. Millard and Mr. R. N. Wilson. Give the student some hope of earning reward justified by his labours, and the examination will become very much more popular. The bitterest complaint of many of those who have gone through the examination has ever been that, although they have studied with exceptional ardour, and given a large amount of time to preparation, they have passed, to all outward appearances, with no more credit than those who have been too callous and inert to study and prepare. My own idea on the subject is that there should be, as at present, the first prize man; but that, in addition, there should be several grades or classes, with or without honours. The inauguration of such a measure would be a great inducement to honest study. As at present existing, many go in for the examination without an hour of preparation, and this of malice aforethought. Knowing that it is either a question of pass or fail, and that there is no chance of an intermediate state, they take the risk, and if sent to *pur-gatory* for a season—yclept, “relegated to their studies”—they are content to go through the same performance on another occasion, trusting to have better luck and scramble through the ordeal. This is not as it should be, and is a state of things that I believe would be remedied by the classifying of successful candidates in order of merit. Having adopted my original suggestion as to the splitting-up of the examination into three sections, would it be too much to expect the Institute to consider whether the further reform would not be a real improvement, conducive both to the popularity of the exam., and to its practical utility?

As regards the outcry for enlarged schemes of education, educating bodies are all very well in their way, and the more that is done in this direction the better for the students who can view such institutions in their true light, and not regard them as destined to make learning easy and strew their thorny paths with flowers. I would draw the attention of such persons to what Mr. Cates said in concluding the discussion at the Association about the value of *self-help*. Without a spirit of self-helpfulness nothing can be attained; and with it everything, be every educating body swept from the face of the earth. Those embryo architects who think otherwise may usefully study Smiles’s “Self Help,” and learn that all the great men of past ages have, to all practical intents and purposes, educated themselves, mainly in the school of difficulty, and often in that of extreme poverty. The modern craze for educating institutions of every sort, if properly cultivated should be an immense advantage; but one cannot help wondering at times whether their ultimate effect may not be an undermining of that spirit of self-help and strong individual effort to which, in the past, the English nation has owed all its greatness.

The ivy-plant, like fire, is a good servant but a bad master. As an accessory to architecture, it is at times, and when held in check, invaluable as an aid to the picturesque—more especially when the building is none too handsome, in which case the clinging creeper will hide a multitude of sins. On an old church a little ivy adds a great charm, and to realise one’s idea of

a true “ruin”—a truly picturesque ruin, that is to say—the plant seems indispensable. Without the expression “ivy-mantled tower,” novelists, including the great Scott himself, would have been minus a most expressive phrase wherewith to give point to a passage of sentiment. But, in spite of its merits as an aid to the picturesque, we know that, in its old age, ivy has a vicious habit of insinuating its manifold, branching arms into the cracks and crevices of a building, thus endangering its stability. When, therefore, this occurs in connection with an historical structure that has intrinsic beauty and interest in its architecture, the ivy must be destroyed, or it will destroy the building. There are not many who will sympathise with the *Leeds Express* in their complaint *re* Kirkstall Abbey, on which you commented last week.

Ivy is generally treated with too affectionate and lenient a regard. Few seem to realise the parasitic nature of the plant, and fewer still recognise how it fastens itself upon tree and building, like evil habits on the man, and ultimately effects their destruction. Ivy looks so innocent and delicate when young that we forget the deadly embrace it gains as it waxes older. One of the prettiest objects we may behold in the foreground, during a woodland walk, is the youthful ivy plant, spreading a few sprays of delicately-formed and brightly-tinted leaves against the rugged, purple bole of the oak-tree. The tree itself seems to caress and fondle it; yet awhile, and the plant covers bole and branches, and the life of the once sturdy oak is smothered in its deadly embrace. So, on both building or tree, ivy must be kept within bounds, or the ultimate destruction of either is merely a question of time. Those who would make excuses for the plant may say that cases occur where its thick stems support crumbling masonry; but this not the general rule, for the over-luxuriant growth of ivy undermines the stability of any building rent with the cracks and crevices of centuries of decay. GOTH.

## CHIPS.

Copthorne, near Fawley, Hants, the residence of Capt. Drummond, has just undergone very considerable alteration and enlargement at the hands of Messrs. W. and R. C. Light, of Portsmouth; Mr. Mitchell, of Southampton, being the architect.

Alexandre Protais, the well-known military painter, died in Paris on Saturday at the age of 63 years. He served as a soldier in the Crimea, and accompanied the French troops to Lombardy in 1859, experiences which suggested most of the subjects for his numerous battle-pieces.

The Nantwich board of guardians decided at their last meeting to extend the hospital at the workhouse, from plans prepared by Mr. Davenport, at an estimated outlay of £5,000.

On Sunday week Mr. and Mrs. W. H. Godwin, of the Ferns, Lugwardine, celebrated their silver wedding, and on the following Monday a very pleasing gathering took place at Withington, when Mr. Godwin entertained the whole of the employés of Messrs. W. Godwin and Son, encaustic art tile manufacturers, and their wives to dinner. The celebration of their silver wedding was taken advantage of by the employés to present to Mr. and Mrs. Godwin an illuminated address and an ornolu drawing-room clock, with tazzas to match.

At the last meeting of the School Board for Carlisle, a committee recommended that Mr. T. Taylor Scott be instructed to prepare a set of plans for schools in Brook-street for 850 children. To this an amendment was proposed that all architects having offices in Carlisle be invited to send in plans. The committee’s recommendation was adopted by seven votes to three, and it was agreed to pay Mr. Scott 5 per cent. commission.

The Warwickshire County Council have accepted the resignation tendered, through ill-health, of Mr. Lait, the county surveyor. The resignation will date back to the end of 1889, and the duties of the office, pending the election of a successor to Mr. Lait, will be discharged by Mr. Wilmot.

The *American Architect* remarks: The profession in Brooklyn, N.Y., has to mourn the loss of Mr. Charles Keely, son of Mr. Peter C. Keely, the architect of so many Catholic churches all over the country, and associated with his father in business. The practice of the office is enormous, fifty churches, it is said, being sometimes in process of execution from the designs of the father and son, and of the excellent work done there, no doubt much was due to the younger man’s talent. Mr. Keely was about thirty-five years of age, active and popular.



## CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WE give our fourth double-page plate of photographic reproductions to-day, and have grouped together the portraits of six well-known architects, of whom the following particulars, furnishing a simple summary of their chief works, may be interesting as a record for future reference:—

Mr. James Piers St. Aubyn, F.R.I.B.A., whose photograph comes first on the sheet, was elected an Associate of the Institute in 1837 and a Fellow in 1856. His chief work in London was the restoration of the Temple Church, including his additions to that building. A large block of chambers in the Temple was erected a few years ago from his designs, and in conjunction with the late Mr. E. M. Barry, R.A., Mr. St. Aubyn built a larger group of similar suites of offices for the Temple authorities, overlooking the Thames Embankment, some time previously. He also erected the four district churches, St. James, St. Mary, St. Stephen, and St. Paul, at Devonport. St. James-the-Less, at Plymouth, is another of his churches, and at Reading he designed All Saints, St. Giles, and St. Luke's. Near Chelmsford two more may be named—at Widdford and Galleywood Common—as well as three other churches at New Brompton, Chatham, and at Erith. In Cornwall, where Mr. St. Aubyn restored St. Michael's Mount, he built churches at Marazion, Penzance, and St. Ives. Others, too, have to be mentioned, such as the church at Revelstoke, South Devon; church restoration at Woolverstone, near Ipswich; and the English church at Dresden. In Ireland, Mr. St. Aubyn erected a church at Kilmaloda, Co. Cork, besides numerous other new churches about England, not to name several private chapels and mission-rooms and church restorations in most of the western and home counties. A design prepared for Truro Cathedral by Mr. St. Aubyn was published at the time its erection was contemplated. In Cornwall, among this architect's mansions and houses, we may note Clonance and Pencalenick. Others are at Anstey, near Dorking; Slinfold, near Horsham; Muntham, also in the same locality; as well as Greenhurst, near Ockley, in Surrey; Delamore, South Devon; Curry Rivel, near Taunton; Chalcot, near Westbury. Claville, Minehead, Somerset, he built, and many less-important residences in Cornwall and other counties. The Theological College and new church at Ely are among Mr. St. Aubyn's works, and many restorations in that diocese. The Carillon Tower for twenty bells, at Abberley, and large additions to Abberley Hall, Stourport, were carried out from his plans, besides numerous parsonage houses in other parts. Mr. St. Aubyn has read practical papers before the professional societies at various times.

Mr. Thomas Blashill, the Superintending Architect to the London County Council, is a Fellow and Member of Council R.I.B.A., a past president of the Architectural Association, F.S.I., and Member of Council British Archaeological Association. He succeeded the late Geo. Vulliamy as architect to the Metropolitan Board of Works. Amongst his executed buildings are Christ Church, Beckenham; restorations at Stottesdon, Shropshire; Putley, Much-Dewchurch, Hampton Bishop, Dormington, &c., Herefordshire; schools at Tarrington and Yarkhill, Herefordshire; parsonages at Sutton-in-Holderness and Orlestone, Kent; the business premises of Messrs. Trübner and Co., Ludgate-hill; Ingram House, Fenchurch-street; enlargement of the Standard Bank of South Africa, Clement's-lane; and various works for the Guardians of the City of London Union. His literary work includes a Guide to Tintern Abbey, published in 1879, and he read a paper before the Institute in 1878 on "Oak and Chestnut in Old Timber Roofs." His pamphlet on "The Tenure of Land for Building" is well known, and also his lectures at the Carpenters' Hall on "Shoring," "Growth and Seasoning of Timber," and "English and Continental Doors"; at the Society of Arts on "Health, Comfort, and Cleanliness in the House"; at the Architectural Association on "Party Walls," &c.; and at the recent Art Congress, Edinburgh, on "The Influence of the Public Authority on Street Architecture." Mr. Blashill was a district surveyor for ten years, first of Bethnal Green East, and afterwards of West Hampstead, until appointed Superintend-

ing Architect of Metropolitan Buildings, about three years ago. He took an active part in the excursions to Italy held in connection with the Architectural Association, and he obtained a fore-man's share in the work of that society some years since. The photograph reproduced was taken by Messrs. Turner and Drinkwater, of Hull.

Mr. Lewis H. Isaacs, M.P., is a Fellow of the Royal Institute of British Architects, and an Associate of the Institution of Civil Engineers. He served his articles with the late Mr. Edmund Woodthorpe, and at the age of 26 received the important appointment of Surveyor to the Board of Works for the Holborn District, to which was added shortly afterwards that of Surveyor to the Honourable Society of Gray's Inn. Mr. Isaacs has been officially connected with and professionally concerned in the many public improvements which have been carried out in the Holborn district since he held office therein. These embrace the removal of Middle-row, Holborn, the widening of the northern end of Chancery-lane, the formation of Clerkenwell-road, the widening of Theobald's-road and Gray's Inn-road, and the formation of Rosebery-avenue, leading from the Holborn Town Hall to the Angel at Islington. His principal works in London are the warehouses and offices of Messrs. Geo. Farmiloe and Sons in St. John-street, the Charterhouse-street Branch of the London Joint Stock Bank, the Holborn Viaduct Station and Hotel forming the City Terminus of London, Chatham, and Dover Railway, the Paddington Public Baths and Wash-houses, and the large range of factories, warehouses, and showrooms built for the late Mr. Charles Cadby, pianoforte manufacturer, at Kensington. Mr. Isaacs also erected, conjointly with Mr. Florence, a mansion in Delahay-street, S.W., the town residence of Mr. Edward Lloyd, overlooking the Green Park. In 1877 Mr. Isaacs entered into partnership with Mr. H. L. Florence, F.R.I.B.A., which partnership existed until 1888. During that period the firm of Isaacs and Florence built, amongst other works, the Holborn Town Hall, a new Library for the Honourable Society of Gray's Inn, the Paddington branch of the London Joint Stock Bank, and the Hotel Victoria in Northumberland-avenue. Mr. Isaacs was elected M.P. for the Walworth Division of the Borough of Newington in 1885, and he was re-elected by the same constituency at the General Election in 1886. His photograph was taken by Mr. Vernon Kaye, of South Kensington, whose print we have reproduced.

Mr. Ewan Christian, the Architect to the Ecclesiastical Commissioners for England, which post he has held for more than thirty-eight years, is a Past President of the Royal Institute of British Architects, and a Royal Gold Medallist. On the occasion of its presentation in 1887, the recipient said: "Mine has been a life of independent service, not of exploits. I have undoubtedly done much work, and some I hope of a valuable kind to those most interested; but I could not think of comparing myself with many of the men of mark who have preceded me in receiving this distinction." To give a list or anything like a complete list of this architect's work, extending as it does back as far as 1840, would be impossible without considerable trouble, and it is beyond our scope to attempt in any case such a catalogue; but a few may be mentioned in the interests of our readers. Mr. Christian has acted as professional referee in numberless cases of church competitions, and he was chosen to adjudicate in the Edinburgh and Liverpool Cathedral competitions, as well as in the Admiralty Offices competition a few years ago. As the advising and acting architect, since 1852, of the Ecclesiastical Commissioners, he has had to report on plans submitted for churches and other ecclesiastical works, amounting on an average of ten years to about 218 yearly, and also upon the cathedrals of Chester, Durham, Lichfield, Canterbury, St. David's, Worcester, Ripon, St. Paul's (London), Carlisle, the last named having been restored by him; and upon Southwell Minster, the continuous restoration of which, intrusted to him for the last thirty years, is still unfinished. When Mr. J. J. Stevenson read a paper on Anti-Restoration before the R.I.B.A. some years since, Mr. Christian warmly supported the late Sir Gilbert Scott, R.A., on the occasion of his reply to the charges made by the anti-restorationists. Hildenboro Church, near Tunbridge, was one of his first works (1843), others, among some forty new churches, being those of St. Thomas, Douglas; St. John, Kenel-

wark, Kent; St. Stephen, Tunbridge; Christ Church, Forest-hill (recently completed); St. Luke, Marylebone; St. James, Leyland, near Preston; St. Peter, Rochester; Swanley Church, near Sevenoaks; St. Stephen's, Spitalfields; St. James, Tunbridge Wells; Trinity Church, Folkestone; St. Mary's, Carlisle; St. Mark, Leicester, St. Matthew at Cheltenham, and of All Hallows at Bromley-by-Bow. From among some 140 restorations of churches—from that of St. Mary, at Scarborough, to the little church at Skelton, near York, restored in 1886, though the monograph of it was published by Mr. Christian as early as 1846—may be cited those of Westwell (Kent), East Meon (Hants), Holbeach (Lincolnshire), Stanhope (Durham), Thorington (Essex), Bosham (Sussex), Alcombury (Hants), St. Dunstan (Canterbury), all interesting examples of Mediæval architecture; episcopal residences at Norwich, Gloucester, Manchester, Bishopsthorpe, Lambeth; caputular residences at Exeter, Llandaff, Bangor, St. Asaph, and in Amen Court for St. Paul's, London; rectories, vicarages, parsonages, and curates' houses of all grades built in every county of England (except Northumberland, Cheshire, and Cornwall), and in Wales, not fewer than 200 in all; numerous schools, and a still larger number of country houses, amongst which are Lavington Manor (Wilts), Abbotsford and Broadwell (Glos.), Lillingston Dayrell (Bucks), and Ascot Wood for the late Sir J. Shaw-Lefevre. "Castle Malwood," Sir William Harcourt's new house in the New Forest, is one of Mr. Christian's most extensive and latest mansions, and "The Highlands," Gloucestershire, also in half-timber, is another. Viney Hill, near Lydney, in the same county, in local red sandstone, was built by him in 1865. Among more recent works in London are the large bank in Parliament-street, erected for Messrs. Cox and Co., and the red terracotta block of offices in New Bridge-street, Blackfriars, for the Economic Assurance Company. Not a few convalescent homes, business premises, and other buildings have been erected under Mr. Christian's supervision all over England. His own house at Hampstead, "Thwaitehead," which he designed, was published among the series of drawings which we gave not long ago in illustration of "Artists' Homes." The new National Portrait Gallery, to be given to the nation, is to be built from this architect's designs, near Charing Cross. Lately Mr. Christian has been appointed by the London School Board to advise and report on the faulty construction of their school buildings, about which an inquiry has been held. His portrait was photographed by Mr. Barraud, of Oxford-street.

Our next portrait is of Mr. William White, F.S.A., who can reckon amongst his works about 120 private houses; 90 school and schoolhouses (70 new); 80 parsonages (45 new); and nearly 250 churches (about 60 being new or rebuilt)—six of these were erected at Battersea. Amongst his principal works are: Truro bank and solicitors' offices; St. Columb bank; renovation of ancient and interesting rectory houses of St. Columb, Cornwall, and of Dartington, Devon; renovation of ancient episcopal palace and chapel of Bishops-court, near Exeter; vicarage house and parochial room of St. Mary Abbott's, Kensington; mansion at Humewood, Co. Wicklow; masters' houses at Winchester College, Eton, Rugby, Shrewsbury, Repton, and Marlborough; Andover cottage hospital; fever and infection hospitals at Winchester College—the plans for which received the highest award (silver medal) for "School Sanatoria" at the Health Exhibition; Hertford public steam laundry; church of All Saints, Notting-hill; Lyndhurst church in the New Forest; St. Saviour's, Aberdeen Park, Highbury-grove; Madagascar cathedral, just completed; and Pretoria cathedral, plans for which are now ready for commencement. Mr. White has written much on Architecture, including "Notes on Newland Church, Gloucester"; "Ironwork, its Use and Treatment"; "Ancient Lights"; "Domestic Plumbing and Water Service"; "Fireproof Construction," and "Wisby in Gothland." He has invented not a few building appliances of a practical character. His papers on church planning are well known, and his contributions to the Institute "Proceedings" are on record. The photograph reproduced was taken by the London Stereoscopic Company.

Mr. Henry Currey, F.B.I.B.A., A.M.I.C.E., is a Vice-President of the Royal Institute of British



Architects. The following is a list in brief of his principal buildings:—St. Thomas's Hospital, London; Magdalen Hospital, Streatham; Peninsular and Oriental Co. Offices, London; hotel, London Bridge; hotel and baths, Buxton; Devonshire-park Theatre and Pavilion, the Queen's Hotel and College, as well as the sea wall terraces, &c., at Eastbourne. Mr. Currey erected a mansion in Surrey for Mr. James Wm. Freshfield, and another near Brussels for Mons. Lemmé. He has acted for many years as architect to St. Thomas's Hospital, the Foundling and Magdalen Hospitals. His likeness given herewith is by Mr. Davis, of Eastbourne.

# PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXI.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.

CARPENTER (Continued).

## PRINCIPALS.

ft. in.	ft. in.	
5 24 0	9 8	45 0 Fir-framed tie-beam.
5 2 17 0	6 6	42 6 Add rafter.
5 12 0	6 6	15 0 Add king.
5 2 6 0	6 6	15 0 Add queens.
5 12 0	6 6	15 0 Add collars.
5 2 4 6	45 0	2in. by 3in. W.I. strap and 4 C. to collar.
5 23 8	20 0	3in. W.I. bolt.
5 2 3 0	30 0	H.N. and W.
5 2 2 0	20 0	Add.
5 4 8	13 4	3in. W.I. bolt.
5 4 1 0	20 0	H.N. and W.
5 2 4 0	40 0	2in. by 3in. W.I. strap and 4 C. to queens.
5 5 0	25 0	Add king.
5 8 8	26 8	3in. W.I. bolt.
5 8 1 0	40 0	H.N. and W.
5 2 5 0	50 0	2in. by 3in. W.I. strap and 4 C.
5 4 8	13 4	3in. W.I. bolts.
5 4 1 0	20 0	H.N. and W.
5 2 1 0	10 0	Wrot. moulded, and carved fir bracket, out of 9in. by 6in. and 3ft. long.
5 2 3 0	2 6	75 0 4 C.
5 24 0	2 6	300 0 Planing to fir and tie-beam.
10 17 0	1 6	255 0 Add.
5 12 0	2 0	120 0 Add.
5 12 0	2 0	120 0 Add.
5 5		3in. tooled York stone template, 14in. by 12in. under ends of tie-beam.
5 2 1 0	10 0	3in. W.I. bolt.
5 2 1 0	10 0	H.N. and W.
2 24 6	4 3	9 2 Fir wall-plate for ceiling joists.
2 21 15 9	6 2	55 2 Fir-framed ceiling-joists.
4 51 6	1 0	206 0 Planing to fir to purlins.
2 48 6	97 0	Deal moulding out of 9in. by 6in. as cornice.
12 2 52 0	24 0	Scribed and fitted ends.
20 52 0	2 86	8 Fir-framed ceiling-joist over classroom.
64 0	4 3	6 0 Fir wall-plate.
3 6	3 6	lin. deal narrow chimney gutter and bar.
1 0	1 0	Deal rounded roll.
2 4 0	5 0	Add.
2 2 6	5 0	Add.
5 6	2 0	11 0 7lb. lead gutter.
2 4 0	6 4	0 6lb. lead over flashing.
2 4 0	8 0	Rake and point.
2 3 9	1 6	11 3 6lb. lead step flashing.
2 3 9	7 6	Rake and point step flashing.
2 5 6	2 0	22 0 7lb. lead gutter.
2 3 9	1 6	11 3 6lb. lead step flashing.
2 3 9	7 6	R. and P.

ft. in.	ft. in.	
2 2 0	6 0	6lb. lead flashing at junction of roofs.
2 20 0	1 3	50 0 lin. deal gutter and bearers.
2 2	4	Deal rebated drip.
2 22 0	2 9	121 0 7lb. lead gutters.
2 2	4	Extra to drip.
2 1 6	4 6	Do. dressed through wall.
4 13 0	1 6	78 0 6lb. lead step flashing to back gables.
2 2 8	1 6	8 0 Add.
4 13 0	52 0	R. and P.
2 2 8	5 4	
2 13 0	1 6	78 0 6lb. lead step flashing to forming gables.
2 14 0	1 6	42 0 Add.
4 13 0	52 0	Rake and point.
2 14 0	28 0	
2 27 0	1 6	81 0 6lb. lead step flashing over porch.
2 27 0	54 0	R. and P. do.
2 1 3	1 6	3 9 6lb. lead flashing.
2 1 3	2 6	R. and P.
1 0		BELL TURRET.
1 0		
6 3	6 3	3 Fir framed in finial.
1	1	Turning to form ball, moulded finial out of 12in. by 12in., and 3ft. 10in. high.
1	1	Turned circular chamfered collar out of 12in. by 12in. by 6, with 6in. diameter perforated and dished at bottom, forming plinth at base of finial.
4 5 0	9 9	
4 5 3 9	9 5	3 9 Fir framed hips.
4 4 6	2 3	Add rafters.
4 5 3 6	2 3	Add for furring.
4 5 2	5 10	Add do.
4 5 2	20 8	Labour circular cutting to 3in.
4 5 2	83 4	Do. to 2in.
2 2 4 2	16 8	23in. deal rounded cir. roll.
8 1	8	Add.
2 6 0	50 0	Circular cutting to end.
4 2	41 4	lin. deal close-jointed boarding, cir. to roof for lead.
8 5 2	41 4	Splay cutting and waste to do.
4 6 0	42 0	Deal moulded cornice with dentil course glued and blocked to design, and 4 C.
4 4 10	19 4	Mitres.
4 1	4	3in. deal carved swelled frieze, 1ft. 4in. wide, tongued both edges and 4 C.
4 5 1	20 4	Mitres.
4 5 1	16 11	4 C.
4 4 7	9 2	Fir-framed head.
4 4 8	7 0	Add below frieze.
4 4 9	4 9	Add below do.
4 5 0	7 6	Add.
4 5 3	7 11	Fir-framed sill.
4 12 6	12 6	Add angle posts.
4 3 8	3 8	Add intermediate.
4 4 7	18 4	Planing to fir and 4 C.
4 4 8	23 4	Add.
4 4 9	19 0	Add.
4 5 0	15 0	Planing to fir.
4 4 6	36 0	Planing to fir and 4 C. angle posts.
4 3 1 5	17 0	Circular ornamental cutting to fir 6in. thick.
8 1 6	12 0	6in. by 23in. fir wrot. and framed uprights.
4 3 8	29 4	Planing to fir and 4 C. intermediate.
4 4 9	30 1	lin. deal wrot. one side cross tongued louvres.

ft. in.	ft. in.	
4 4 9	19 0	Splay and edge to do.
4 2 1 8	13 4	Notching lin., louvres boarding.
3 1 3	5 0	Add.
4 6 9	18 0	Labour groove for lin. louvre boarding cross-grain.
2 2 1 3	5 0	Splayed edge to lin. louvres.
4 2 2 2	1 5	24 7 lin. deal wrot. cross-tongued louvre boarding.
4 2 2 2	1 10	31 9 Do. do.
8 4 1 0	32 0	Labour to groove for lin. and grain.
8 2 1 5	22 8	Add.
8 2 1 10	29 4	
4 4 0	1 9	28 0 4 C.
8 2 2	1 9	30 4 4 C.
8 2 2	2 10	49 1 Add.
5 4	2 3	12 0 lin. deal wrot. cross-tongued framed ventilator.
2 1 4	1 7	
4 11	3 8	Labour raking cutting.
2 1 2	3 8	lin. deal wrot. cross-tongued and framed cover.
2 1 7	3 2	Labour splayed edge to lin.
2 1	1	Labour cutting perforation 9in. by 13in. through lin.
2 1	1	Perforated zinc panel 12in. by 16in.
2 4 8	9 4	Deal wrot. and mitred bead to fix in zinc panel.
4 7	4 7	21 0 lin. deal-jointed boarding and furring for lead.
1 4	1 4	
4 1	4	1 9 Ddt. do.
4 1	4	Labour notching do., 8in. girt.
4 1 8	6 8	Do. 18in. girt.
4 1	4	2in. deal rounded roll.
2 2 4 6	5 3	1 11 Splayed ends.
6 4	4	Fir-framed joists.
6 4	4	Deal moulding out of 3in. by 23in. Mitres.
6 8	4 3	4 C.
1	1	Perforated zinc panel 1ft. 4in. by 1ft. 4in., and fixing to ventilator.
4 10	4 10	23 4 Add.
10	10	8 Ddt. do.
4 2 0	6 4	4 0 Add rolls.
6 0	6 0	3 0 6lb. lead flashing to ventilator.
4 5	1 8	C. C. nailing.
13 4	13 4	1 8 Add.
1 0	13 4	7lb. lead to flat.
4 2 0	16 0	4 Bessed ends to roll.
3 6	2 8	7lb. lead bossed to base of finial.
1 9	3 1	7lb. lead bossed of finial.
4 3 4	60 0	7lb. lead dressed to cir. roof.
4 5 6	14 8	Add rolls.
4 4 8	12 0	
8 1	8	Bessed ends to do.
4 6	24	Soldered dots and screws.
4 6 1	24 4	Deal moulding out of 8in. by 7in.
4 1	4	Mitres.
4 6 1	30 5	4 C.
4 5 3	21 0	Labour to grooves for lead.
4 5 6	106 4	lin. deal close-jointed vertical boarding to base of turret.
2 3 5 6	15 2	Ddt. do.
4 2 6 6	6 13	0 Fir-framed struts.
2 4 3 0	24 0	2in. by 3in. W.I. straps at angles, and 4 C.
8 4 8	21 4	3in. W.I. bolts.
8 4 5 6	32	H.N. and W.
4 5 6	22 0	lin. diameter W.I. bolts and 4 C.
4 4	4	H.N. and W.
2 5 0	10 0	23in. deal rounded roll.
2 4 3 9	30 0	Add.
2 3 3	6 6	Add.
4 1 9	7 0	Add.
2 1 7	3 2	Add.
16	16	M. to roll.
2	2	Splayed ends.
4 5 0	100 0	7lb. lead covering to base of turret.
2 6 9	20 3	6lb. lead apron.
1 6	20 0	Do. flashing.
65 0	43 4	7lb. lead, add for rolls.



ft. in.	ft. in.	
16	16	Mitres of lead roll.
24	24	Soldered dots and screws.
4 4 3	17 0	Deal moulding 3½ in. by 2 in.
4	4	Mitres.
2 20 3		
6		
6	10 2	Fir framed in truss to carving turret.
2 20 3		
9		
6	15 2	Add.
2 5 3 6		
6		
6	8 9	Add uprights.
2 4 6 0		
4		
4	5 4	Add struts.
8 2 0	16 0	2 in. by ½ in. W.I. strap, 4 C.
12 2 0	36 0	Add.

#### THE SOCIETY OF ARCHITECTS.

THE fifth ordinary meeting for the sixth session of this society was held at St. James's Hall, Piccadilly, on Tuesday evening. Mr. F. Clerk Allam, F.R.G.S., vice-president, in the chair. Mr. H. E. Chevallier, of Nice, was elected by acclamation an hon. member, and the following three gentlemen were elected by ballot as members:—William Thorold Lowdell, 9, Great James-street, Bedford-row, W.C.; Denshaw Dorabjee Mistry, 3 and 5, Parsee Punchayet-lane Fort, Bombay; and George Herbert Lonsdale Stephenson, 59, Moorgate-street, E.C.

#### ELECTRICITY IN THE DWELLING.

A paper on this subject, abundantly illustrated by apparatus and also by experiments, was read by Mr. F. Percival Allam. A large assortment of appliances was lent by the Acme Electric Company; Edison and Swan Electric-Lighting Company; Electrical Fittings' Association; Lea, Son, and Company; Wheatley, Kirk, Price, and Goulty; Woodhouse and Rawson; and several others. Mr. Allam described in his opening remarks the chemical battery, and some of the apparatus worked by its aid, including bells, burglar and fire alarms, and then having explained the theory of electromagnetism, and the production of electric currents by induction, he examined the construction of telephones and dynamos. Passing on to his main subject, electricity for lighting, Mr. Allam showed that while for public and street illumination arc lamps were almost exclusively used, their unsteadiness rendered them unsuitable for houses. For the dwelling, however, we have an admirable means of lighting in the incandescent or glow lamps. By means of these little lamps the most artistic effects can be produced—effects which delight the eye, for here we have light without glare. As the heat given off by the lamps is not appreciable, they may be placed close to the walls or decorations of a room if desired. They are indeed under the most perfect control, and by suitably arranging them we can, if we please, have light without any visible source, which is the ideal method in the science of illumination. The brilliancy of the carbon filament can be subdued, if desired, by obscuring the glass globe by roughening its surface by means of the sand-blast, but the more general way is to surround the globes with shades of various shapes and colours. Most of the lamps in use have a nominal candle-power of 16, but in places where a more brilliant light is wanted 32 or 50 candle-power lamps may be used. On staircases and in passages where the light is required but occasionally, eight candle-power are sufficient, and economise the current. It is impossible to give a reliable rule as to the number of lamps required to light any given area, on account of the varying amounts of light absorbed by different coloured surfaces. The only proper method, where practicable, is to take several good oil lamps and place them round the room until the desired effect is obtained. The position of these will then mark where the glow lamps ought to be fixed when the house is being wired. In lighting by gas, to avoid complications of pipes in walls and ceilings, it is the common practice to group the gas jets together as much as possible. It is best, however, to distribute the light as much as possible, and the most pleasant lighting is obtained when the glow lamps are placed round the room about 3ft. from the walls, and from 7ft. to 10ft. from the floor. Nowadays it is unnecessary to speak of the many advantages of the electric light over its rival—gas. One may, however,

mention the lessened danger from fire, the absence of heat, the whiter light, and the freedom from noxious vapours produced by coal gas to the destruction of books and pictures, and harm of animal and vegetable life. When the lamp is to hang from the ceiling the current is brought down the wires which support the lamp and shade; these insulated twin wires are twisted together and covered on the outside with silk to any suitable pattern, and form a pleasing contrast to the inartistic gas-pipe. If the drop be a long one, the line of straight wire is generally relieved in the middle by glass beads or ornamental metal sprays threaded on. When brackets are used, care should be taken to avoid making them look like adapted gas-brackets. Artistic forms in wrought iron and hammered brass and copper are readily designed for the purpose, so as to harmonise with the style of decoration and furnishing of the room. When a house has its own generating plant, the engine and dynamo are usually placed in the basement, or in a separate building outside. The cable is brought from thence to a switch-board, on which is placed a main switch for breaking the whole current if required, an ammeter and voltmeter for measuring the current, and an automatic cut-out for breaking the circuit, should there be an excessive flow of current through any accidental cause, such as two naked wires coming accidentally into contact. From this board wires branch off to the various rooms. When houses in course of construction are wired for the light, the wood casing containing the cable and wire is fixed to the naked brick walls, and hidden from sight by the subsequent coatings of plaster. This makes very neat work, and if the house is a fairly dry one, the buried wires, well insulated with pure indiarubber, and the work properly done, there is little likelihood of anything going wrong. At present, however, the task usually presented to the electrical engineer is to run the wires in a house, not only finished and decorated, but furnished. Then the casing has of necessity to be fixed to the wall, and is apt, if care is not taken, to spoil the decoration and appearance of the room, besides producing the usual damage in cutting away for inserting the wooden plugs. In order to minimise this disfigurement as much as possible, Messrs. Nicholson and Jennings have recently introduced a new kind of casing made of a material resembling Lincrusta Walton. This material can be moulded to any design, and coloured to suit the intended surroundings, while the cost is not more than the ordinary wood casing. When the wires have to run across the ceiling this might be used with advantage, dummy lengths being run at right angles to form panels. Split bamboo canes have been lately suggested for use in covering the wires. These would look extremely well, if polished, and would match the Japanese furniture and decorations now found in so many houses. A better plan, however, than running the casing on the ceiling, is to lay it under the floor of the room above, across the joists, bringing the wires down through the ceiling. In most cases wires from the lamps are brought down the walls to switches; these control the current for any given lamp or lamps, and take the place of the gas tap. Sometimes, however, the switch is placed in the holder, just above the lamp. The switches are generally made with a slate or china base, with a metal, wood, or china cover. The arrangement of the mechanism inside varies with every maker; but the object is in each case the same, to break and close the circuit by the movement of a handle or lever, care being taken that good contact is made between the metal parts conveying the current when the switch is "on," and that there is a good spring keeping the switch always "off" until moved by hand into the reverse position. A "wall socket" is a handy arrangement for obtaining a light that may be shifted to different parts of a room. At any convenient point on the wall a socket is fixed, to which the wires from the mains are led. When a light is required in the movable lamp, all that has to be done is to connect it with the socket by means of a flexible wire cord, with a plug at one end. By having several of these sockets placed in various parts of the room, the electric lamp may be made as portable as the common oil table-lamp. The householder, on the introduction of the electric light, is apt to imagine that, having got rid of his gas-pipes, he need no longer dread the possibility of fire. However, when one considers the intense heat generated in the electric arc, and the fact that the glowing of the fila-

ment in incandescent lamps is also the result of heat, it is obvious that the element we have to deal with is by no means of an inoffensive and harmless nature, and that immunity from fire can only be obtained by adhering to the required conditions, by exercising great care in the perfect insulation and protection of the conductors. Much of the care displayed in England by the electrical engineer has been due to the stringent rules drawn up by the Fire Offices, and which have to be strictly adhered to by the contractor in order that the work may be passed by the company's inspector. The rules published by the Phoenix Fire Office, under the direction of Mr. Musgrave Heaphy, are those most generally used. These rules deal with the details that have to be observed by the contractor, such as the proper insulation of the wires and cables, the distance at which the wires must be laid from one another, and the introduction of a proper number of fuses in the circuit. Some of these rules may appear unnecessary and to show over-carefulness, but it is better to lean to the side of over-carefulness, and these rules have greatly increased the adoption of the electric light by inspiring the public mind with confidence in its perfect safety as well as its many other advantages, for, by adhering to these rules, electric lighting may beyond doubt be made absolutely safe. The Phoenix Fire Office, in the preface to its rules, remarks, "The electric light is the safest of all illuminants, and is preferable to any others, when the installation has been thoroughly well put up." The author concluded by giving a short description of the various systems now in practical use for the distribution of electricity from central stations. The first and oldest method is, he remarked, to employ continuous currents at a low pressure. This can only be done when the supply station has its customers all within a small radius, for as the cross-sectional area of the main cable has to be increased in proportion to the current, a very large amount of copper has to be used when the current is great, thus making the cost of the mains a very heavy item when the district served is a large and straggling one. To avoid the use of these expensive mains, a new system has been brought into use during the last few years, and has been almost universally adopted where the lights are scattered over a large area. This is known as the "transformer system." The dynamos employed are designed to give currents of a very small quantity but of high pressure. They, moreover, instead of being continuous, as in the low-pressure system, alternate very quickly in their direction. The currents thus generated do not flow through the lamps, but through a piece of apparatus called a "transformer," which is placed in the dwelling to be lighted. This transformer works on the principle of the medical induction coil. The high-pressure current traverses a number of coils of fine wire. Over these coils are wound a smaller number of turns of coarser wire, the ends of which are connected to the lamps. Owing to the current in the fine coil alternating, varying lines of magnetic force are formed, which cut the coarse coil, producing alternating currents in the lamp circuit. This "secondary" current, however, is of a large quantity and at a low pressure. The main cables used in this system are of small size, and can be laid down at a moderate cost; but great care has to be taken that the insulation is kept perfect, otherwise great loss is sustained by the current leaking to the earth, and there is the risk of workmen who may accidentally touch the defective cable receiving dangerous shocks. The third method to be mentioned is also on the converter principle, in which a small high-pressure current is transformed into a low-pressure current of greater quantity. In each house or sub-station a battery of accumulators is placed, and the high-tension continuous current from the central station has to pass through each set of the batteries in any given district. The secondary current from each sub-station is taken from its own battery. Thus, if there are ten sub-stations and batteries in any district, the pressure on each secondary circuit will be but one-tenth of the pressure of the current supplied from the central station. As the authorities have forbidden electric-light wires to be run overhead, every company has now to lay its mains underground. Several systems are in use, the chief aim being in each case to keep the two cables well insulated from each other and from the earth, and protected from accidental blows of picks and shovels. Some-



times the cables are well insulated with india-rubber, sheathed with lead, and then placed in earthenware or wooden pipes filled with creosote and pitch. Another plan is to place the naked copper in brick conduits or iron troughs, simply insulating it by running it on earthenware or porcelain insulators.

A short discussion followed, in which Messrs. E. Tidman, W. Allport, C. E. Gritton, and Alfred Howard took part; and a vote of thanks was passed to the lecturer.

#### STUDENTS' PRELIMINARY EXAMINATION AT THE INSTITUTION OF SURVEYORS.

OF the candidates who presented themselves at the Preliminary Examination of the Institution of Surveyors, held concurrently in London and Manchester on the 21st and 22nd inst., the following satisfied the examiners:—

Edwin Crossley Atkinson, Hill House, Thurlow, Suffolk; Guy Berry, Burton House, Wandsworth Common, S.W.; John Friendship Bowden, 33, Haldon-road, St. David's, Exeter; Harry Greaves Bradshaw, 26, Demesne-road, Withington, near Manchester; Thomas Edmund Carr, Moor Monckton Rectory, York; Lionel Cooke, 20, New Bridge-street, E.C.; John Hunter Cranston, Swains-hill, near Hereford; Robert Gerald Craske (passed at head of list), Beverley-road, Colchester, Essex; Frederick Kersey Debenham, Heath House, Commercial-road, Stepney, E.; Martin Collier Duchesne, 2, Faircroft-terrace, Audley-road, Saffron Walden; Walter Robinson Elgar, Crockshard, Wingham, Kent; Gilliebrand Elwin Evered, The Firs, Clarence-road, Clapham Park, S.W.; Arthur Sherman Everett, Berry, Totnes, Devon; Fred Finn, 2, Serpentine-road, Sevenoaks, Kent; Herbert Phillips Fletcher, Anglebay, Woodchurch-road, West Hampstead, N.W.; John Sainsbury Gilbert, Granville, Mill-hill Park, Acton, W.; Frederick Algernon Green, Merevale, Bickley Park, Kent; Francis Henry Hankinson, Eastbury, Bournemouth, Hants; Ernest Wivelsfield Harrison, Bugbrooke Rectory, Weeden, Northamptonshire; Percy Cave Holiday, Bicester, Oxon; Frank Wilnot Jarman, 4, High-street, Croydon; Barnard Marr Johnson, 3, Sussex-square, W.; Walter Nike King, Westcroft, Tring, Herts; Alfred Millington Knowles, Colston Bassett, Bingham, Notts; John Herbert Margetts, Ashberry House, Warwick; Walter North Martyn, Tower House, Poole, Dorsetshire; James Frederick Mellor, 100, St. James's-street, Brighton; John Pettitt Ogilvie, Elmswood, Marlborough, Wilts; Peter Arnold Ouvry, East Acton, London, W.; Leonard Ronald Preston, 26, Fellows-road, South Hampstead, N.W.; Charles Bates Purnard, Underley Estate Office, Kirkby Lonsdale; Herbert William Raffety, Fairholme, High Wycombe, Bucks; Thomas Scott, West Ham Vicarage, London, E.; Ernest Soutter, The Paddocks, Guildford; Ernest Allen Stapledon, Royal Agricultural College, Cirencester; Benjamin Henry Symons, Bridge Town, Totnes, Devon; Frederick Wilson Temple, 27, Sandgate-road, Folkestone, Kent; John Homan Thorpe, 10, Market-square, Bromley, Kent; Francis William Walker, Plas Grove, Hooton, Cheshire; Francis John Walkington, Greythorne, Kingstons, Ireland; William Henry Wells, 14, Girdler's-road, West Kensington, W.; Ernest Victor Whitaker, Wandsworth Lodge, Upper Tooting, Surrey; Frederick Yeo, Okehampton, Devon; Thomas John Young, Breckon-hill, Hexham, Northumberland.

#### CHIPS.

St. Peter's Church, Worcester, was reopened on Friday after restoration. The works, which have cost about £1,300, have been carried out from the designs and under the personal superintendence of Messrs. Yeates and Jones, A.R.I.B.A., architects, Angel-place, by Mr. John Bourne, contractor. Mr. Taylor, of Birmingham, did the decorations, and Mr. W. Forsyth, Tything, the pulpit and wood carvings. Mr. W. Birbeck, Ledbury, the hot water apparatus, the Worcester Gas Company the gas pipes and fittings. The altar rail, lectern, and other brass work, &c., were provided by Messrs. Jones and Willis, Birmingham. The encaustic and geometric tiles were provided by Messrs. W. Godwin and Son, Hereford.

A Liberal club and hall are to be built at Bedminster, Bristol, from plans by Mr. F. W. Willis. Mr. A. J. Beaven, also of Bristol, is the builder, and the cost will be about £5,000.

A new Constitutional Club has been erected at Oxford, and special attention has been paid to the ventilation which is carried out on the Boyle system.

A new free library is about to be built at Kidderminster, harmonising with the adjoining schools of science and art. Mr. J. M. Meredith, of Kidderminster, is the architect.

The town council of Middlesbrough have under consideration a recommendation from a committee proposing that an eminent engineer be called in to advise as to the desirability, cost, and method of constructing a bridge across the Tees from Middlesbrough to Port Clarence.

A chapel is being added to the workhouse at Droitwich for the board of guardians. Mr. W. Small is the contractor, and a stained-glass window is to be put in the building. Messrs. Jones and Willis, of London and Birmingham, being the artists.

## Building Intelligence.

**LONDON COUNTY COUNCIL.**—At Tuesday's meeting of the Council it was decided by 42 votes to 38 to instruct a committee to report as to the acquiring of a suitable site for a council chamber and offices. A committee reported that the alterations at Spring-gardens had now sufficiently advanced to render it desirable that steps should be taken for arranging the seating of the council chamber, and for obtaining the necessary furniture. It was decided to invite tenders for the work from selected firms. The chairman of the committee *re* Brass and Sons, reported that the committee had very carefully considered the reference to them by the Council, directing them to investigate and report upon the accusations affecting the position and standing of Messrs. Brass and Sons, and reported that, in view of the present state of the law and of the many legal difficulties that would attend the procedure under the reference, they were unanimously of the opinion that it was not desirable to carry on the inquiry. They accordingly recommended "that the reference be discharged," and this was agreed to. On the motion of Sir J. Lubbock, it was determined that the officials of the Council should be instructed to watch for and collect any objects of antiquity which might be met with in excavations carried on by the Council with a view to the preservation of such objects, either in a special municipal collection, or in the British Museum, or in the Guildhall Museum, as the Council might determine.

**MEXBOROUGH, ROTHERHAM.**—A new board school, situate on the common, was opened last week. The building has been constructed from plans prepared by Mr. Tacon, of Rotherham, the architect to the board, the work being undertaken by Mr. G. H. Smith, builder, Mexborough. The total cost will be about £2,000. The character of the structure is plain Tudor Gothic. Accommodation is provided for a mixed school of 102 children, in addition to four class-rooms, two for 60 each, and two for 50 each. There is a separate entrance for boys and girls; lavatory, cloak-room accommodation, and the necessary outside conveniences. The ventilation of each room is by the appliances of Robert Boyle and Co., Limited, and the heating is by means of hot-air stoves by Messrs. Wright Bros., of Sheffield. The children have separate playgrounds. The building is of rock-faced stone from local quarries, the brick also being from Mexborough kilns.

**NEWCASTLE - ON - TYNE.**—New lithographic printing premises have just been built in Clavering-place for Messrs. R. Robinson and Co., on the site of others destroyed by fire. The new works occupy practically the same position as those burned down, but the planning and construction are entirely different. More floors have been added, each floor being of a greater height than before. The building, which was erected on new foundations, is solidly constructed in brickwork, and lined throughout with white glazed bricks. The floors are supported from basement to roof by iron columns; upon these rest steel girders, which, in turn, carry the floors. The staircase is built entirely of incombustible materials—stone, brick, and iron. There are six floors in height, containing an aggregate of 30,000 superficial feet. The whole of the buildings are warmed by a hot-water apparatus. A lift adjoins the staircase, and extends from the basement to the top floor. This lift is driven by the "Otto" gas-engine. The buildings were designed and carried out under the superintendence of Mr. Frank W. Rich, of Newcastle.

Colonel Rich, inspector of railways, on Thursday inspected the new railway constructed from Chester to the Dee Bridge by the Manchester, Sheffield, and Lincolnshire Railway Company. The line is seven miles in length, and at the bridge joins the Hawarden Loop Railway now in course of construction. Among those present to receive the inspector were Mr. Fox, engineer; Mr. Cotterill, resident engineer; and Mr. Logan, contractor.

Mr. A. F. Fowler, C.E., engineer to the Tees Conservancy, the York Corporation, the Aire and Calder Navigation, and the Whitby Harbour Trustees, has been recommended by the Ribbles Committee of the Preston Corporation to be appointed by the Town Council, at their next meeting, the resident engineer of the Ribble improvement works at the estuary of the river, at a salary of £500 a year.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**EDINBURGH ARCHITECTURAL ASSOCIATION.**—A lecture on "Symbolism" was given by the Rev. Edward Sugden, of Dundee, to the members of the Edinburgh Architectural Association on the 23rd inst. Professor G. Baldwin Brown, president, was in the chair. The lecturer defined "symbolism" as that which treats of the representation of the real by the ideal. He pointed out that some of the chief things used in symbolism were letters, figures (geometrical and others), flowers, stones, colours, costumes, acts, sounds, numbers, names, and animals. He showed that letters are symbolical of man's thoughts; that figures, combined with colours and acts, gave us a great diversity of signs; and that flowers may symbolise a solemn, religious doctrine, or the tender passion of a young man for his ladylove. He also directed notice to costumes, ecclesiastical and civil, and gave the beautiful symbolism of the various instruments that may be introduced into the sunrise portion of Haydn's "Creation." Reference was made, in closing, to the symbolism of heraldry and shop signs.

**ST. PAUL'S ECCLESIOLOGICAL SOCIETY.**—The eleventh annual report, 1889-90, of the council of this Society, to be read at the annual meeting to-morrow (Saturday) afternoon at St. Paul's Chapter House, states that the proceedings of the past year have been very satisfactory; the papers read at the evening meetings have been of great interest, and the visits, with one exception, have been very largely attended. During the year ten meetings have been held in the Chapter House, and papers have been read by Mr. A. Oliver, the Rev. Ernest Geldart, the Rev. E. S. Dewick, Mr. G. H. Birch, the Rev. H. Hamilton Kelly, Dr. J. Wickham Legg, and Mr. F. Hamilton Jackson, and on one evening members were invited to bring for exhibition, and to describe, objects of ecclesiastical interest. This was a new departure, but the result was so successful as to warrant a repetition of the experiment in the future. Afternoon visits were made to the churches of St. Mary Abbot's, Kensington, St. Cuthbert, Kensington, and Hammersmith; to All Saints, Fulham; to Chiswick Parish Church, to St. Alban's Cathedral, to Bow and Stepney, to Winton, and to Aveley. Twenty-two new members have been elected during the year; the number on the register is now 274.

**THE ART OF GLASS STAINING.**—A meeting of the Architectural Section of the Philosophical Society of Glasgow was held on the 23rd inst., Mr. T. L. Watson, F.R.I.B.A., vice-president, in the chair. Mr. Stephen Adam, glass stainer, read a paper on "The Progress in the Art of Glass Staining." He regretted that cheap shoddy work was now so much in request, and pointed out the blasting effect it would have on the glass-staining art. It was common to see the terms "Artists in Stained Glass" standing over glaziers' and window-cleaners' shops. If the art of glass-staining was to run in such channels it would tend to degrade, as it was doing, an ancient, honourable, and beautiful craft. He traced the development of the art down to modern times, and pointed out the characteristics of the various periods. Referring to some recent stained-glass work, Mr. Adam said he could not enter the noble cathedral of Glasgow without experiencing a keen sense of pain. The feeling was overpowering that these painted windows were never meant for the position they occupied. The scheme of colour was offensive, the regular massing of glaring, primitive colours, and the absence of second and tertiary colours was against all rule, and did not appeal to cultivated taste. Take away the sacred texts, and they might well transfer the most of these windows to a music-hall or other place of entertainment. In addition to all that, the windows were fading. In Paisley Abbey they had stained glass, good and bad, thrown, as it were, recklessly into the window openings. There was a scheme of stained glass in Glasgow Cathedral, but in Paisley Abbey there was no intelligent arrangement.

At a vestry meeting held at St. Edmund's Church, Exeter, last week, a report by Mr. F. J. Commis, of that city, recommending the erection of a new wooden ceiling and roof, was adopted. The church has been closed for some time, owing to the fall of a portion of the ceiling and the threatening appearance of other parts.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## ADVERTISEMENT CHARGES.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., and LVI., may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. N. and Son.—A. and H. M.—W. G. and Son.—A. C.—E. G. M.

OLD T-SQUARE. (There is no use in publishing your letter. We have submitted it to the author, and he declines to continue the controversy—we suppose, because he has had enough of it.)

## "BUILDING NEWS" DESIGNING CLUB.

## FOURTH LIST OF SUBJECTS.

Subject E.—A Cabman's Shelter and Newspaper Kiosk with Illuminated Clock Tower between. This building is for a site in the middle of a main thoroughfare of a large town adjoining a cabstand, and situated on a paved island or street refuge, 43ft. long by 13ft. wide. At one end of this site, in front of the kiosk, the paving is to be rounded, and the other end left square, next cabstand, the building being so placed on the island as to allow ample space for foot-passengers in front of the paper-kiosk. The shelter, which is to be of timber, filled in with panelling or V-jointed boarding, is to measure inside 20ft. long by 8ft. wide. Out of this a little kitchen place, 6ft. by 8ft., is to be formed, with a glazed screen dividing it off from the main part. The two entrance doors (2ft. wide, made sliding) are to be situated, one on either side, between the kitchen and the main refreshment place. A seat, 1ft. 6in. wide, is range along the sides, but not at the end, and the table is to be in the centre. A small American cooking stove is to be placed in the kitchen, with flue in tower wall, and a sink with plate-rack and cupboard for cups, &c. The shelter is to stand on a brick, or stone, plinth, 14in. high above pavement, and the floor is to be finished in cement on concrete. Provision for a dust-box outside to be made. Roof covered with red tiles. Ventilation to be provided for. The clock tower, 30ft. total height to final, is to be of brick or stone, 9ft. square outside, on plan at base; upper part may be of timber, like the roof, which is to be covered with lead. Clock faces on all four sides. The kiosk for sale of newspapers is to be of timber, like the shelter, and to project from the other side of the tower, 4ft. 6in. inside by 6ft. wide, and rounded on plan to follow line of pavement. The base of the tower is to be open into kiosk, to be used by the vendor of papers, and his doorway into the kiosk to be in one of the flank external sides of the tower. Plan, 3 elevations and section; scale, 4ft. to the inch. Sketch and small-block plan showing position on island. Style optional.

DRAWINGS RECEIVED.—"A. G." in a circle, "Herbert," "Sarchedon," "Labor Omnia Vincit," "Nightlight," "Airedale," "Streona," "Cassowary," "North Star," "K. W. T.," "Fleur de Lis," "Pat," "Niger," "Glaucus," "Nox," "Niblick," "Lycidas," "Bunya," "Dot," "Pat," "Do-no," "Koko," "Waverley," "West Anglian," "Menelaus," "Coaly Tyne," "St. Magnus," "Jeky," "McGinty," "Tyne," "Westward-ho," "So and So," "Jehu," "Coverac," "Reference."

## Correspondence.

## CLERK OF WORKS AND WHOLESALE CONTRACTS.

To the Editor of the BUILDING NEWS.

SIR,—Will you allow one who, in twenty-five years' responsible charge of contracts, has had both systems to deal with, to express a different opinion to that in your article on above? My own experience is that the smaller the contractors the greater the scamping, and that separate contracts means keeping some half-dozen tradesmen all eager to make a profit out of one piece of work rather than one, and instead of six tradesmen anxious to do good work, the unfortunate architect and clerk of works finds himself faced by six tradesmen, each keenly anxious to make as much money out of the work as possible. The rows and bothers there are to settle where one trade's obligations ends and the other begins will give as much trouble as the rest of the work, and one scamping tradesman will set all the others by the ears.

Your shocking example, the London School Board, is an unfortunate one, as these schools were nearly all subtle to separate contractors by one contractor, and the system of open tendering and monthly payments directly helped men to undertake work of this kind beyond their capital or experience.

It is notorious that some of these contractors had no workshops, and scarcely a yard, when they took contracts, and that all their work was sublet, except, perhaps, the material of brick-layer and carpenter.

I do not know the superior officer of the board or his experience; but I venture to say that if such a superior officer visited all the buildings in London erected under open competition he would find 75 per cent. with as gross scandals as the Board schools, and if he visited the North and West of England, where separate tenders are the rule, he would find 80 per cent.

Architects have the matter in their own hands. Write a careful specification—do not leave the office boy to do it with the scissors—choose a competent and trustworthy clerk of works, and see he does his duty, and stand by him; keep a high standard, and scamping builders will shun the office.—I am, &c.,

ROBERT PHILLIPS.

SIR,—I have read with interest your article last week on "Wholesale Contracts." As regards your suggestion to obtain "separate contracts" for a building, the idea is very good; but from experience I have found the trades clash one with the other—the bricklayers with carpenters, and *vice versa*, and so it goes all through; whereas under the old style, where a general foreman looks after things, one trade works into the hands of the other, and the work proceeds more pleasantly to all parties concerned.

I take it the reason why jerry-work creeps into buildings, even where a clerk of works is employed, is that some architects do not give their clerk of works the full power the latter ought to be in possession of. You state that under your proposed order of tendering "the clerk of works would be more a master of the situation than he is now." If he is not at the present time fully master of the situation, whose fault is it but the architect's?—who, instead of looking upon him as his representative, and placing full power in his hands, together with all information even of a financial nature relative to the building, and insisting that no communication either to or from the builder should pass otherwise than through his hands, seems to put him on one side in some cases, and only allows him a quarter the power he ought to have. As a natural consequence, the builders, who are, as a rule, men of keen perception, take the advantage; whereas if the clerks of works were always treated as they ought to be, I am sure better buildings would be the result, and greater satisfaction be given both to architect and client; he would then be fully master of his position, and whenever the builder through having the contract too low began to be "dictatorial," he would find that of no use. In time, likewise, I am confident, were this to be general, a difference would soon be seen in the builders' tenders, who, if they knew they had but little chance of scamping, would not cut their prices down so low as at present.—I am, &c.,

BUFF TERRACOTTA.

## Intercommunication.

## QUESTIONS.

[10214].—**Earthwork Slopes.**—Can any of your readers tell me of a book that gives information as to the proper slopes to cuttings, embankments, open water-courses, and ponds?—J. S.

[10215].—**Wood-Block Floor.**—Seven years ago I had a floor laid with 8in. by 4in. by 1in. wood blocks on a 6in. bed of ground-lime concrete, with a 1in. thick Portland cement-floated bed on top of concrete. The blocks were laid in cement before the floated bed was thoroughly set. The floor has proved a complete failure, and on examination it is found that the underside of blocks have become quite rotten, and not fastened by the cement whatever, but quite free. The floated cement bed is very dry and hard. Over where hot-water pipes are embedded in the concrete the blocks seem more rotten than elsewhere. What is the best to do with it? and will the composition used by wood-block floor layers generally prevent this decaying process? and of what is their composition made besides pitch and tar?—SAWSET.

[10216].—**Ageing Pitchpine.**—Will any of your readers kindly say what kind of chemicals would be suitable for giving pitchpine an aged and mellow appearance, similar to that seen upon pitchpine framing after being exposed for a long time before varnishing? It assumes a deep purple.—BUILDER.

[10217].—**Architect, Client, Builder.**—1. An architect gives a certificate in favour of a builder, and his client refuses to honour it. What position does the builder stand in? 2. If an architect sends a final certificate to his client, and not the builder, who has been the recipient of all former certificates, and the client wishes his architect to reduce the amount of the certificate, and he does so, can the builder, who is in a position to prove the certificate being written for the larger amount, sue his client for the same?—H. H. T.

[10218].—**R.I.B.A. Exam.**—Is it absolutely necessary to prepare all probationary drawings on half-sheets of double-elephant paper, 27in. by 29in.? I have carefully prepared some drawings on paper 22in. by 15in. Would these be accepted? Will Mr. Middleton, or "G. H. G.," oblige?—H. H. T.

[10219].—**Damp.**—Would you permit me to ask the assistance of your readers in my dilemma? I had a house built 13 years ago, and cannot keep the N.E. walls dry. The damp shows only in a moist (not necessarily rainy) atmosphere. I tried a solution guaranteed to cure all damp walls. It did no good. A couple of coats of good paint were then tried—no better. I then built a room on, making it an inner wall; still no better. Can any of your courteous readers suggest a cure? I may say it does not arise from the damp-course, as it is only the upper portion of the wall which is affected.—PAILO.

## REPLIES.

[10204].—**Crushing Weight of Stone.**—Tests of picked specimens are very deceiving. Dry Bath stone between pieces of pine behaves in a different manner to what we find in practice. Practically we find stock bricks will carry 5 tons per square foot; Bath stone and Ancaster, 10 tons; hard laminated sandstone, 30 tons; blue brick, 20 tons.—ROBERT PHILLIPS, County Surveyor's Office, Gloucester.

[10206].—**Strains.**—From the formula  $\frac{c b d^2}{L} = W$  it can be shown that  $d^2 = \frac{W L}{c b}$ . The strongest section for a rectangular beam is when the depth and breadth are as 7 to 5—that is, breadth ( $b$ ) =  $\frac{5}{7}$  depth ( $d$ ). Substitute  $\frac{5}{7} d$  for  $b$  in the above. Then  $d^2 = \frac{W L}{c \frac{5}{7} d}$ . Therefore,  $d^3 = \frac{W L}{c} \times \frac{7}{5}$ . Hurst's constant for northern pine = 4, and factor of safety = 5. Then  $d^3 = \frac{15 \times 20 \times 7 \times 5}{4 \times 5} = 525$ ; then  $d = \sqrt[3]{525} = 8$ , and  $b = \frac{5}{7}$  of 8 = 5 $\frac{1}{2}$ . Therefore the section of the beam should be 8in. by 5 $\frac{1}{2}$ in.—H. CARTER PEGG.

[10206].—**Strains.**—As "Como" will perhaps prefer the "strains" worked out according to the formula he gives, I send the following:—As the beam must not be loaded more than one-fifth its breaking weight, we must take the weight  $15cwt \times 5 = 75cwt$ . We then have  $75 = C \frac{b d^2}{20}$ , and taking  $C$  at 4 for fir timber,  $75 = 4 \frac{b d^2}{20} = \frac{b d^2}{5}$ , or  $b d^2 = 375$ .

Now let "Como" decide upon a depth of beam suitable to the span, say 10in. Then  $b \times 10 \times 10 = 375$ , and  $b = 3\frac{3}{4}$ . In the reply given last week the beam is taken as loaded to one-sixth the breaking weight.—J. W.

[10206].—**Strains.**—The formula for weight which your correspondent "Como" gives can easily be employed for finding the dimensions of the timber beam, if the value of the constant  $C$  for the particular kind of timber to be used be known. For, evidently:

$$b d^2 = \frac{W}{C} \times \frac{L}{l} \times \frac{1}{b}$$

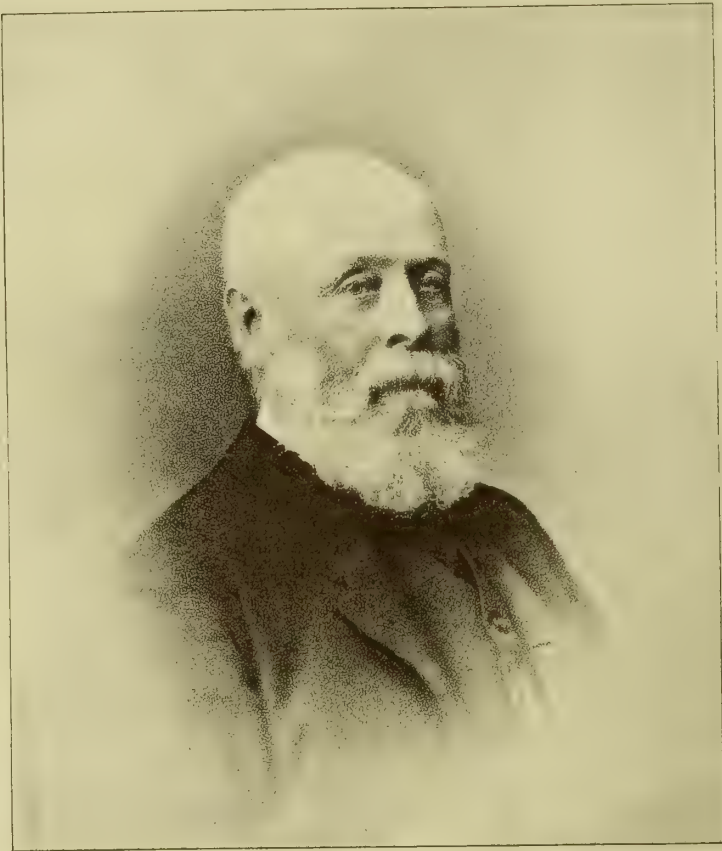
$$\text{Therefore: } b = \frac{W}{C} \times \frac{L}{d^2} \times \frac{1}{b} \quad \text{or} \quad d = \sqrt{\frac{W}{C} \times \frac{L}{b}}$$

Suppose  $b d^2 = 12$ , then since  $2 \times 6$  or  $3 \times 4 = 12$ , either of these numbers may be taken. That being chosen which would be most convenient, we have only to extract the square root of one of them, and we have the two dimensions of a beam with length of bearing =  $l$ , which will bear the strains produced by a weight =  $W$ .—J. EAUZ.



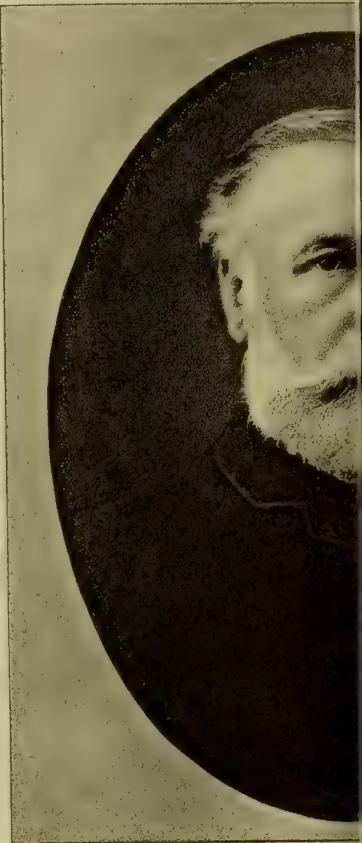




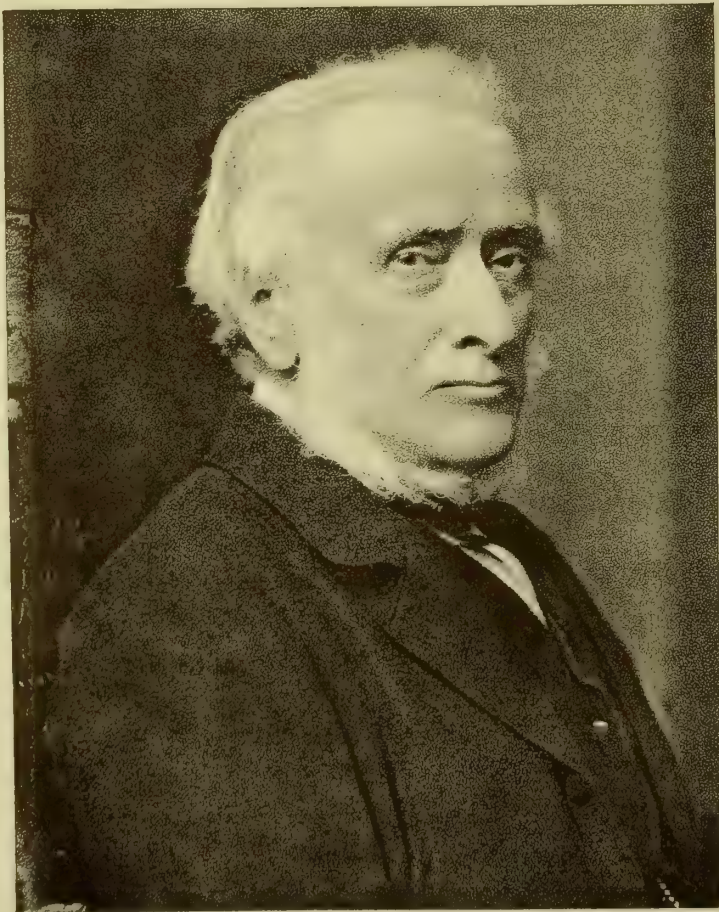


*J. P. St Aubyn Friba*

J. P. ST AUBYN FRIBA  
ARCHITECT TO ST MICHAEL'S MOUNT CORNWALL

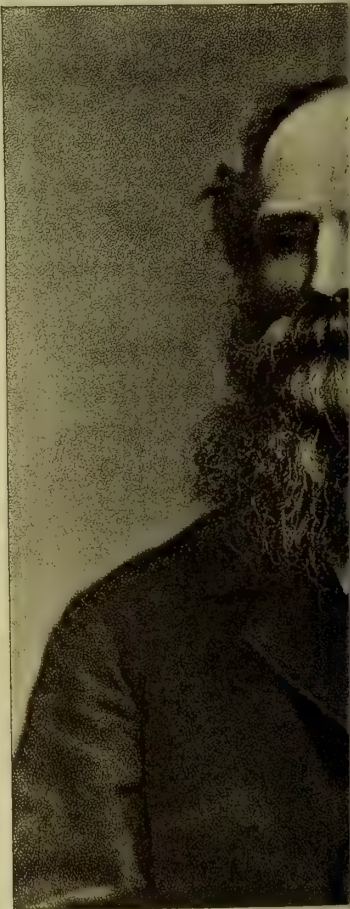


THOMAS BL  
ARCHITECT TO THE LON



*Ewan Christian Friba*

EWAN CHRISTIAN FRIBA  
ARCHITECT TO THE ECCLESIASTICAL COMMISSIONERS



WM W  
ARCHITECT OF PARIS



JAN. 31. 1890.



*William White*

WILLIAM WHITE F.S.A.  
COUNTY COUNCIL



*Lewis H. Isaacs*

L. H. ISAACS M.P.  
(ISAACS & FLORENCE) ARCHITECT OF THE HOTEL VICTORIA



William White F.S.A.  
F.S.A.  
MURCH LYNCHURST



*H. Currey*

H. CURREY F.R.I.B.A.  
ARCHITECT OF ST THOMAS' HOSPITAL







[10203.]—**Strains.**—In reply to "Como," the following is method of working out the formulae:—

$$\begin{aligned} 15\text{cwt.} &= \text{weight} \\ 5 &= \text{factor of safety} \\ 75\text{cwt.} &= \text{breaking weight} \\ 3.6 &= \text{C. for fir} \\ 3.6 \frac{b^2}{20} &= 75 \end{aligned}$$

this gives  $b^2 = 417$  nearly  
 $b$  should be  $\frac{20}{7}$  of  $d$

$$\text{Let } c = d, \text{ then } \frac{5c}{7} = b$$

$$\text{then } \frac{5c}{7} \times 2 = 417$$

$$d \text{ or } c = 8\frac{1}{2}\text{in. nearly}$$

$$b \text{ or } \frac{5c}{7} = 6\frac{1}{2}\text{in. nearly.}$$

—J. E. M.

[10206.]—**Strains.**—"Como" very naturally finds some difficulty in obtaining the values of two unknown quantities from one equation in which both occur. The difficulty may be evaded by assuming a value for one of them; in practice it is easy to settle for which—e.g., in the case of a beam spanning an opening in a wall,  $b$  is fixed by the width of the wall, and in case of a beam supporting a floor, though the economy of material increases with the increase of  $\frac{b}{d}$ , yet as increasing  $d$  would

increase the gross height of the building, the economy in timber would be partially or wholly balanced by the extra brickwork required, so that the ruling factor will probably be the market size of timber. Taking the ordinary formula for beam supported at both ends, weight in centre, constant for yellow pine (Molesworth, Ed. 21, p. 122). "Como's" problem works out as follows:—

$$W = \frac{4 \cdot k \cdot b \cdot d^2}{7} \quad \text{Safe load} = \frac{W}{5}$$

$$\therefore \text{Safe load} = \frac{4 \cdot k \cdot b \cdot d^2}{35}$$

$$\therefore 15 = \frac{4 \cdot 10 \cdot b \cdot d^2}{35}$$

$$\therefore b \cdot d^2 = 450$$

$$\text{say, } d = 9\text{in., then } b = \frac{450}{81} \text{ or } 5\frac{1}{2}\text{in. nearly}$$

$$\text{" } 11\text{in. " } \frac{450}{121} \text{ or } 4\text{in. nearly.}$$

—L. G.

### CHIPS.

At a special meeting of the Sale Local Board, held recently, the surveyor (Mr. A. G. McBeath) submitted details of a scheme for the disposal of the sewage of the Board's district. The system to be adopted is known as the international process, and the effluent can be turned into the river Mersey. The scheme will deal with 2,220,000 gallons of sewage per day, and pumping machinery will be constructed to deal with eight millions per day. The site of the works is a little over  $\frac{1}{2}$  acres, and the cost of impounding tanks, filter beds, and pumping apparatus is estimated at £14,733. The plans have been conditionally approved.

The memorial-stones of a new Sunday-school for the New Connexion Methodists of Ardsley, near Barnsley, were laid last week. The present school accommodates about 160 scholars; the new one will accommodate 300, and the old school will be converted into three class-rooms. The cost will be about £800. Mr. J. P. Kaye, of Leeds, is the architect, and Mr. Thackeray, of Leeds, the contractor.

At the annual meeting of the Edinburgh Association of Science and Arts, held on Monday, Mr. Alexander Donald Mackenzie was appointed president, Mr. Alexander Lawson and Mr. George James Beattie vice-presidents, Mr. R. M. Westwater secretary, and Mr. John Turpie treasurer for the ensuing year. The retiring president (Mr. Turnbull) addressed the meeting, and Mr. James Macdonald read a paper on "Lead and its Application to Building Construction."

The new Assembly Rooms at Whalley, near Blackburn, have just been opened; they comprise a large hall, stage, retiring-rooms, smoke-room, caretaker's house, and storage, and have cost, including furnishing, about £2,300. Mr. C. Sydney Ingham, of Manchester and Southport, and Mr. M. Wilkinson, of Blackburn, have acted as joint architects, and the work has been carried out by local contractors.

Messrs. Sugden and Son, of Leek, the architects employed to adapt the Mechanics' Hall, Hanley, for the purposes of a Technical Museum for North Staffordshire, which is expected to be of a permanent character, have made a further report to the Hanley Corporation as to the unsafe condition of the building and the expensive works necessary to render the building safe. This was discussed at length by the town council at their last meeting, it being pointed out that the building was allowed to become dilapidated before the Corporation came into possession of it. The report was eventually adopted.

At a meeting of the congregation of St. Paul's Established Church, Greenock, held on Friday, it was unanimously agreed to erect a new church on the site of the present building at a cost of about £8,000. The new church is to seat about 700 people.

### LEGAL INTELLIGENCE.

**IN RE C. J. BURSILL.**—Mr. Registrar Giffard made last week a receiving order under a petition presented by the debtor, a builder and contractor, of Iverson-road, Kilburn, and West Hampstead. The liabilities are given at £29,500, of which £25,000 are secured.

**IN RE WAWMAN.**—(London Bankruptcy Court, January 20, before Mr. Registrar Linklater.)—The bankrupt, a builder at Felixstowe, in Suffolk, formerly carrying on business at Croydon, applied for an order of discharge. The failure occurred in October, 1885, the liabilities being returned in the statement of affairs at £7,200, and there were no assets. The Official Receiver reported in opposition that in 1880 the bankrupt filed a previous petition, under which the creditors agreed to accept a composition of 8s. in the pound, which was never paid. The trustee made six other specific charges against the bankrupt. Mr. Registrar Linklater now gave judgment to the effect that all the charges made against the bankrupt except one failed, and that he had only to consider the case with reference to the offence found in the Official Receiver's report—viz., the previous failure in 1880. Being of opinion that the offence of the previous failure was surrounded by circumstances of great aggravation, he should suspend the order of discharge for three years from this date.

**DANGEROUS PARTY WALLS AND THE BUILDING ACTS.**—**CHARLES V. GOVER.**—(Jan. 21 and 22, Chancery Division, before Mr. Justice Kay.)—The plaintiff and defendant are owners respectively of Nos. 69 and 68, Basinghall-street. The defendant having pulled down his house, No. 68, with a view to rebuilding, proceeded to underpin the party wall, which was a very old one standing upon elm boards and cross timbers, which rested upon mud, and it was alleged that the defendant left the wall in a dangerous condition. In March, 1888, the plaintiff and defendant were served by the Commissioners of Sewers with a dangerous-party-structure notice under the Metropolitan Building Acts. In spite of the notice and a complaint by the plaintiff the defendant continued the work and erected a wall tied to the plaintiff's wall and built on it in such a way, it was alleged, as interfered with ancient lights in the plaintiff's house, which is used for office and warehouse purposes. The plaintiff then brought the present action for an injunction to prevent the defendant allowing the party wall to remain in its dangerous condition, also to restrain the defendant from interfering with the ancient lights, and for damages. The plaintiff obtained on motion an interim injunction restraining the defendant from doing any of the works mentioned in section 83 of the Metropolitan Building Act, 1885, except such as were required to be done by the dangerous-party-structure notice. As the defendant continued his work in spite of the injunction he was served with notice to commit him for breach of the injunction. This motion came on with the trial of the action, which was heard on Tuesday and Wednesday week. Mr. Justice Kay said the case was not a satisfactory one, because it seemed to him that in this Metropolitan architects and contractors went to work as if there were no such Acts as the Metropolitan Building Acts in existence, and did not take the slightest pains to act in accordance with them. He had been entertained by an argument that, notwithstanding the injunction and the notice, the defendant was at liberty to build anything he liked. What defendant had done was not only distinctly contrary to the provisions of the Metropolitan Building Acts, but a direct and positive violation of the injunction which had been granted. Notwithstanding the action brought by the plaintiff, notwithstanding the notice, and notwithstanding the order of this Court, the defendant thought he would do as he liked. The acts of defendant had been entirely wrong, and there had been no defence except that of acquiescence by plaintiff. That defence entirely failed, and therefore as regards the party wall there must be an injunction and the defendant must pay the costs of it. He must also pay the costs of the motion to commit, which now came on with the trial. The plaintiff had also shown that he was entitled to some damages, which he would assess at £50. As to the alleged interference with the plaintiff's ancient lights, the plaintiff said that there was such a material diminution of light as to render his house less fit for the use to which a house of that kind was ordinarily put. But his lordship had never heard weaker evidence on that point than had been put forward in this case; therefore that part of the action must be dismissed with costs. The costs of each party would be set off.

**ACTION FOR LIBEL AGAINST A REDRUTH ARCHITECT.**—Before the acting Under Sheriff for Devonshire (Mr. E. H. Houlditch), at Exeter on Thursday, the 23rd inst., John Short Sanders, commission agent and commercial traveller, of Newton Abbot, brought an action to recover damages for libel against the Western Manufacturing Company, of Redruth, Cornwall. The Hon. Bernard Coleridge, M.P., represented the plaintiff, and Mr. James Hicks,

V.P.S.A. (who carries on the business of the defendant company), conducted his own case. Judgment had been allowed to go by default, and it was for the jury to assess the damages. Mr. Coleridge said the action was brought by the plaintiff against the Western Manufacturing Company, of which Mr. Hicks was the sole proprietor. Mr. Sanders was a commercial traveller residing at Newton Abbot. The defendant represented the Western Manufacturing Company at Redruth, and was also an architect in a good way of business, and further acted as a commission agent. In April, 1888, Mr. Hicks, being desirous of pushing the business of the Western Manufacturing Company, a confectionery business, employed plaintiff to sell his wares throughout Devon. Up to the end of October sales amounting to £251 12s. 7d. had been effected, the commission due being £25. There was no secret about the plaintiff retaining the money, because he sent in accounts of the sums received with the names and dates. This went on to December 10, and the sales then amounted to £325 14s. 1½d., and the commission to £32 11s. 6d. On that day plaintiff went to Paignton, when a client showed him a letter, written on the company's note paper, to the following effect:—"Sir, Mr. J. S. Sanders does not now represent us, and you will please not pay him any money." The imputation was that the plaintiff could not be trusted. On the 17th December the defendant sent the following telegram to Sanders:—"If you attempt to collect another account we will have you arrested." The most serious libel was contained in a letter in December, 1888. It ran as follows:—"We hope there will be no trouble arising out of your sending money to Sanders, but on the face of it it has a serious aspect. We think you should have placed yourself in communication with us, as you must have known the goods were ours. We need scarcely say we have received no remittance from Sanders in respect of those goods. We hope you will do what you can quickly to close affairs." Defendant said he had received complaints from customers as to the mode in which the plaintiff had conducted his business, and thought himself justified in writing to his clients on the subject. The defendant disclaimed his intention of allowing judgment to go by default. This was due to an oversight arising out of his answers to interrogatories. The jury assessed damages at £50. The defendant intimated his intention of applying to a higher Court for a new trial on the ground of misdirection.

**SERIOUS CHARGES AGAINST A SURVEYOR.**—At Westminster Police-court on Saturday, John Hill, 41, a surveyor, of Broadstairs, formerly an architect and surveyor at Brighton, was brought up in custody, having absconded from his bail, to further answer charges of embezzlement and forgery. The prisoner, from March, 1888, until the beginning of last year, was associated in a business capacity with a Mr. Hans Scharien, a builder and house agent, of South Kensington. Mr. Scharien alleged that the accused received a considerable sum of money on his behalf, and that he endorsed a cheque "H. Scharien and Co." without authority and misappropriated the proceeds. Cross-examined, prosecutor admitted that accused acted as an auctioneer for him, and that he was authorised to endorse documents other than cheques, also that some remuneration was due to accused. Sergeant Church said prisoner was taken in custody last February, and while under remand from this court absconded. Two persons, who each bailed him in the sum of £30—one being a small tradesman, who accepted the responsibility for a small consideration, and had never seen the prisoner—had to go to prison for 14 days in default of paying the amount of their forfeited recognisances. When originally charged, prisoner said part of the money belonged to him, but he knew he had no business to receive it. On Friday witness re-arrested him at Ramsgate. The prisoner was remanded in custody.

A number of residences are about being commenced at Smethwick, Bloxwich, near Walsall, and near Solihull, Birmingham. These houses will be of a size and character adapted to the requirements of clerks, &c., and of the higher class of skilled artisans. The front elevation of these buildings is intended to be of a Gothic character, and ornamental stone, woodwork, brickwork, and metal work; Minton's tiles, buff and red terracotta, and other decorative accessories will be introduced. The total cost of erection is estimated at about £26,000. The architect is Mr. John Statham Davis, of 53, Newhall-street, Birmingham.

William Chatterton Milton, aged 34, of Park-street, Stoke Newington, manager to the Hitchings Patent Plaster Company, pleaded guilty on Saturday, at the Dalton Police-court, to forging an endorsement on a cheque for £28 14s., with intent to defraud his employers. The prosecutors, through their solicitor, asked that the case might be dealt with as one of embezzlement, and they strongly recommended the prisoner to mercy. Mr. Haden Corser assented, and ordered him to be imprisoned with hard labour for three months.



### WATER SUPPLY AND SANITARY MATTERS.

WORSLEY, NEAR MANCHESTER.—An inquiry was opened on Wednesday, 22nd inst., at the Court-house, Worsley, before Col. W. M. Ducat, R.E., with reference to an application of the Barton Rural Sanitary Authority to borrow the sum of £4,000 for private street improvements at Boothstown and Walkden. There were present many property owners who objected to some of the works as unnecessary. The inspector said the authority was compelled as a public body to carry out the law. The authority was represented by Mr. J. W. Whitworth (deputy clerk), Mr. C. C. Hooley, C.E. (surveyor), Mr. Geo. Burgess (chairman), and Mr. Jas. Evans (member). Mr. Thomas Berry, C.E., represented the Trustees of the late Duke of Bridgewater (ground landlord), and Mr. F. Booth, secretary to the Ratepayers' Association. The clerk stated that the money was to be repaid in ten years. The surveyor explained the works proposed by the authority. After hearing the evidence the inspector visited the streets in question. He will report to the Local Government Board.

### CHIPS.

The Aberdeen town council received a report on Monday from Dr. Matthew Hay, the medical officer of health, condemning, as an "unhealthy area" under the Artisans' and Labourers' Dwellings Acts, a district lying between the Ship-row, Chapel-lane, Virginia-street, Marischal-street, and Castle-street.

Professor Baldwin Brown, of Edinburgh, inaugurated a course of lectures on art in the Terrace Good Templar Hall, Paisley, last week. The lectures are in connection with the University Extension Scheme.

The strike of brickmakers in the East Worcestershire and Staffordshire Districts, which commenced on Monday week, terminated on Friday, all the employers having conceded an advance of wages of 15 per cent.

New buildings, erected by the Luton Board in extension of Old Bedford-road School, were recently opened by the Right Hon. A. J. Mundella, M.P. The school originally consisted of three rooms, and was for girls and infants only. The main room has now been enlarged, and several new rooms have now been added. The school which previously provided for 218 children, now accommodates 250 boys, 250 girls, and 279 infants. The school furniture was supplied by Messrs. Hammer and Co., of London.

The Bishop of Colchester on Saturday consecrated the new church of St. Clement's, Ilford, built to meet the needs of the increasing population on the north side of the town. The first part of the design only has been carried out at present, owing to want of funds.

The Directors of the Cowbridge and Aberthaw Railway met at Cardiff on Thursday, when the contract for the construction of the line was given to Mr. W. H. Mathias. The first sod will be cut at Cowbridge on Friday in next week, the 7th prox.

The annual dinner of the Cardiff Master Builders' Association was held at the Angel Hotel, Cardiff, on Friday evening, when Alderman D. Jones presided. About 90 members sat down. Mr. Edwin Seward, R.C.A., proposed "The Cardiff Builders' Association," to which the chairman and Mr. Shepton responded, and the health of "The Architects of Cardiff" was acknowledged by Mr. J. P. Jones.

At a meeting held at the rooms of the Society of Antiquaries, Mr. John Evans, D.C.L., P.S.A., in the chair, it was resolved that subscriptions be invited for the purpose of striking a medal in honour of Mr. Charles Roach Smith, and that the balance of the fund be handed to him, in recognition of his life-long and valuable services in the cause of archaeology. Subscriptions should be forwarded to Mr. George Payne, F.S.A., hon. secretary and treasurer, The Precinct, Rochester.

New married quarters for the Royal Marines are to be erected at once at Chatham. Messrs. Naylar and Son, of Rochester, have secured the contract. About £6,000 will be spent.

Messrs. Archibald Smith and Stevens have been intrusted with an order for two of their "Reliance" hydraulic lifts for the extension of Brown's and St. George's Hotel, Albermarle-street. The same firm have in hand similar lifts for the Norfolk Hotel, South Kensington; Queen's-gate Mansions, Kensington; Montague Mansions, Bloomsbury; Avenue Mansions, Shaftesbury-avenue; and the French Hospital, Charing Cross-road. During the past month they have completed "Reliance" lifts for the Camberwell Infirmary, the Middlesex Hospital, Baron D'Erlanger, and Mr. R. Benyon, the two latter for their town houses.

Mr. F. W. Maxwell, of 29, Princess-street, Manchester, having successfully passed the requisite examination, has been admitted as a Fellow of the Surveyors' Institute, London.

### Our Office Table.

The architects of Cardiff and district and their assistants met at a dinner at the Park Hotel, Cardiff, on Wednesday evening, the chair being occupied by Mr. J. P. Seddon, F.R.I.B.A. This gathering, which is intended to become an annual event, was the outcome of the visit of the Society of Architects to South Wales in the autumn, and the Society was upon this occasion represented by its secretary, Mr. G. A. T. Middleton.

In celebration of the extension of the electric lighting at the British Museum from the reading-room and courtyard to the various galleries, a private view of the museum was given on Tuesday evening by Mr. E. Maunde Thompson, the chief librarian, and was attended by over 1,000 visitors. Both arc and glow lamps are employed, the sculpture galleries on the ground floor, and the Egyptian, Archaic, Etruscan, and White Memorial galleries above being lighted by the former system, 126 arc lamps in all being used; while rows of incandescent lamps—127 altogether—are introduced into the Greek, Pan-Athenæan and Ethnological galleries. The installation is a success, the objects being fully illuminated, with an absence of glare. The western gallery was, however, closed, the explanation given being that the current was not sufficiently powerful to supply all the lights required. It was noteworthy that the colours of exhibits were apparently unchanged by the arc lights, whereas the incandescent lamps gave a distinctly warm glow. All the lamps on both systems are supplied from dynamos charged by engines of 200H.P., the machinery being in duplicate and placed in the basement, the main lines being laid outside the building. Messrs. Siemens Brothers, who effected the original installation five years since, have carried out the present work, under the direction of Mr. W. H. Preece, F.R.S., of the Post Office, and Mr. John Taylor, architect to H.M. Office of Works. Mr. Pullman has been the clerk of works. The engines were supplied by Messrs. Marshall, Sons, and Co., of Gainsborough.

The committee deputed by the Staffordshire County Council to elect a chief surveyor of main roads met on Tuesday week, and had before them the seven candidates who had been selected from the 123 applications originally received. The selected candidates were—R. E. W. Berrington, borough surveyor, Wolverhampton; J. T. Eayrs, borough surveyor, West Bromwich; G. A. Hutchins, Cardiganshire; Joseph Lobley, Hanley; James Moncur, Kirriemuir, N.B.; F. H. Phillips, Cardiff; and S. S. Platt, Rochdale. The committee reduced the number further to three—viz., Messrs. Berrington, Hutchins, and Moncur, and in the result Mr. Moncur received the appointment. The salary is £800, to include travelling expenses, the rent of an office at Stafford, and the wages of a clerk. The chief surveyor will have the charge of nearly 700 miles of main roads, and it is intended to divide this length of road into six or seven districts, to each of which an assistant surveyor will be appointed, at salaries to be fixed by the Council. The chief surveyor will have the power of appointment and dismissal of these subordinates. Mr. Moncur was trained as a road surveyor, first in the office of Mr. Blackadder, C.E., Dundee, and afterwards with Mr. Grant, C.E. and road surveyor, Kirriemuir, whom he succeeded in 1880. Since that date he has had full charge of the roads in the Forfar district of Forfarshire, extending to 312 miles, and has gained experience in maintaining roads, forming new roads, erecting bridges, drainage works, and all the other operations connected with roads. Mr. Moncur will enter upon his new duties on the 10th of February, and proceed to the arrangement of districts and the organisation of his staff, in order that all the machinery may be ready for the taking over of the roads by the Council on the 1st of April.

The late Mr. John McArthur, jun., architect, of Philadelphia, the architect of the new City Hall at Philadelphia, which is probably the second building in importance in the United States, died at his residence, 4,203, Walnut-street, Philadelphia, on the morning of the 8th Jan., of heart disease, accelerated by influenza. His death was not altogether unexpected, for his health has been failing for several years, and during the last six months he has frequently been compelled

to remain at home for days together. He was at the new City Hall for the last time on New Year's Day, and then caught a cold that aggravated his delicate state, and, to the great grief of all who knew him, proved ultimately fatal. He was about 63 years of age.

MESSRS. HUDSON AND KEARNS send us specimens of their coloured office calendars gorgeous with peacocks, and suggestive of Time's rapid flight with its light-winged dove. The views of Streatley Bridge and Bisham Abbey are very nice, and altogether the calendar is one of the nicest and most artistic we have seen. The little ivory pocket calendar and memoranda tablet is also neat and tasteful.

### MEETINGS FOR THE ENSUING WEEK.

- MONDAY.—Royal Academy. "Roman Architecture," No. 3, by Prof. Geo. Aitchison, A.R.A. 8 p.m.  
Royal Institute of British Architects. "The Renaissance in Northamptonshire," by J. A. Gatch. 8 p.m.  
Society of Arts. "The Electro-Magnet," Cantor Lecture No. 3, by Prof. Silvanus P. Thompson. 8 p.m.  
Liverpool Architectural Society. "Mouldings," by T. W. Haigh.  
Leeds and Yorkshire Architectural Society. "Mural Painting," by F. Suddards.
- TUESDAY.—Institution of Civil Engineers. "Bars at the Mouths of Tidal Estuaries," by W. H. Wheeler, M.Inst.C.E. 8 p.m.  
Manchester Architectural Association. "The Houses of Queen Elizabeth's Courtiers," by J. A. Gatch, of Kettering.  
Glasgow Architectural Association. "Influence of French Renaissance on Modern Architecture," by H. D. Walton.
- WEDNESDAY.—Civil and Mechanical Engineer's Society. "Recent Progress in Sewage Treatment," by C. H. Cooper. 7 p.m.  
Carpenters' Hall Free Lectures. No. 1. "Architecture in All Ages," by Banister Fletcher, J.P., D.L. 8 p.m.  
Society of Arts. "High-Speed Weaving and Knitting without Weft," by Arthur Paget. 8 p.m.
- THURSDAY.—Royal Academy. "Roman Architecture," No. 4, by Prof. Geo. Aitchison, A.R.A. 8 p.m.  
Edinburgh Architectural Association. Paper by John Kinross. 8 p.m.
- FRIDAY.—Institution of Civil Engineers. "Reclamation of Land from the River Tees," by Colin P. Fowler. 7.30 p.m.  
Royal Institution. "The London Stage in Elizabeth's Reign," by H. B. Wheatley. 9 p.m.  
Society of Arts. "The Utility of Forests and the Study of Forestry," by Dr. Schlich. 5 p.m.

### Trade News.

#### WAGES MOVEMENTS.

SMETHWICK.—A well-attended meeting of carpenters and joiners of Smethwick was held on Friday night, in connection with the local branch of the Amalgamated Society of Carpenters and Joiners, for the purpose of considering their present position in the trade. Mr. W. Roe presided, and remarked that he hoped all the non-association men would join the society at once and make their organisation a strong one. In Smethwick they were being paid a rate of wages 1d. per hour lower than the Birmingham men received. Mr. McNeil submitted a code of rules relating to the number of working hours (the total hours for work being fifty-four), the rate of wages to be paid for ordinary and overtime, &c., which were unanimously adopted. Addresses were delivered by Mr. Langford (secretary) and others.

DUNDEE.—At a largely-attended meeting of the Dundee and District Master Builders' Association, held in Mathers' Hotel, Whitehall-street, the schedules issued by the School Board architect for tenders for the Leff-road school, Loches, were under consideration, and it was unanimously resolved to decline to tender except according to the general condition of contracts as agreed to between the Dundee Institute of Architecture, Science, and Art and the builders of Dundee. The meeting expressed regret that an attempt should be made to break through this arrangement, and hoped that the Association would not again have to complain on this head, and instructed the secretary to send a copy of the resolution to the School Board architect, and to the secretary of the Dundee Institute.

The Derbyshire County Council have resolved to take under their own control from April 1st the whole of the main roads in the county, 900 miles in length. Six district surveyors will be appointed to act under the direction of the present county surveyor. Heretofore the main roads have been managed by 173 local authorities.



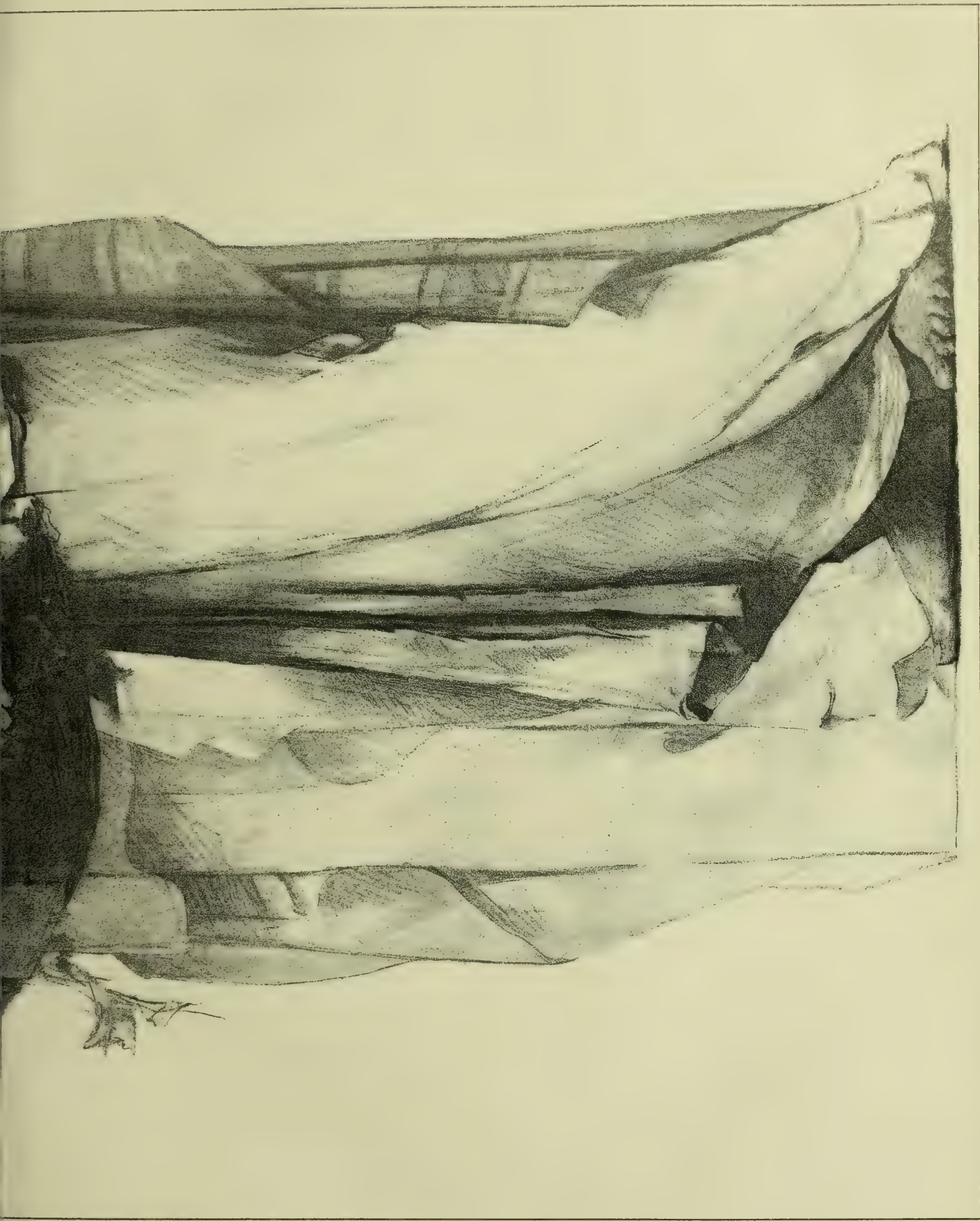




THE BUILDING NEWS, JAN. 31. 1890.







"PHOTO TINT": A NEW AND IMPROVED METHOD OF COLORING PHOTOGRAPHS.

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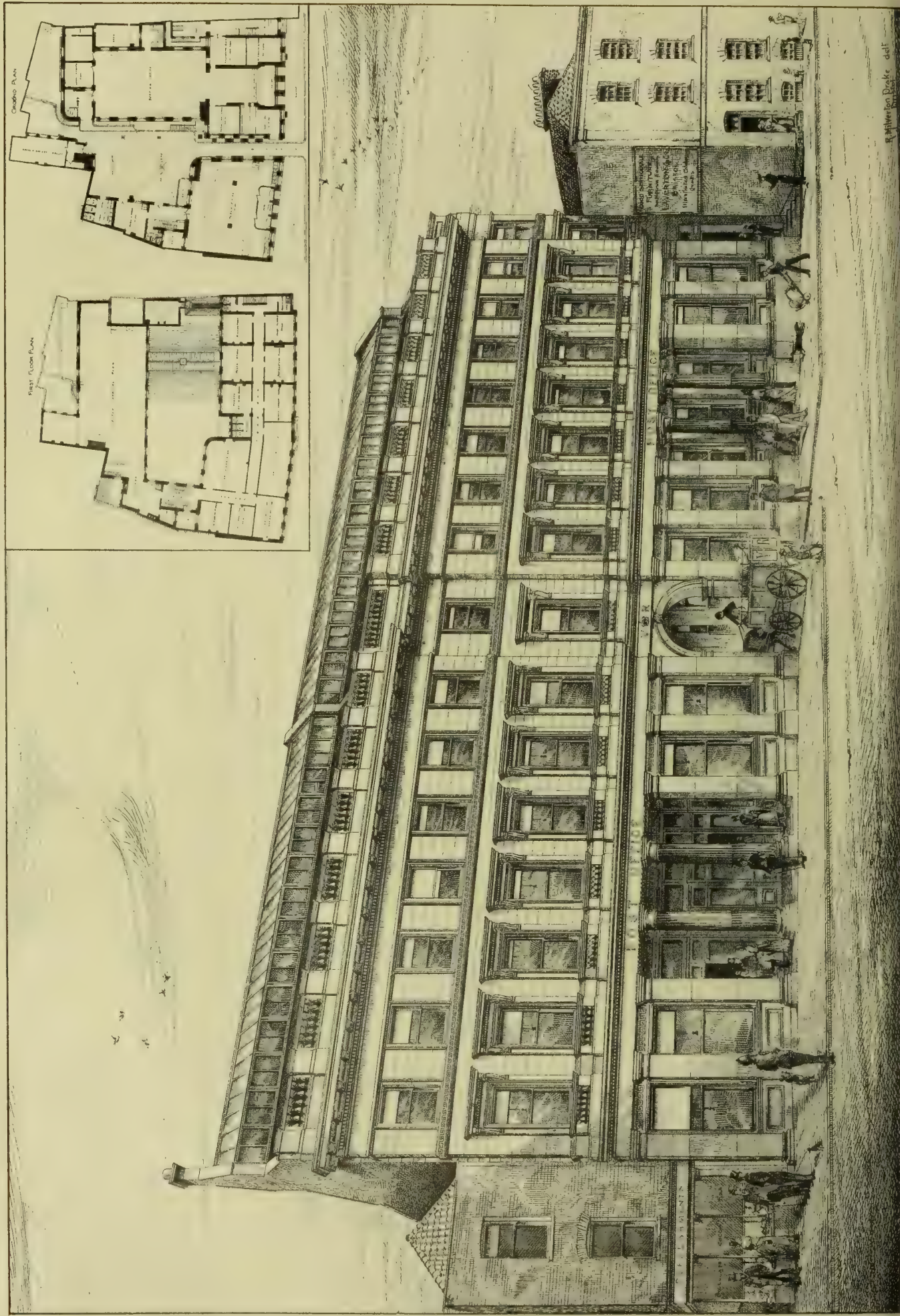








THE BUILDING NEWS, JAN. 31. 1890.



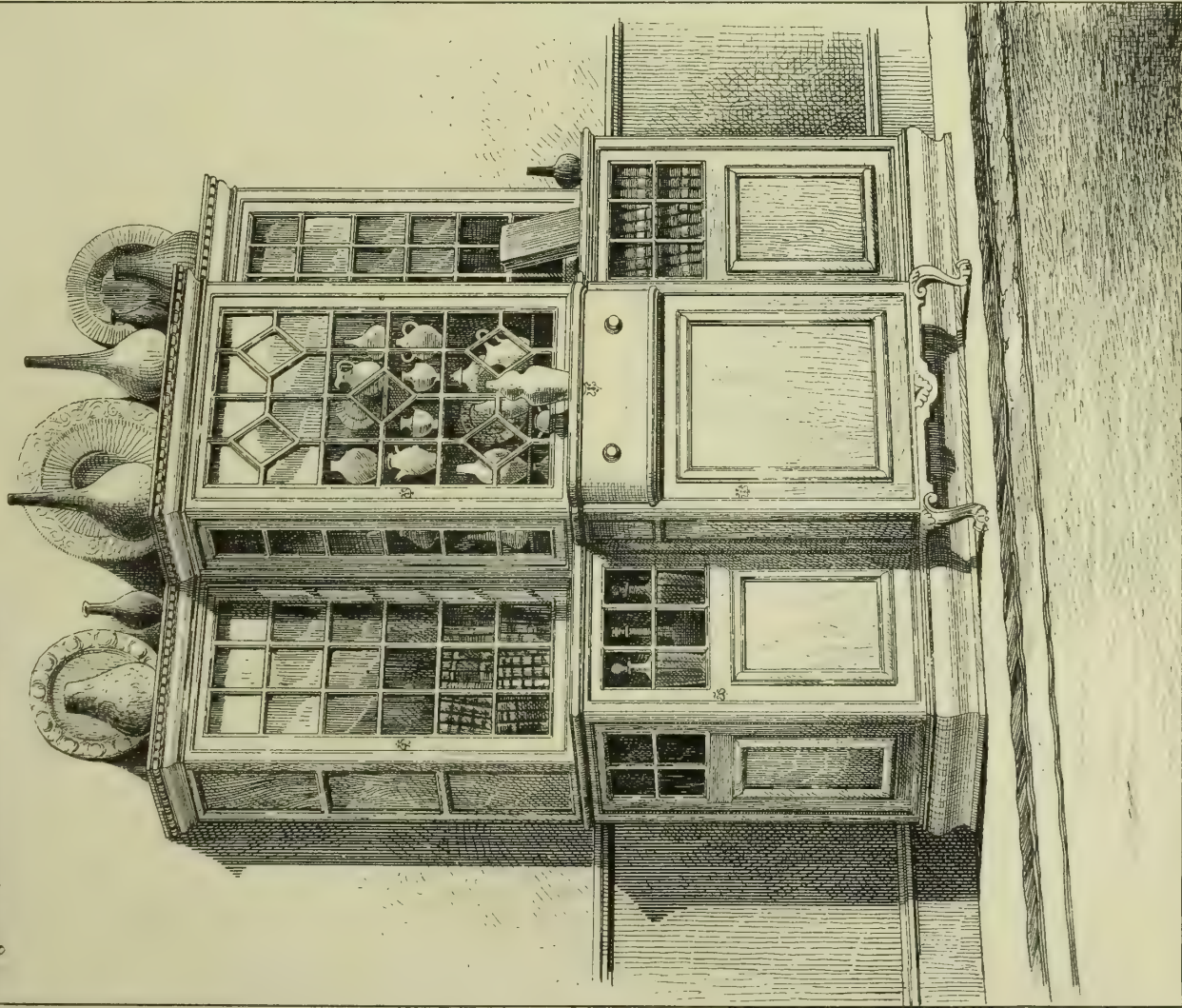


THE DENTON TOWER, JAN. 10, 1900.

# THE "HOGARTH" CHIFFONIER

MADE BY FOSTER & COOPER  
designed by MAURICE B. ADAMS F.R.I.B.A.

MADE IN MAHOGANY



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# THE "HADDON" CHIMNEY PIECE

IN OAK

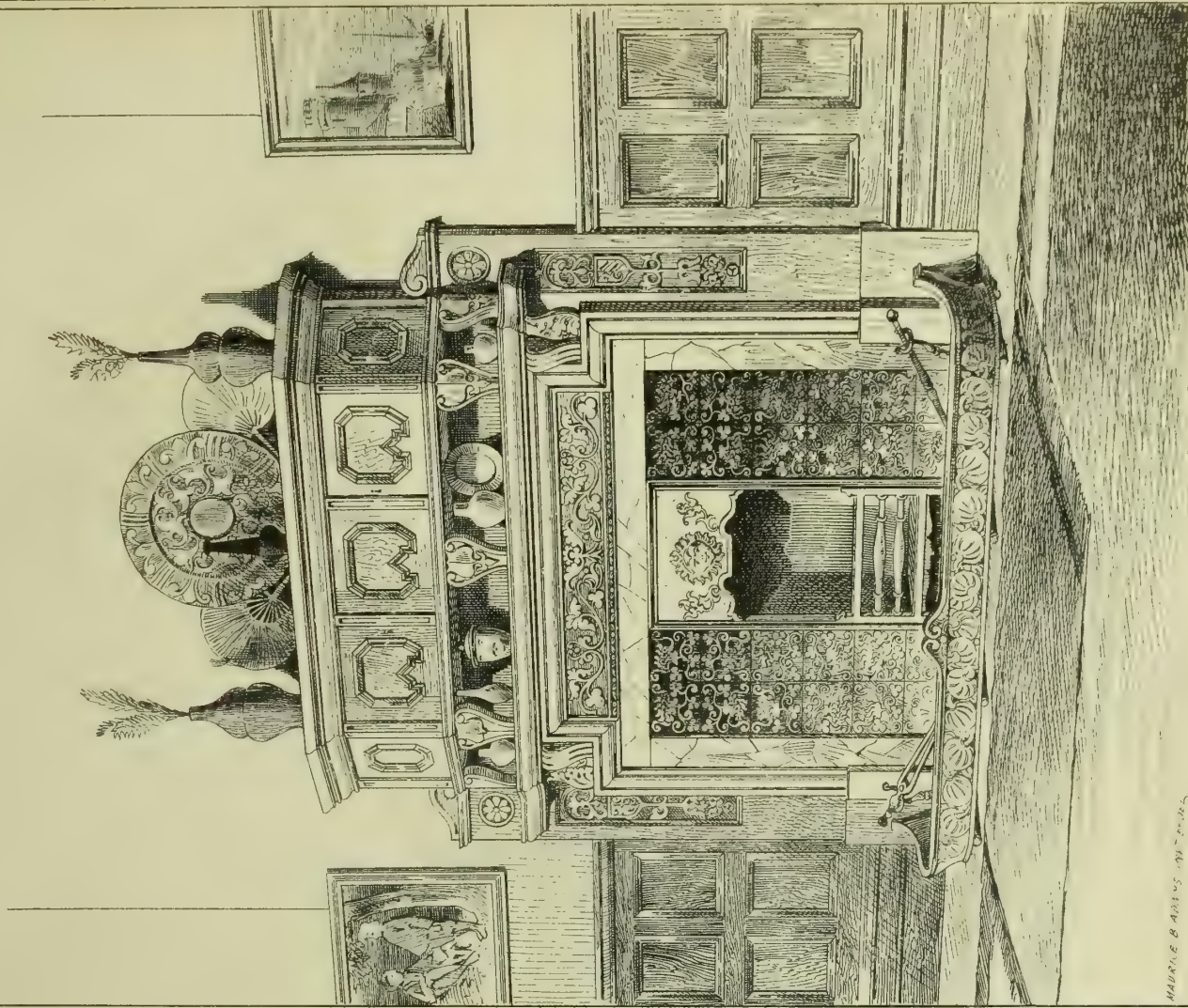


Photo lithographed & printed by Messrs. Adams & Co., London, W.

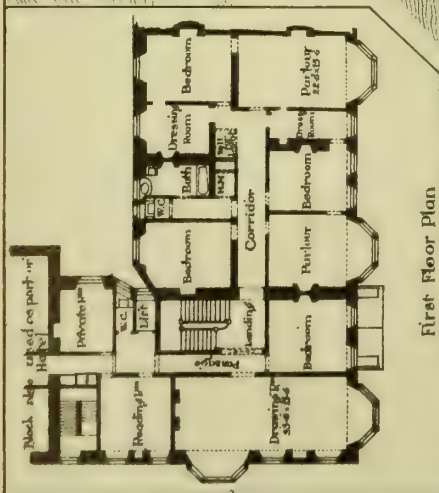




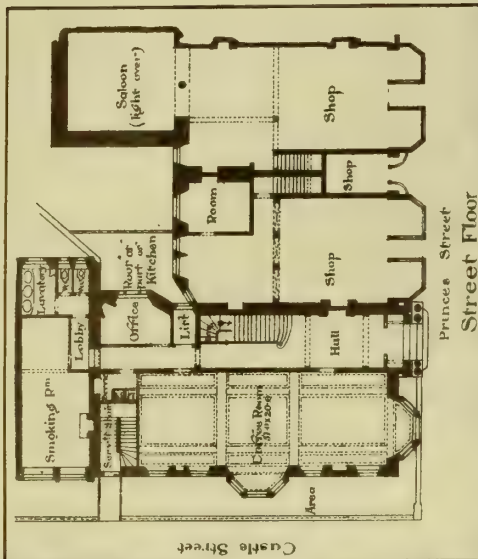




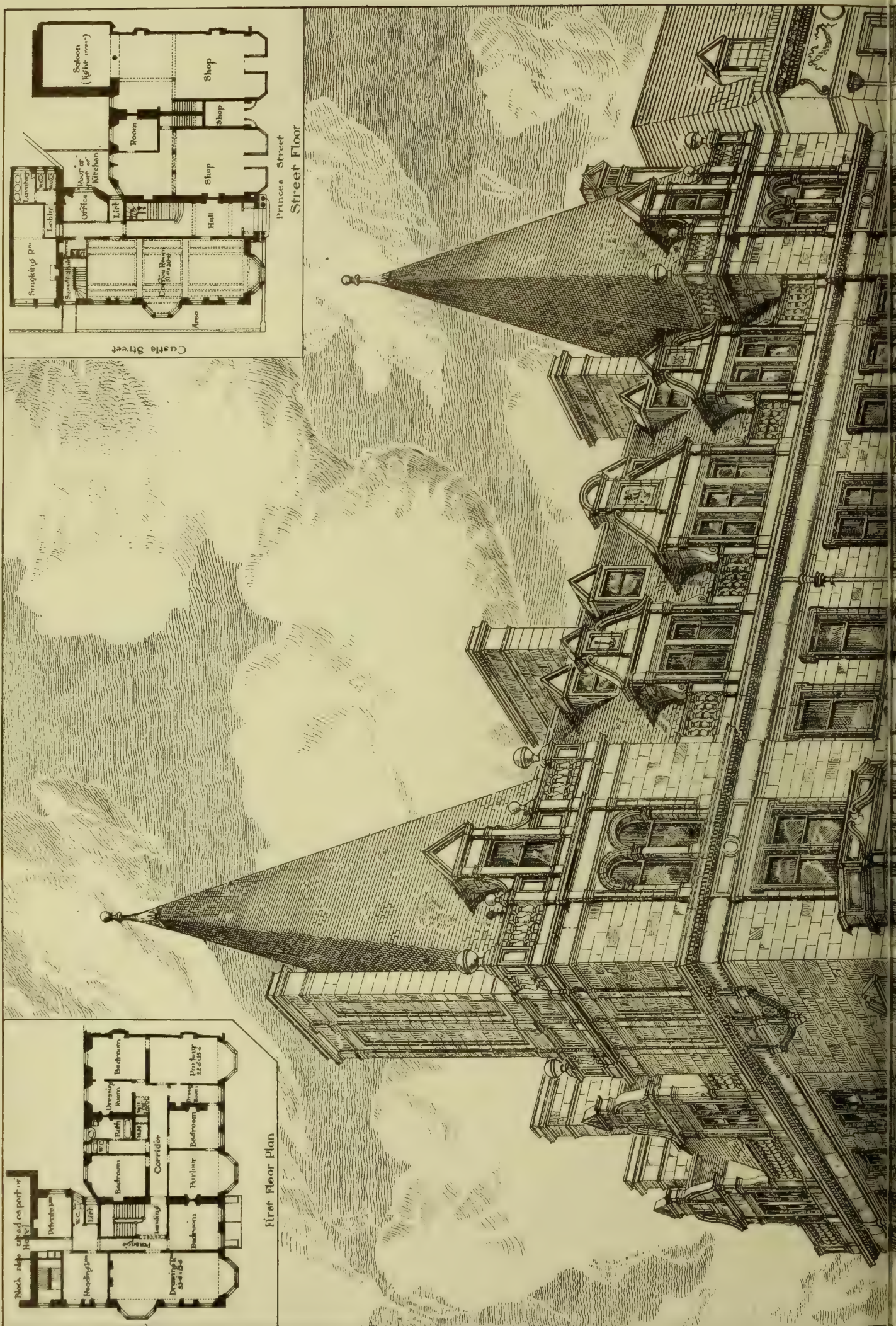




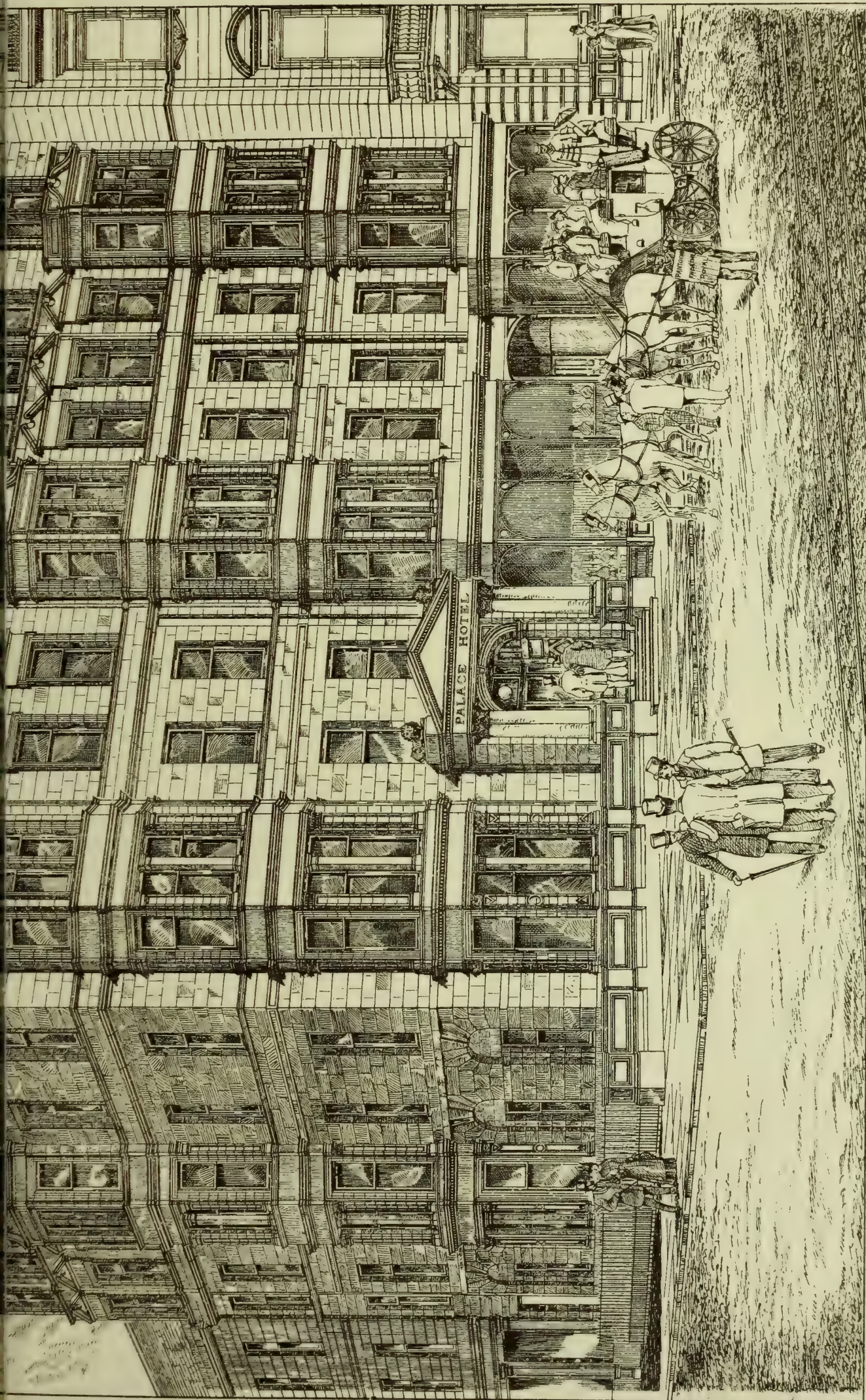
First Floor Plan



Street Floor





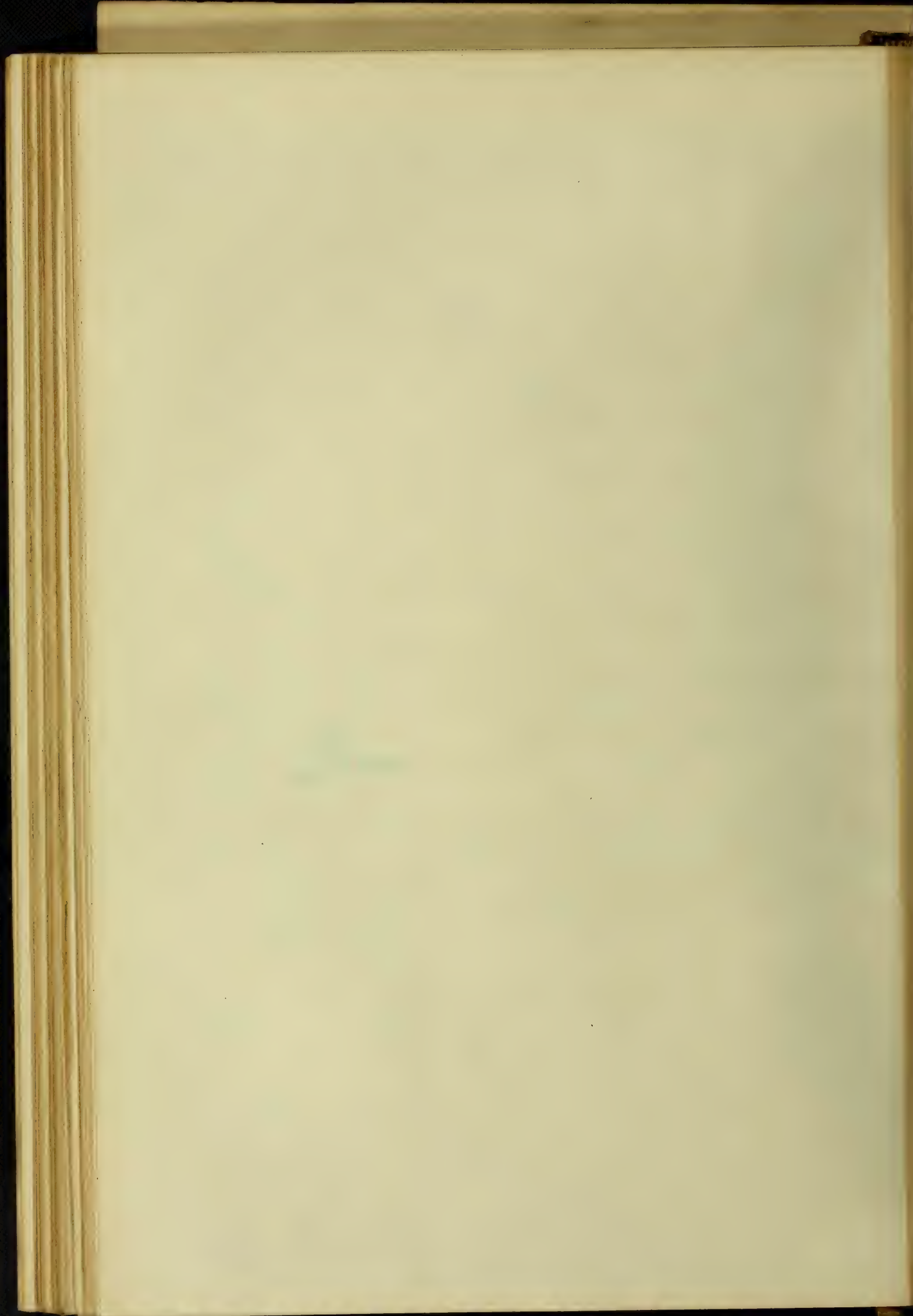


PALACE HOTEL PRINCES ST EDINBURGH

Macintyre Henry Architect

Photo Lithographed & Printed by James Aikman, 6, Queen's Square, W.C.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1831.

FRIDAY, FEBRUARY 7, 1890.

## COMPETITION DESIGNS.

WHETHER better results attend the giving of a commission to one architect, or a competition in which a large number of the profession are invited to send in designs, is a question that cannot possibly be answered under the present conditions. Are architects who compete more or less able than those who are content to depend on their private practice? Do the chances of competition make it probable that a more thoughtful or skilful design can be acquired than by instructing a professional architect of known ability and experience to prepare one? The chances in favour of obtaining a better design by competition are increased by the number of those responding and the competency of the competitors; but these two elements are uncertain unless the inducements to enter the lists are great. For important public buildings, the chances are decidedly in favour of competition when properly conducted, even if some of the *élite* of the profession remain out of it, for the simple reason that a certain number of able architects, unknown to fame, are inclined to try their luck. So very much, however, depends on the terms of invitation and the discretion of the committee of selection or their assessor, that it may be safely asserted that the contributions of unknown talent and the chances of securing the best designs may be practically thrown away or lost. For example, if out of one hundred designs sent in there are a dozen sets which show skilful planning or artistic ability, and those dozen are overlooked in favour of a showy or popular set, all the advantages of competing are flagrantly thrown aside, and it would have been much better if the committee had taken their requirements to a competent architect and have instructed him to prepare a design for their approval. They would, at any rate, be able to give him their instructions without fear or favour, and he, on his part, would be able to avail himself of the advice of the individual members, instead of a formal set of printed instructions that may be, and often is, silent on points of the greatest moment to an architect; he would at least not be debarred from asking questions, and be able to adopt or suggest views of the utmost value to him in preparing a well-thought-out design. A strange perverseness seems to control the destiny of our competitions for public works. A public invitation is decided upon, an assessor is appointed to aid the committee, but after the expense and labour incurred, the safeguards and conditions necessary to secure the best selection are one by one set aside or ignored, perhaps the assessor's recommendations unheeded, the choice made being a hundred times worse than if a single architect had been commissioned to make a design. The advantages of competition are thus completely lost sight of.

Compared with the procedure adopted by an architect acting under specific instructions from a client, the mode of a competing architect is adverse to a thoughtful consideration of the problem. He has certain instructions more or less arbitrary and ambiguous set before him, which he cannot alter or modify without running the risk of being disqualified; the accommodation is given in a schedule form of areas, and he has sometimes a rough plan furnished as a guide as to the arrangement suggested. In many designs submitted under these conditions we see a tendency to follow them implicitly, competitors adopt the plan with-

out further consideration, and also the superficial feet scheduled. Little original inquiry or thought is bestowed to modify and improve, in short, there appears to be a presumption that the nearer the instructions are followed the better. Mr. Waterhouse, R.A., in his judicious remarks to students at the Institute, spoke of the desirability of hampering competitors as little as possible with vexatious restrictions, leaving them free to solve in their own way the problem before them. It will be well if this advice is acted upon by those who draw up instructions. As they are generally worded, they not only restrict invention, but leave on the minds of many competitors a strong impression that they must not be deviated from, that the rooms must be of a certain scheduled size, and located as shown on the plan. The result can be apprehended. Having drawn the plan to scale according to the dimensions given, nothing more is needed than to fill in the details, and furnish as attractive-looking an elevation as possible. We have had the opportunity of examining numerous competition designs, and can speak from personal experience of the timid manner in which many competitors set to work on their plans, and how closely they follow any suggested scheme. Only a few of the bolder geniuses venture to show modified arrangements, which they do so as often to their advantage as they risk the innovation. Mr. Waterhouse rightly said: "I would have every competitor put as nearly as may be in the position of an architect acting for a private client who, though he may have suggested his requirements, would probably listen to his professional adviser if he gave good reasons for not literally adhering to them in all cases." The remark clearly bears out the suggestion previously made that if competition-designing is to be successful, it must be free and spontaneous, and that the procedure followed by a privately-instructed architect should be kept in view. Schedules of sizes for rooms should be only suggested, so that each competitor would be free to vary the dimensions to make his rooms agreeable in proportion. Mr. Waterhouse, in speaking of the Sheffield Municipal Buildings' designs, referred to the anxiety of many competitors to adhere to the suggested dimensions, by which compliance they often gave rooms of intolerable proportions, such as 50ft. by 30ft. by 12ft. 6in. high. We have seen many worse proportions than 50ft. by 30ft. The other day we saw an assembly-hall 80ft. by 30ft.; often a disagreeable nearness to a square, which has neither the oblong nor the exactly equilateral to recommend it—in fact, the result of dividing the space at disposal in the easiest manner to comply with the instructions. Now, we venture to say that a plan of this description, though common enough in competitions, would not be prepared by an architect whose reputation was worth anything, and who was instructed by a private client. The want of study of plan is seen in a great many other things—such as halls and staircases. These are often painfully neglected; at other times we see them swallowing up an immense area, completely sacrificing the rooms or offices of important departments, which ought to be got on the ground floor, but which are thereby placed a floor or two higher up, much to the detriment of the design. To think of double flights or twin stairs when the space is too cramped for an easy ascent to one staircase is, as Mr. Waterhouse pointed out, inexcusable folly.

A suggested sketch plan, by excluding the architect's own attempt to solve the problem, is, to a large extent, answerable for these faults. We often see that the competitor has simply followed the plan, actually adopting the same spacing for rooms, halls, and entrances. An architect instructed by a client would certainly resent a plan thrust upon him to follow. He would use his own

discretion, discuss the defects of such a plan, show how it could be improved, or a better arrangement made; but the competitor has no appeal—he has to simply follow his instructions. There is no opportunity afforded him to discuss the merits of a scheme; he must act in accordance with the terms or retire. It is almost impossible to obtain thoughtful designs under such a system. The assessor is tied to the terms, and cannot justly depart from them without apparent injustice to others. For these obvious reasons architects should, by combining together, endeavour to alter this arbitrary dictation of plan and requirements, as quite prejudicial to the end in view of competition—that of obtaining the most skilful design at a given cost. If promoters saw that professional men of competence would not respond unless they were wholly free to act upon their own knowledge, and would not be tied by vexatious restrictions, a healthier and more beneficial régime would be soon established. As we have said before, the conduct of competitions is what those who enter into them are content to make them or allow them to be—indeed, it is absurd to indulge in rhapsodical outbursts of indignant remonstrance against committees and boards for unfair decisions and dealings as disappointed competitors are wont to do.

Were we to sum up the errors and weaknesses of competition design, we should discover that they were mainly the results of rapidity of execution and of the want of personal attention and thought. They are such faults as we do not find in designs prepared in the ordinary manner. The plan roughly sketched is given to a lot of clerks to work out, the elevations and perspective sketches are handed over to draughtsmen to make the best they can of them. Between them a set of drawings are prepared that bear evidences of disagreement in several particulars—elevations that do not agree with the plans, plans that show no careful revision, that are full of errors and crudities, while the general absence of detail and finish show the work has been done piecemeal by different hands not under the immediate control of one mind. One great merit of dividing a competition into two parts—a "sketch" and "final stage"—is that there is much less of this crudeness and imperfection of design possible. The "preliminary or sketch" designs are the work of one hand—the architect himself—who has time to think over and revise his arrangements between the first and final competition. There is evidently more likelihood of obtaining studied designs by this mode than when only one set of finished drawings are to be sent in on a short notice.

Let us look to some common faults of design. Of those noticed in designs for public buildings, one of the most prevalent is in not selecting a prominent or desirable position for the chief apartments. Instead of making the large hall, council-chamber, or court a key to the whole, it is placed on one side or allowed to take a chance position on the plan, often unemphasised in the elevation. In municipal buildings one or other of these ought to constitute the nucleus of the whole, and be assigned a position that will give the building a distinctive character. Generally this is to be found on one of the main axes, either in a line with the principal entrance, or in the centre of one of the chief fronts. The Manchester Town Hall is an example of an open triangular block with the public hall in the centre—undoubtedly the best position that could be given to it. The Dewsbury Public Hall Buildings, which occupy three sides of an irregular site of wedge-shape, has the hall placed on a central axis opposite the entrance.

The Fulham Vestry Hall Competition showed great indecision. Some of the competitors put the public hall in front, others in the rear parallel to one side of the site, while a large number placed the axis of hall obliquely to the front block. The site being



of irregular form—tapering behind—there was not much choice between these alternatives; but for regular-shaped sites one or other of the main axes can be chosen, and if the end or flank can be expressed externally, a good central feature may be made of it, to which the other buildings or offices can be attached. The Sheffield Municipal Buildings site, which is of a triangular shape, offered one or two good positions for the council-chamber; but few seem to have availed themselves of the one which a council-chamber ought to have—retired from traffic and noise. No less common is it to find the rooms and offices badly lighted, either from small areas or through windows badly placed, often too low to allow the light to enter with the best advantage. What can be expected from windows several feet below the ceiling, opening into an area or court surrounded by lofty buildings. In the hurry of plan preparation, a small court is expected to do wonders to give light to large offices. Failing a window in a front, a small area is contrived, and windows introduced opening into it, and the difficulty is supposed to be met. The inefficient lighting of corridors is a fault only too common. If a side light or two can be eked out, or a borrowed light through some room obtained, no more trouble is taken—the ends of the corridor may be perfectly dark just where the light is wanted. Borrowed lights through rooms are one of the weak points of designs prepared by novices. In several recent municipal offices competitions we have found corridors entirely lighted through the offices in front. If space allowed us, we could name many other of the weaknesses of designs submitted in competition. We are satisfied to dwell on a few of the more prevalent. We might have said a great deal on the subject of adapting buildings to their surroundings, or the want of more care in designing elevations and roofs to principal thoroughfares, or towards boundaries that one day are likely to be exposed to view by the removal of adjoining premises, and on the absolute necessity of making perspectives from a point of view from which the group of buildings or design can be seen, instead of from imaginary positions which never can be utilised. On the latter subject certain restrictions as to the height of eye, distance from picture plane, and angle of line of sight, ought to be laid down by promoters.

#### HOUSE-LIGHTING.

ALTHOUGH architecture does not deal directly with such services as those of water, gas, and electricity, the professional adviser is often required to prepare specifications and obtain estimates for these requirements. It may be true that the callings of gas-engineer and electric-light contractors leave the architect nothing to do except to select the positions for lamps and the ornamental fittings, pendants, and electroliers; that the electric light engineer undertakes the inside "wiring" of the house, contracts for the putting up of the fittings, and connects the wires to the mains of the supply company; but those duties have to be performed with some care and attention, and as the engineer and contractor are often one and the same person, it is reasonable that the architect should be able to exercise some control, and, for this purpose, that he should at least know the proper manner of carrying out the work. He specifies the trades of the bellhanger, the smith, and ventilating engineer—why should he not also specify the work of the electric-light engineer? There can be no reason whatever, except that the new profession of electric-light engineer is one that entitles its followers to the respect due to specialists. The subject is, at any rate, one that the architect will have to master, and as far as it goes, there is not

much to learn to make oneself tolerably proficient in the application of electricity to lighting purposes; therefore it was opportune that the Society of Architects devoted one evening last week to hear a paper read on the subject of "Electricity in the Dwelling," by Mr. E. Percival Allam. As the subject is not a very familiar one to many architects, it was excusable that the author of the paper should speak on a few of the elementary facts of electrical science, such as the chemical battery, the theory of electro-magnetism, electrical induction, Faraday's experiments with magnets and coils, and so on.

As a clear introductory statement of the principles of electro-magnetism and the production of a current, Mr. Allam's paper, reported in our last issue, will be read with interest by all; but it may be regretted that so little time was left for the discussion of details of a practical kind. What the architect naturally desires to know is how the internal mechanism of an installation should be arranged; he wants information of a practical kind as to the proper "wiring" of a building, the number of lamps necessary in certain rooms, their distribution and fittings. These are just those items which an elementary paper does not supply. Speaking of the number of lamps required to light a given area, Mr. Allam was justified in remarking that the only method is to take good oil lamps and place them round the room until the desired effect is obtained. We know of an instance where a certain number of incandescent or glow lamps were ordered to light a large room, but after they had been fitted it was found they were unequal to the task, and gas lamps were called into requisition to supply the deficiency. The walls had been painted rather too dark, and absorbed the light. The first thing the architect who is consulted in the matter should do is to decide on the positions of the lamps in the room. For effective and uniform lighting, no doubt it is desirable, as pointed out by Mr. Allam, to distribute the light round the walls at certain intervals, "about 3ft. from the walls and from 7 to 10ft. from the floor," but for artistic effects, and even for architectural reasons, we think grouping the lights is an advantage. Following Nature in the distribution of sunlight, we think uniformity of illumination is undesirable, except in offices and workrooms, where the light ought to be evenly distributed amongst the employés or clerks. In those galleries at the British Museum just lighted by incandescent lamps, we noticed, at the inauguration the other evening, that the regularity and closeness of the lines of lights produced a painful and glaring effect; but in these rooms, where exhibits of works by uncivilised races are displayed, an excessive and otherwise too uniform lighting scheme is, perhaps, permissible. As Nature gives us light and shade and various gradations, so we think there is a variety and charm to be obtained in lighting a room, say a drawing-room or a large hall, by groups of lamps either in the form of electroliers or brackets from the walls. For decorative effects the grouped plan is the best, as we then obtain a gradation of shade on the walls. The architect is the right person to select those points of an interior, particularly if it is irregular in plan, which he thinks should be shown up or illuminated—as, for example, in throwing into strong light and shadow any sculpture, or columns and capitals; and he may have like reasons for burying in gloom or shadow some other feature that he wishes to conceal. It appears to us that many of our modern hotel and restaurant interiors are illuminated on the principle of supplying as many pendants and electroliers as possible. The light may be well distributed, but the architectural effects have not been consulted. Strong shadows, of course, are to be avoided, especially those which are

cast on the lower parts of the walls and floor, and the pendant system of lighting minimises these objections to a large extent.

Speaking of hanging lamps, Mr. Allam referred to the insulated twin wires which are twisted and brought down to the lamp, and all covered with silk to any suitable pattern; he also spoke of this "line of straight wire being relieved in the middle by glass beads and ornamental metal sprays, &c." Pretty as some of these sprays and leaf entwines are, they are certainly not artistically appropriate, and some of the ornamental metal leafage with tendrils imitating natural ivy and other climbing plants we have seen are to be avoided. Many artistic forms of wrought iron and hammered brass and copper are, as Mr. Allam says, available without recourse to naturalistic imitations. Several useful suggestions were given. The use and value of accumulators or secondary batteries for storing current from which to run the lamps when the dynamo is not at work or charging are undoubted. The proper mode of wiring a house, the undesirability to leave the work till after the house is finished and decorated, causing the rooms to be knocked about, the unsightliness of casings being fixed to the wall instead of being buried in casings behind the plaster are matters of moment to the architect. The employment of a casing that can be fixed to the wall and made to harmonise with the decorations is one of the points to be attended to, and we agree with Mr. Allam when he said a better plan than running the casing on a ceiling is to lay it across the joists under the floor above, and to bring the wires through the ceiling. Due insulation of the wires, their distance apart, and the insertion of fuses are precautions that cannot be too strongly enforced in large establishments. On the whole, electric lighting, free from the many disadvantages and dangers of gas, especially the over-heating of rooms, and the noxious gases which are given off so destructive to all kinds of decoration, pictures, and books, lends itself with facility to the architect's purposes, especially by the ease with which the fittings can be applied to ornamental features, such as capitals, as the wires can be bent and twisted in any manner, which is quite incompatible with gas tubing and the rigid and stiff forms of the fittings used. The subject is one that is forcing its way into general recognition, and the profession will be acting wisely in making themselves familiar with the arrangements and details of electric lighting installations.

#### ARCHITECTURAL BRICKWORK.—XXVIII.

##### ARCHES.—DOOR OPENINGS.

FEW situations are more favourable to architectural brick effect than that of the doorway. In a thick wall by simply forming two or three recesses in the jambs, and building them with well-selected bricks, either plain or moulded, an ornamental and imposing opening can be obtained. Take, for example, the plain brick semicircular arched doorways found in old buildings of the Georgian period, where we see the doorway recessed a brick or half a brick from the outer wall face. The recess itself is composed of jambs, usually one brick wide, having an arch over it of the same depth. The outer, or face arch, or upper arch above the recess, is generally a brick and a half in thickness. A third recess or face imparts a still more solid effect to the work capable of architectural ornamentation. Very rich effects are obtainable by this mode of recessing the arches and jambs. We have a notable and effective archway of several recesses or members in the great arched entrance to the Natural History Museum at South Kensington, in which



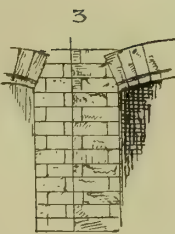
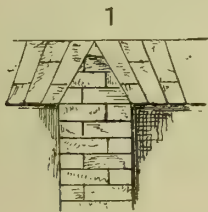
terracotta shafts are introduced. Many of the Romanesque brick churches, and the deeply-recessed portals of some of the French cathedrals, show the beauty and effectiveness of this treatment, though in other materials. The membered brick jamb has a beauty of its own, for the ever-varying lines and curves of its horizontal joints and radiating arch joints add much to the appearance of a recessed doorway as seen in perspective. Take, for example, the brick contoured jambs of many Verona buildings, like those we represent in sketches 4 and 5, and notice the play of these jamb and arch lines, and the varying effect of shadow and reflected light in them. We hope to give a few other sketches of jambs and arches of this character.

#### CUTTING ARCH BRICKS.

Particular care is necessary in constructing these arches over and within recesses, as they are unconnected by any tie; there is no bond between the upper and outer face arch and that over the inner doorway, as each arch carries its own thickness of wall over. Bricklayers pay particular attention to the outer faces, to rub them smoothly, and make the joints neat; but inside, the bricks are often hollowed or cut away, so that the pressure is brought to bear on the fine joints just at the outer edges, which are sure to fracture or crumble. The arch often bulges out in front from the lack of resistance in the inside joints; in other cases we see gauged bricks drop down below the intrados line, destroying the appearance of the arch. For brick arches which are only half a brick in length, whole bricks make stronger work than when every alternate brick is made up of two bats. We shall show other instances of cut and moulded arches.

#### FLAT ARCH SKEW-BACKS.

In Fig. 1 we show how skew-backs are formed for straight arches abutting against



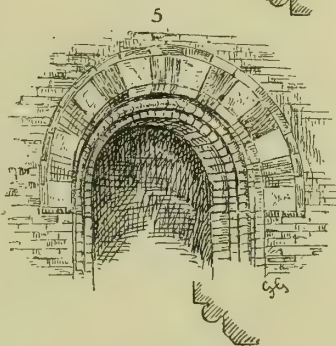
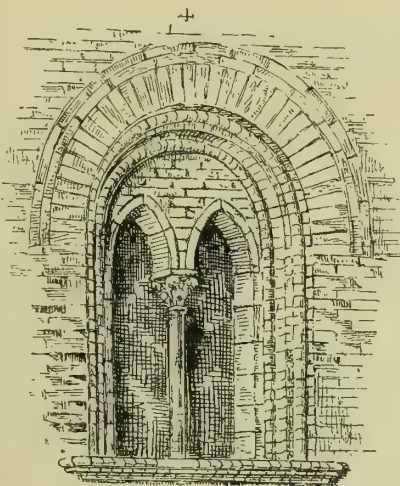
each other on a mullion. The skew-backs are cut to an angle of 60°, and the mullion is one and a half brick, or 14in. wide. The voussoir bricks are cut and rubbed to the proper shape, the joints converging to the apex of an equilateral triangle, the base of which is the soffit of the arch. These flat-gauged arches are generally cambered to allow for any settlement, the soffit having

a rise of  $\frac{1}{4}$  in. to the foot. In setting out and cutting of this arch the skew-back is first given, and the lines of extrados and springing are drawn. Then from the centre line of arch the half-width of the centre brick is set off, and from these points of width lines are drawn to the centre of arch, and the face mould of key is the result. Moulds are made longer than the key, and marked at the soffit line. Then the moulds are traversed along to the skew-back, the marked line being always kept to the soffit or springing line. The bevels are pencilled on the mould, and the length of bevel of each course being thus obtained, the bricks can be cut to the desired length and bevel.

Below Fig. 1 we show plans of successive courses of the mullion, which is a brick and a half wide.

#### ANGLE MULLIONS.

For bay windows the mullions at the angles are generally of cut brick. In sketch 2 we show the sides making an angle of 45°. By reference to the diagram it will be seen that on one course the bricks meeting at the angle



*a* and *b* are cut to a bevel at the end, and another diamond-shaped brick, *c*, is introduced between them to form a bond. In the next course the bricks are reversed, the closer, *d*, being on the other side. Unless the bricks were cut there would be no tie. Sometimes, however, pieces of hoop iron are used to tie the front and back bricks together. At the junction of side of bay with main wall an arrangement is shown for the same purpose, the dotted lines indicating the following course and showing how the straight joint at the junction of the two walls is broken in the successive course. Bricklayers vary these methods. In 3 we show the elevation of the angle mullion.

#### EXAMPLES.

In sketches 4 and 5 we illustrate two windows, one from the Cathedral of Monza, given by Mr. Street, and the other from Verona. The Italians in their treatment of brickwork have shown themselves masters of

effective arch moulds and jambs; their bright, sunny climate is favourable to the deeply recessed arch with its receding members throwing one portion, as the soffits of arches, into deep shadow and lighting up another portion by gleaming lines of sunlight on shaft and mouldings. Hence the beauty and gradation of the deeply set windows with these groups of moulded brick members. The alternate use of brick and marble in the outer arch is a common feature in Italian Gothic architecture; also the filling up of the tympanum above the small arched lights.

#### ARCHITECTURAL ASSOCIATION.

THE eighth ordinary meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair. It was announced that the Common Room discussion, postponed from Jan. 28th, would be held on Tuesday (next), Feb. 10, at 7 p.m., when the subject for consideration would be "A Revised Scheme for Architectural Training," to be opened by Mr. Arthur W. Earle. Mr. F. R. Farrow read an appeal from the Rev. T. H. le Boeuf, rector of Croyland, asking help for raising £3,000 for the completion of the works for preserving that fragment of a Benedictine Abbey Church. He also announced that visits would be paid on Saturday (to-morrow) afternoon, the 8th inst., to D'Oyly Carte's new Theatre, Cambridge-circus, and on the 22nd inst. to the Imperial Institute, now in course of erection from Mr. T. E. Collcutt's designs.

#### FREE PUBLIC LIBRARIES.

A paper on this subject, illustrated by diagrams and plans, some of which we reproduce herewith, was read for the author, Mr. E. W. MOUNTFORD, who was laid up by the prevailing epidemic, by Mr. H. D. Appleton. In the course of his introductory remarks, Mr. Mountford said that free libraries appear to have existed in England from the 14th century, and certainly others were established during the Protectorate of Oliver Cromwell. The honour of having possessed the earliest is claimed by more than one town, but Bristol would appear to have the best case. Mr. John Taylor, of that city, has shown that a library was formed there in a church before 1464, in which year it was ordained that on every festal day free access was to be given to all willing to enter for the sake of instruction, provision being made that the Prior should explain all difficult passages, and give lectures once a week, that three catalogues of the books should be provided, the Prior to pay a penalty for all books missing at the time of the annual collation of the works. A second public library was established in Bristol in 1613. The present movement in favour of free libraries originated in 1849, when a Bill empowering municipalities to erect buildings and to levy rates for the purpose was introduced by the late William Ewart, and was passed in April, 1850. Other Acts followed in 1855, 1866, and 1877, the most interesting feature of these measures to architects being that the total sum available for the erection of buildings, stocking with books, and maintenance was limited to a rate of one penny in the pound. Nothing could be more objectionable than the practice of altering existing buildings to serve as libraries. Not only was the result invariably unsatisfactory in respect of the inferior nature of the accommodation provided, but the plan had not even the merit of being economical. As a rule the first cost of such a building, plus the outlay necessary for alterations and additions, would suffice to erect a properly-arranged and well-appointed building, more convenient to the librarian, and more comfortable and attractive to the public. At Wandsworth was an example of an adapted building, and, apart from the new reading-room, it would be difficult to imagine a place more unsuited to its purpose. The author continued: In designing a new building for a public library, the chief points to be aimed at are plenty of storage room for books, sufficient light, room, and comfort for the readers, and facility of superintendence and management. A badly arranged plan will not only increase the anxiety and labour of the librarian, who is responsible for keeping order in the building, but may necessitate the employment of one or more

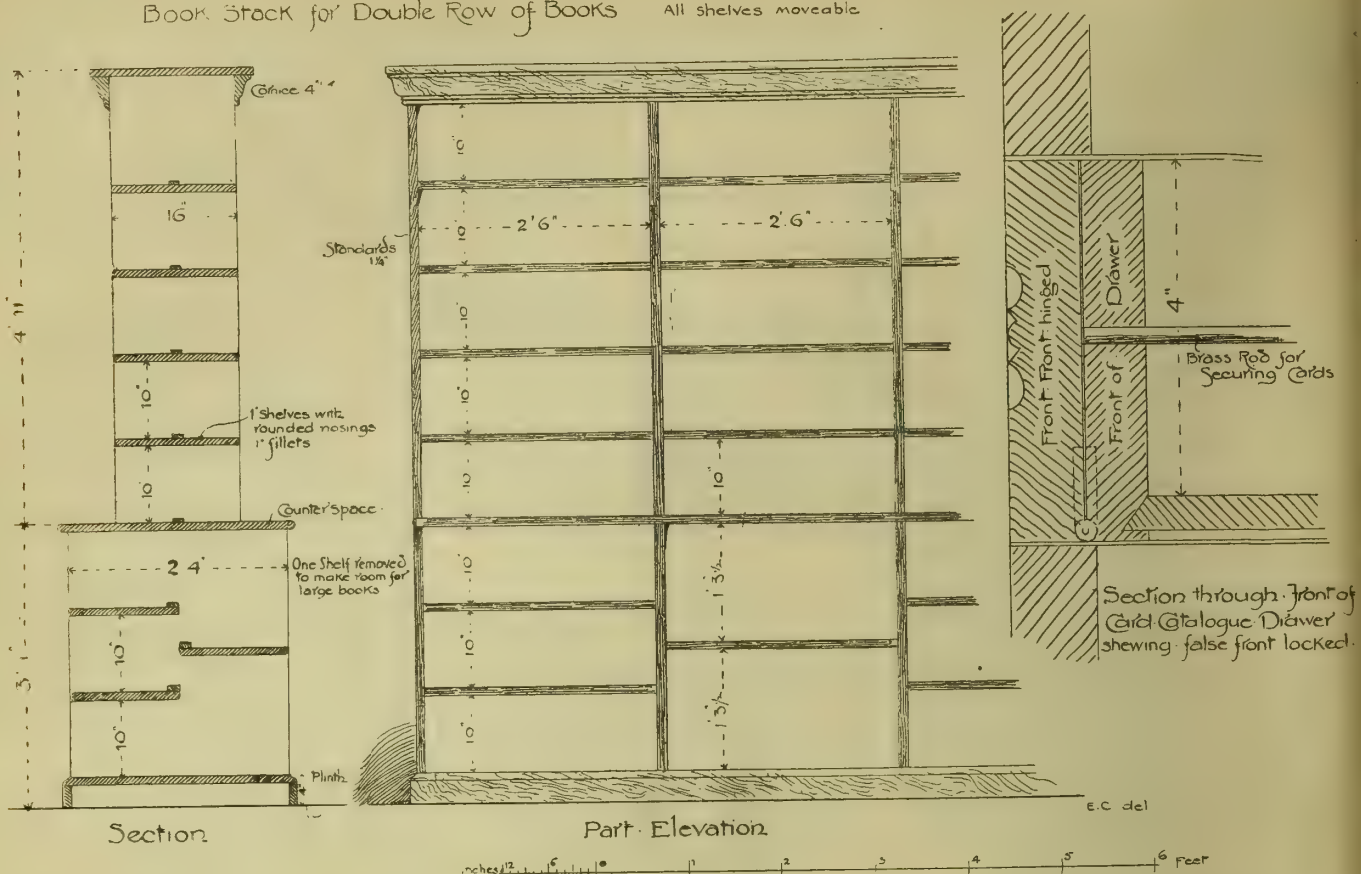


## LIBRARY FITTINGS

Illustrative of Paper on "Free Libraries" by EW Mountford FRIBA.

### Book Stack for Double Row of Books

All shelves moveable



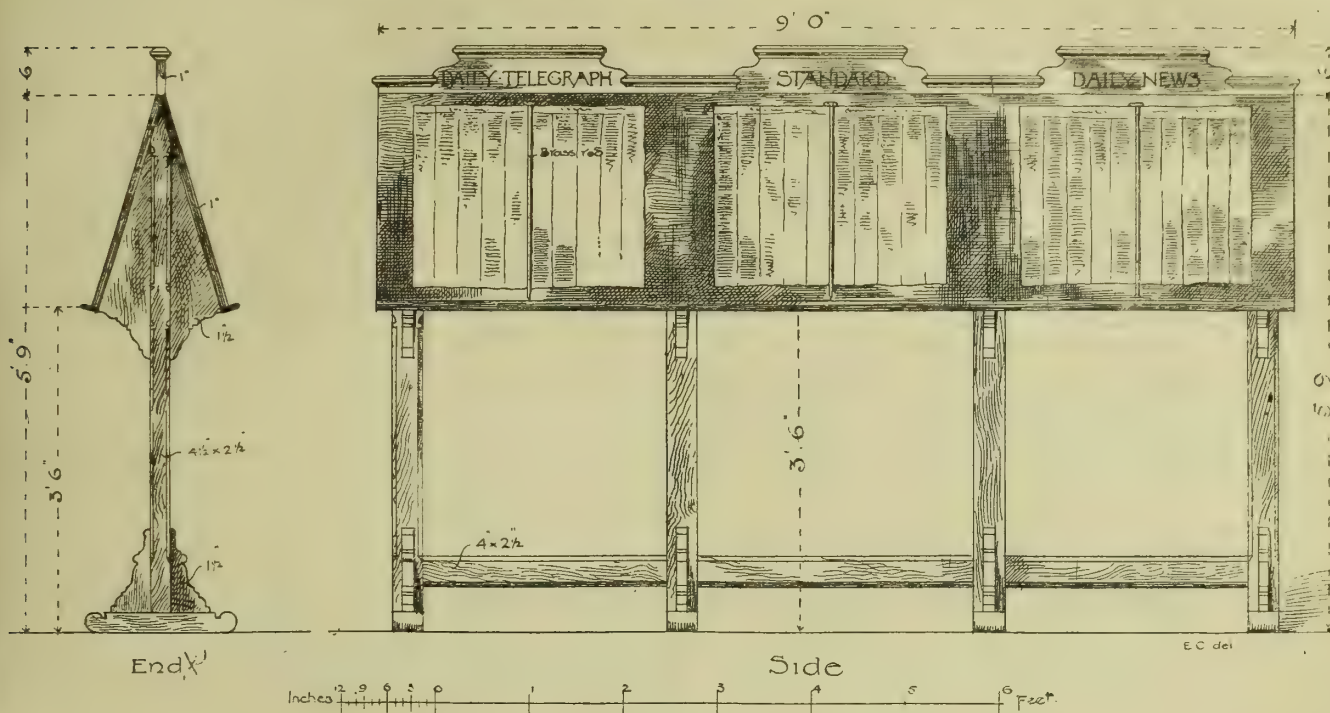
assistants, thus adding to the cost of maintenance. In the smallest library three distinct departments are essential, a lending library, a reference library, and a reading-room. Furthermore, there should be a fair-sized entrance hall, a private room for the librarian, and, where possible, separate reading-rooms for ladies and boys respectively, all rooms being in direct communication with the hall, so that no one of them need be used as a passage to another. The reading-room should be in two parts, divided by a screen, one for newspapers, the other for magazines, reviews, and such like works, or, better still, there may be two distinct rooms. Store-rooms for books, in connection with both reference and lending libraries, will probably be required, a work-room for bookbinding and repairing, and a receiving and unpacking room. Generally a dwelling for caretaker, consisting of sitting-room, two bedrooms, and a kitchen, will be asked for, and it is an advantage to provide a room for assistant librarians. If a librarian's residence be required it should contain two reception-rooms, kitchen, three or four bedrooms, and bath-room. The desirability of providing lavatories and other conveniences for the public are questioned by some librarians of experience, who state that such accommodation is likely to be abused and become a nuisance. It is certain that where provided they have in some instances afterwards been closed; but, of course, they must be provided for the officials. Although in some cases more rooms may be required, these are sufficient for all ordinary purposes. If we consider the various apartments separately, the entrance hall naturally comes first. This should be as roomy as possible. In arranging an economical plan, the tendency is to reduce the hall to a minimum; but with people coming and going to and from all the rooms opening out of it, probably often stopping to chat, a small hall must at times become inconveniently crowded. It should have an outer porch, wherein, before the library itself is opened in the morning, copies of the daily papers may be posted for the benefit of men who, being out of employment, want to see the advertisements in good time. The lending library must always be on the ground floor, as near as may be to the principal entrance. Abundance of light is essential; and should top-lighting be out of the question, there must be plenty of windows, with reference to the position

of which the book-cases will have to be arranged. The room should not be less than 13ft. high (Mr. E. C. Robins thinks not less than 14ft., and no doubt he is right if the money suffices), the windows being kept up as high as possible in order to throw light over the tops of the book-cases, and to permit dwarf book-cases being placed against the wall beneath them. The old-fashioned system of arranging the books in alcoves, while very pleasant and quite adequate for college and similar libraries, is quite out of the question in free libraries, where every inch of space is wanted for some purpose. The book-cases are therefore generally arranged, so far as the lending libraries and store-rooms are concerned, in rows across the floor at right angles to the counter, to save the steps of the assistants, and to the principal windows, in order to get the light between the stacks upon the backs of all the books. As much counter-space should be provided as can be—not less than 30ft. in length—in order to allow sufficient room for the indicators and the serving-desks. Two doorways should be provided for the public as far from each other as space will permit in order to facilitate the free circulation of borrowers. With one doorway for egress and ingress also, blocks must take place on crowded occasions, such as Saturday nights. The doors here, as well as in the reading-rooms generally, must be on swing hinges, with the upper parts glazed. The reference library should be placed in the quietest part of the building, away from street noises, and “far from the madding crowd” of newspaper and novel readers. In this room the readers occupy the whole of the centre; so the books require all the wall-space, thus necessitating top lighting, which, however, is the best for other reasons. For all these reasons it may with advantage be placed on the first floor—the more so as a comparatively small number of people use it. In order to increase the storage capacity a gallery may be provided about 10ft. from the floor, which need not be more than 3ft. 6in. wide—just sufficient for a book-case against the wall and room to pass in front of it. The book-case it carries being 8ft. high, this makes the maximum height to plate 18ft. Round the room in front of the book-cases there will be a rail, and near the door a counter with desk for assistant librarian. Probably the best way of arranging the tables used by the public is to have seats upon one side

only, all the readers facing the counter. This is partly to check conversation, and partly to protect the books from mutilation or theft. Under this arrangement the tables need only be 2ft. wide, but they must be 4ft. if readers occupy both sides. Two feet in the length of the table should be allowed for each reader. Long tables are the most economical of space, but for other reasons short ones are preferable. With readers upon both sides 6ft. should be allowed between the tables; with the single arrangement 5ft. or a trifle less will suffice. The news-room, where there is another reading-room in the building, is devoted entirely to newspapers, which are placed upon upright stands just as in a club. To economise space the stands are made double to allow of readers upon each side, and they should, of course, be placed at right angles to the windows. The spacing out of the windows and size of the room should be regulated by the reading-desks. Experience shows that the desks may conveniently be placed about 6ft. 6in. or 7ft. apart from centre to centre, and, being a foot in width, this allows room for two rows of readers, and the necessary passing and repassing between. The windows may be 4ft., or even more, above the floor, as no benefit is derived from their coming lower, and looking out of them is distinctly to be discouraged. In the magazine room tables will be required, and here readers will be placed upon both sides; but, of course, not at the ends. Three feet is wide enough for these tables, and they should be at least 6ft. apart. Allowing for everything, 14sq. ft. is the minimum allowance for each reader. The position of the librarian's room needs to be carefully considered. Without being overlooked himself, he should be able to see all that goes on. It should adjoin and communicate with the lending library, and at the same time command the news-room and staircase—in fact, all the building if possible. By means of speaking-tubes, the librarian should be in communication with his assistants in all the other rooms without rising from his table. The room may possibly be used for the meetings of the commissioners, which will, of course, necessitate its being of a good size, there being always nine of these gentlemen. But it is much better to provide a separate room for them in a quiet part of the building, not too far from the librarian's room, and they like to have a long table with a



## LIBRARY FITTINGS

Illustrative of Paper on "Free Libraries" by EW Mountford FRIBA  
Reading Desk for Newspapers

separate lock-up drawer for each. A lavatory should be provided for the use of the commissioners and librarians. Of the ladies' reading-room and the boys' reading-room nothing need be said, excepting that the latter must be placed where it is constantly under the eye of some official. If a retiring-room for ladies be provided, it should lead out of their reading-room; but nearly all librarians agree that this accommodation is better dispensed with. The number and size of book stores will be regulated by the number of books the Commissioners propose that the library shall contain. For the reference library and its stores six volumes may be calculated to the lineal foot of shelving; for the lending library eight volumes to the foot. The height of cases being fixed generally at 8ft., and containing eight shelves, the requisite length for any given number of books may easily be calculated. If the library consist of two or more stories there must be a lift for books communicating with the various rooms, and there should be a private stair for the use of the officials. Nothing spoils the binding of books more than gas; therefore, until the use of the electric light becomes general, plenty of outlet ventilators should be provided by means of flues formed in the walls, or chimney shafts by openings in the roof, or the use of ventilating lights, and the burners should be kept as far above the level of the books as possible. The heating should be by means of hot water or steam, and coils are to be preferred to rows of pipes. The rooms for librarian and commissioners should have open fireplaces. Of the exterior of the building everyone will probably have his own ideas. The great thing is to have plenty of windows kept well up from the floor, and all made to open. The building should be of fire-proof construction if funds will permit, and wood-block flooring is very preferable to any other because of its noiselessness. Plate glass is desirable for the windows for the better shutting out of external sounds. The first and most important of the fittings are the book-cases. Those in the reference library are placed round the walls, being protected from the general public by a rail placed about 3ft. from them; but in the lending library and book-stores, where the public have no access to them, the cases are placed in rows across the floor, with narrow aisles between, and are made double—that is to say, with books facing both ways. These double cases are better without a central partition between the books, although sometimes a small fillet is nailed along the centre of the shelves to prevent the books in one row from actually touching those in the other. The

omission of the central partition allows of freer access of air to all the books, does away with any corners for the accumulation of dust, and facilitates the dusting or washing of the shelves. A few general principles should be borne in mind in planning the shelves of a room. First, full capacity requires that, up to 7ft. 8in. or 8ft., all wall space and both sides of all aisles be covered with book-backs. Except doors, windows and the narrow ends of double book-cases, there should be nothing in sight but the backs of books and the occasional narrow edges of the uprights. Any scheme failing this is wasting shelving capacity. Remember that every aisle is equally valuable for reaching books on either side; every face of books must have half an aisle vacant in front of it. If a face has a whole aisle, there is obvious waste in planning; 8in. more space would give an entire extra face of books. An individual shelf should not be more than 3ft. 6in. long, nor less than 8in. broad. Wood shelves are almost universally 1in. thick—that is to say, 3in. Long shelves are awkward in use, because they do not afford enough uprights to support the books properly, but we are helped to the selection of the golden mean by the experience that shelves over 3ft. 6in. long sag in the centre when full of books. The shorter the shelves the less the danger of warping, and the greater convenience of the frequent uprights which serve as book supports. The only objections are the extra cost of the uprights and the slight space lost. On the whole, 30in. is about the best length for a shelf. If you have spaces of odd lengths, the greatest length allowable is 3ft. 8in. If that length is exceeded, divide it into two—one of the standard length (30in.), and give the rest of the space to an odd short length. The reason for this is that with movable shelves the fewest possible varieties of length should be used. If all the shelves are 30in. long, any spare shelf will fit any vacant space. But if the architect will divide each wall-space into even parts, possibly twenty different lengths may be required in one building. A common error is waste of space by giving too great depth to shelves. In circulating libraries 80 per cent. of the books, as a rule, are not larger than octavo. The common octavo is only 6in. wide. Large octavos are seldom above 7in., so that a shelf 8in. deep allows liberal margin for books and a little air space. In wider shelves, which waste both money and space, the librarians are constantly annoyed by the loss of books, which are pushed into the vacancy behind the row in front. For quartos 10in. shelves are needed, for folios 16in. shelves. These are amply liberal dimensions. The best plan is to arrange shelves for books

larger than folios in separate deeper shelves, preferably below the desirable counter ledges. The best average height is 10in., which gives room for all octavos. Quarto book-shelves should be 12in. high, or they may perhaps be best put with small folios, which require 14in. The larger folios require 20in., but beyond this height the very large books may well be kept upon their sides. Of course, with the movable shelves now general it is possible to put shelves to fit each size of book exactly, but we must not overlook the fact that there is no saving whatever in reducing the shelf height, unless shelves enough are reduced to make room for one extra. Where new work is planned the height of book-cases should not be over eight standard shelves, with inch shelves and 10in. spaces between, a base of 4in., and 3in. for top cornice; this gives a total height of 8ft. from floor to top of case. The base is sometimes made 6 or 8in. high to prevent the books on lowest shelf from being accidentally knocked or injured by brooms or water in cleansing operations. This arrangement has also the advantage of relieving the strain in stooping to pick up a book from the floor level. A ledge is formed at a height of 37in. from the ground on both sides of the book-case, which is known as a counter-ledge, and is useful to librarians in reaching and returning books. The greater width of shelf below the counter-ledge provides accommodation for quarto and folio volumes. Of course counter-ledges need not be provided to every case, or they may be put upon one side only, or they may be omitted altogether, and the larger volumes placed in cases by themselves. 13 to 15ft. is a good length for a book-case—that is to say, it would consist of five lengths of shelves, the shelves being 30in. to 36in. long. Tonks's "Patent Metal Slips" and clips are the best means of supporting movable shelves, or, where these are too costly, small holes may be bored in the wooden uprights, into which are inserted brass studs to carry the shelves. If space allow, the aisles between the cases may be 5ft. or 6ft. wide; but where space is limited, as it almost invariably is, the width may be reduced as low as 30in. I should not recommend, however, making them less than 3ft. wide. Cross aisles between the ends of book-cases may be arranged of the same width as standard shelves are long, so that, if necessity arises, pins may be inserted and shelves fixed across the aisle to exactly correspond with the others. Iron shelves have been used, but wood shelving is superior to iron because it is cheaper, admits of a better finish, looks better, and is less harsh and abrading to the binding of books. When used in the British Museum, I am told the iron shelves had to be covered with leather. The



reason given for the use of iron shelving is that it is incombustible; but, unless the whole building is absolutely fireproof, it is obvious that iron shelves are useless for this purpose. In America, gaspipe frames for book-shelves are advocated by the superintendent of Buffalo Library, who claims to secure by their use—First, economy of material and lightness; second, economy of room (the divisions between the sections of shelves being of light sheet iron, no appreciable space is taken up by anything but the books themselves); third, the least possible obstruction to light; fourth, the freest circulation of air among the books, to the benefit of the bindings; fifth, cleanliness. The following remarks on the British Museum book-press, by Mr. Richard Garnett, assistant keeper of printed books, are of interest. He says:—"The introduction of a new book-press so arranged as to give additional accommodation for books, without encroaching upon the already fully occupied wall-space, is regarded as a very important event at the British Museum, where the demand for space is so constant, and the difficulty of meeting it so considerable. The merit of the first conception of the idea in England appears to belong to Mr. C. G. Virgo, till lately of the Free Library, Bradford, now curator of the Queen's Museum, Manchester. According to the best information I can procure, Mr. Virgo's device consisted in placing a shelved book cupboard before each of his presses. It was divided into two compartments, opening to right and left, thus giving access to the original press whenever wanted, and at once doubling the book accommodation, or trebling it if the shelves admitted of double rows. The means for improving this system for museum purposes were found in the peculiar construction of the new library, which consists of two stories divided by a grating, serving at once as floor for the upper and ceiling for the lower room. Instead, therefore, of a door, we proposed to place before each book-press on the lower story another book-press the facsimile of the former, provided with handles for drawing out from the wall and attached to the bars of the grating overhead by little wheels, by which, on the handles being pulled, it is found, even when full of books arranged in a double row, to run out quite easily to such a distance as to allow perfect facility of access to the press behind it. When this access is no longer required it is simply pushed back again. The indicator is an appliance of the greatest usefulness, serving to indicate what books are "in" and available for issue. It consists of a case or rack full of small holes with consecutive numbers; in these spaces are placed certain signs by which the intending borrower can tell whether the book he requires is "in" or "out." The front is glazed, the back being open to enable the assistants to make the necessary changes. The indicator stands on the lending library counter, where it is equally easy of access to the public and to the library assistants. There are different kinds of indicators in use, the two most commonly used being the Cotgreave and the Elliot. The Cotgreave consists of an iron frame fitted with as many thousand small zinc shelves as there are books to be recorded; upon each of these shelves is placed a small metallic-cased ledger, numbered alike at both ends, but in different colours—blue one end, red the other. If the blue end of the little ledger is turned towards the public the volume is available; if the red end, the book is "out." This indicator occupies a space of 4ft. by 6ft. for every 5,000 volumes. The Elliot indicator has no little books, the borrowers' ticket being placed in the numbered space when a book is issued. Its size is 3ft. square for every 1,000 volumes. There are many other systems in use; but generally they take much more counter space than the Cotgreave. The tables are best made rather heavy to prevent their being moved. In one library, where the tables are of pitch-pine, the commissioners have desired the tops to be 2in. thick, to allow of their being planed when requisite. The counters must be 2ft. wide at least, the inner side being fitted up with shelves and drawers, of which each librarian has his own views. That in the reference library may contain a row of drawers on the outer or public side, to contain the card catalogue, each drawer being 11in. or 12in. wide, some 24in. long, and 5in. deep. A thin partition divides the drawer into two compartments longitudinally, and they have double fronts, the outer ones being hinged and locked. In the inner front are two small holes, in which are placed the ends of two brass rods,

one to each compartment of drawers, which run through perforations in the cards contained in the drawers. The outer front being secured, it is impossible to withdraw the rods or remove one the cards. All counter-tops should be of polished hard wood. The catalogue case is merely a very shallow cupboard with glazed doors and a back covered with green baize or cloth, upon which are pinned lists of the titles of books which have been added to the library since the printing of the catalogue. A show case is a useful fitting in the lending library. It very much resembles the catalogue case, but is deeper and provided with shelves, upon which are arranged copies of the newest works to which the librarian wishes to call the attention of readers. It usually has the glazed front fixed, the books being put in from the back. Catalogue boards are required for displaying the catalogue of books, the leaves from which are cut out and secured to the board, two copies of each leaf being so placed to enable the public to see what books the library contains. They are fixed within the space allotted to the public in the lending library, and near the indicator for the purpose of comparison. We have now considered all the points that occur to me in connection with free public libraries. Doubtless there are others which will present themselves to your minds. My object in writing this paper has been to raise a discussion upon this important subject, which has hitherto received but little attention from architects as a body.

Mr. J. M. BRYDON, in opening the discussion, said that the views of librarians were of more importance on this subject than those of architects, but the latter could justly consider certain points in the building as well within their province. First of these was the requirement of ample provisions both of lighting and ventilation in a library; these were purely architectural questions, and unless they were properly met, and in an architectural manner, the building would be a failure. A second point to be remembered was that public libraries were necessarily managed by a very limited staff, and it was, therefore, essential to keep in view that there must be a ready passage-way for the officials through every path, and opportunity given the librarian to see and hear everything that went on. A third point to be borne in mind was the amount of space that should be allotted to each newspaper reader. Mr. Mountford had in his paper suggested 14sq. ft. per reader as the minimum allowance; but he should consider that nothing under 15sq. ft. a head ought to be allowed—if less space than this were afforded, the effect would be inconvenient crowding. The ventilation of a public library was most important. As all sorts of persons came in, the atmosphere would become almost unbearable at times—in hot weather, for instance—unless ample ventilation were provided. All windows should be as high up in the walls as possible, so as to preclude loiterers from looking out. The number of persons in a reading-room was a fluctuating quantity, and means should, therefore, be supplied for increasing or lowering the warmth or the amount of ventilation quickly and at the will of the chief librarian. One practical difficulty in furnishing a library was to get chairs that were noiseless; the grating sound made by most chairs on the wood-block floors, so usual in libraries, was unpleasant and disturbing. The reference library should undoubtedly be on the first floor, and he agreed with Mr. Mountford also that it was better to keep the books in stalls and not displayed round the walls of the room, for space was very limited. He proposed a vote of thanks to Mr. Mountford for his excellent and instructive paper, and with it he would couple the name of Mr. Appleton for having read it.

Mr. LEWIS KARSLAKE concurred with Mr. Brydon and the author that the arrangement of books round the walls of a room, although the most pleasant, was wasteful of space and less convenient to the staff.

Mr. CECIL DAVIES, chief librarian at Wandsworth Public Library, thought it was essential for architects to recollect that under the Public Libraries Acts the rate that could be levied was limited to a penny; hence it was unwise to erect a building that would cost £3,000 per annum for maintenance when only £1,000 per annum was available. In his paper Mr. Mountford mentioned that only nine library commissioners would be elected, and would require the use of a committee room. This was the case in the Metropolis; but in other towns the committee of management might consist of any

number the local authority chose to appoint. The common difficulty in planning a library was that the site was rarely rectangular; but the architect must aim primarily at giving ample light and fresh air to every department. There should be no obscure corners in the building to harbour dirt, and no portions of a room concealed by columns. The walls should be kept free from pilasters, for those at Wandsworth rendered it impossible to hang maps or prints on the walls. He did approve of the subdivision of the building into more rooms than was necessary, for it tended to create disturbances between various classes of visitors. Every portion of the room should be visible from the librarian's seat, and space should be given between all presses and rows of books to allow two librarians to pass each other. The store-room could with advantage be placed in the basement; but it should be provided with a hatch opening into the street for taking in boxes of books. As to ladies' rooms, his opinion was that they were not needed; but a separate room, under close surveillance, but not too near the entrance, should be provided for boys. If tables were reserved for ladies this was sufficient. Retiring rooms were not required. The local sanitary authority ought to make any provision of the kind outside that was deemed essential. The librarian's apartments should allow for the possibility of his being a married man with children, and should consist of at least a sitting-room, two or three bedrooms, kitchen, and scullery. Ample provision should be made for extinguishing fire should it unfortunately break out. He would appeal to architects who had designed free libraries to send plans and any particulars to the Wandsworth Free Library, where he was making a collection of such literature and its illustrations for the public benefit.

Mr. QUINN, of the Chelsea Free Library, said he concurred with the last speaker and Mr. Mountford that it was not wise to put books into the rooms, not only because they occupied much space, but because they might be stolen. Mr. Mountford was right in recommending that all windows be placed high up in walls, whereas at Chelsea they were low down and looked upon a street, any trifling movement below creating much disturbance. It was desirable in the original plans to make provision for future extension.

Mr. F. R. FARROW, in seconding the vote of thanks, said he considered it was not well to provide separate rooms for either ladies or boys, although special tables should be provided for each of those classes of readers. The multiplication of rooms wasted the space, and increased the difficulty of supervision. He should like to hear from some librarian which was the best place to put the librarian's office, whether in a separate room or where he could overlook the greater part of the building.

Mr. QUINN said two places should be provided for the librarian—a quiet office in which he could carry out his cataloguing and other clerical work, and a desk for supervision in the chief room.

Mr. A. O. COLLARD said some years since he made measured drawings of the British Museum reading-room, and could testify to the excellence of its arrangement in many details. It was practically designed, not by Sir Robert Smirke, but by his brother, Sidney Smirke, and contained, owing to successive improvements, many ingenious contrivances for economising space and saving useless labour to the staff. The presses were an excellent arrangement, and moved very easily, even when filled with books. The divisions in the reading tables and the spaces at the ends were utilised as channels, protected by wire grids, for bringing warmed fresh air into the rooms from outside. The linoleum used there was an improvement on the wood-block flooring generally employed, and was much more noiseless.

The PRESIDENT, in putting the vote of thanks, observed that the architect who planned a library should first endeavour to accommodate his books and staff and the public, and then suit his architectural style to the requirements so laid down. Too often architects who entered into competitions found almost contradictory conditions laid down, and when the design was selected and carried out, a magnificent librarian would be appointed who would declare it to be all wrong, and quite inconvenient for its purposes. While he sympathised with librarians' objections to have to keep w.c.'s and lavatories in order, he thought such places ought to be provided in the building, and not left to the sanitary authority



to find elsewhere. It was essential that the amount of space to be allotted to each reader should be definitely laid down, and he took it that in such a building natural ventilation would always need to be assisted by some one of the well-known patented appliances.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fortnightly meeting of the Institute was held on Monday evening. Mr. Arthur Cates, vice-president, in the chair.

The deaths were announced of Mr. E. W. Stephens, of Maidstone, Fellow; and of M. Jules Louis André, of Paris, hon. corresponding member.

#### THE ROYAL GOLD MEDAL.

THE CHAIRMAN announced that the council had decided to recommend to the members on that day month, in accordance with by-law 64, the name of Mr. John Gibson as the person to be recommended to Her Majesty as the recipient of the Royal Gold Medal, for his work as an architect.

#### THE RENAISSANCE IN NORTHAMPTONSHIRE.

A paper on this subject, illustrated by numerous photographs shown as lantern slides, was given by Mr. J. Alfred Gotch, Fellow. The author referred to the influence of Italy in the middle of the 16th century on the arts and literature of England, but considered that up to the third quarter of the century the Tudor style of architecture still reigned supreme. About 1550 to 1560 the new forms were universally adopted, and the comparative quietude of the age and the great wealth of many ministers and courtiers of Elizabeth enabled them to build mansions in which to establish themselves and their posterity. Lord Burghley, Sir Christopher Hatton, and Sir Thomas Tresham were the most illustrious builders in Northamptonshire. The capricious way in which the details of the period varied in excellence was striking. Side by side, so to speak, certainly in many cases within a few yards, might be found work the most delicate and refined, and work the most coarse and clumsy; but there was no gradual growth and decadence, no possibility of assigning a date to the work by slight changes in the detail or modification of the moulding. In Northamptonshire, however, the work was of more even excellence, and, on the whole, of more intrinsic merit than that of any other district with which the author was acquainted. The capital stone which abounded in the county accounted to some extent for this exception to the general rule. Although one John Norden, in his "Delineation of Northamptonshire," in 1610, enumerated some fifty seats of noblemen and squires, there now only remained about ten for him to refer to, some having entirely disappeared, and others being completely modernised. Dingley Hall, built about 1558, still retained some notable specimens of the Early Renaissance, the work of Edward Griffin, Attorney-General to Queen Mary, who not only made use of most eccentric mouldings, but adorned his work with highly curious and illspelt inscriptions. Burghley House was next described, and letters written by workpeople at Burghley to Sir William Cecil in London were quoted, which, in common with others relating to Holdenby House, Hatfield House, and Cobham Hall, threw some light on methods of procedure connected with buildings of that era. The workpeople appeared to have applied direct to the owners for instructions; of the architect, as such, not a word was mentioned. A surveyor was here and there spoken of as going to inspect the works, but the owner apparently arranged everything and furnished the drawings, the carrying-out of which was intrusted to a foreman or clerk of works, who hired the workmen on behalf of his master. The details seemed to have been generally left to the fancy of the various artificers, who probably carried out the small scale drawings according to their own lights, though occasionally requests were met with for full details, which in some cases appeared to have been supplied by Thorpe, John Shute, Henryck, and others. Mr. Gotch then gave quotations from letters addressed to Sir William Cecil from the mason, foreman, and others at Burghley, asking how certain features or details should be carried out, and having alluded to Wothorpe, the Dower House at Burghley, built about 1600, proceeded to describe Sir Christopher Hatton's palace at

Holdenby, now entirely removed, with the exception of the entrance gate and the servants' wing. Turning next to Sir Christopher's purchase of Kirby Hall, Mr. Gotch thought there could be no doubt that the whole of the main building was built by the Staffords, and from Thorpe's plan it was known that he laid the first stone in 1570, and the work appeared to have gone on until 1575, while subsequent to 1580 various extensions took place. Fifty years later, under Inigo Jones, another and the last period of active building set in, and fortunately the judicious care of the present owner, Earl Winchelsea and Nottingham, was preventing Kirby, as far as possible, from falling into the same state as Holdenby. Reference was then made to John Thorpe's connection with the building of Kirby Hall, Burghley, and Holdenby, and also to his plans of Lyveden New Building, which was erected for Sir Thomas Tresham, who also presented to the town of Rothwell a new market-house, which, however, was never finished and had never had a roof. It was in some respects a typical Elizabethan building, and though its detail was coarse, yet it could not be denied that the whole composition had the merit of vigour and piquancy. The Triangular Lodge, Rushton Hall, and the Lyveden New Building (three interesting works by Tresham, whose works were all about the same date), Mr. Gotch considered more severe than that of Tresham's successors at Rushton, the Cokaynes. His gables were straight, many of theirs were curved, and all his architectural work was simple, elegant, and suggestive. Apthorpe Hall, one of the most striking specimens of Renaissance in the county, was next described, and its similarity to Rushton pointed out. At Lilford, a few miles from Oundle, was a fine example of the circular bay; but there was something in the stiff arrangement of the windows that told of the tame slavery to which architecture in England was about to succumb. At Drayton House was a veritable storehouse of architecture, from walls and gateways of the Edwards, to pediments and panelling of William III. One wing was dated 1684, and the exterior still proclaimed its date; the principal interest, however, lay in the vaulted cellars, which a close inspection showed to be vaulting of the days of Elizabeth. Rockingham Castle was enlarged in similar manner to Drayton House, and was well worthy of inspection. Turning to the southern part of the county, there was not much Renaissance, but Canons Ashby and Castle Ashby could not be omitted. The former was a beautiful old house presenting work of the end of the 15th, the end of the 16th, and the beginning of the 18th centuries. Castle Ashby was begun about 1583, and the bay windows of that time were easily recognised, while the fine entrance screen was the work of Inigo Jones, dated 1624. The Renaissance impressed itself not only on the great houses; every kind of building was touched, from the Palace of Holdenby to the little cottages of Brigstock and Geddington; and the author considered there were few districts in England where more suggestive features could be found for stone treatment. Having alluded to the almshouses at Weekley, Mr. Gotch, in conclusion, thought the style was the outcome of a fascinating period. All England was quivering with vitality; when Dingley was built, Spenser was six years old; when Thorpe laid the first stone of Kirby, Shakespeare was the same age; when Lilford was rising above the Nene, Ben Jonson was still alive; while, between the stoppage of Rothwell Market-house and the beginning of the Triangular Lodge at Rushton, the great Armada was shattered. It was no wonder that the architecture of the time was interesting. Into the stones of their houses the men of Elizabeth's time hewed their greatness and their simplicity.

On the motion of Mr. Wyatt Papworth, F.S.A., seconded by Mr. Ralph Neville, F.S.A., and supported by Mr. E. H. Bruton, F.S.A., of Oxford, and Messrs. S. Flint Clarkson, H. D. Appleton, J. M. Brydon, and Paul Waterhouse, a vote of thanks was cordially accorded to Mr. Gotch for his paper.

#### SOCIETY OF ENGINEERS.

THE first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, February 3rd, at the Town Hall, Westminster. Mr. Jonathan R. Baillie, the President for 1889, filled the chair,

and presented the premiums of books awarded for papers read during his year of office, viz.:—The "President's Premium" to Mr. G. M. Lawford for his paper on "Fireproof Floors." The "Bessemer Premium" to Mr. Samuel Griffin for his paper on "Modern Gas Engine Practice." A "Society's Premium" to Mr. Henry Faija for his paper on "Forced Filtration of Water through Concrete," and to Mr. George R. Strachan for his paper on "The Construction and Repair of Roads."

Mr. Baillie introduced the President for the present year, Mr. Henry Adams, to the meeting, and retired from the chair receiving a hearty and unanimous vote of thanks for his services during the past year.

Mr. Adams then took the chair and proceeded to deliver his inaugural address. After thanking the members for the honour they had conferred upon him in electing him to the Presidential Chair, he briefly alluded to the satisfactory position of the Society, which now numbers 417 members of all classes, and mentioned the loss by the death of Dr. Percy, and the addition of Earl Granville, Lord Armstrong, Lord Brassey, Sir Wm. Thomson, Mr. Wm. Anderson, and Mr. Benjamin Baker to the roll of honorary members. He commented on the principal points of the papers read during the session, and described the features of interest in the works visited by the members during the vacation. The President then referred to the progress of technical education, noticing particularly the work of the Science and Art Department, and that of the City and Guilds of London Institute, and incidentally gave some particulars of the City of London College, where he has been for 21 years the Professor of Engineering. Several large bridges were described, the Forth Bridge, of course, occupying the place of honour, and references were made to many other engineering works and processes which have occupied public attention. In conclusion, attention was directed to the necessity for specialisation in the studies of engineers, the multifarious sub-divisions rendering it physically impossible for one man to thoroughly master more than one or two branches, and hence the necessity for the existence of such bodies as the Society of Engineers where experience could be freely exchanged. A final exhortation to the members to wear out rather than rust out, brought to a close a very able and interesting address.

#### MASONRY AND STONE-CUTTING.\*

By LAWRENCE HARVEY.

[TWENTY-SEVENTH LESSON.]

**CORBEL ARCHES.**—I give the name of Corbel Arches to the arches called in French "trompes"—that is, arches which carry structures projecting beyond the face of the wall. They are of three sorts; those placed within an inside angle of two walls, connecting, for instance, the parapet of a bridge with the embankment wall by a splayed angle, as in Figs. 180 and 181; those which support the projecting angle of two walls, where a splay has been formed below; those which support a semi-circular turret projecting beyond the face of a wall.

*Skew Corbel Arch in the Interior Angle of Two Battering Walls.*—In Fig. 174 we have the plan of a battering wall, of which the trace of the exterior face is the line Y A B. A triangular space, A S B, is cut out of that wall, and we are asked to cover this space by a corbel arch in order to carry a wall above.

The soffit of the corbel arch will necessarily be conical, and although the triangle to be covered is not isosceles, yet we can adopt for the soffit a cone of revolution or right cone. To do this take  $SC = SA$ , describe on diameter A C a semicircle placed in a vertical plane; let this circle be the directing line of a cone, of which S is the apex. This cone has only to be prolonged until it be cut by the face of the wall to obtain the outline of the face-arch.

We give the batter of the wall on a section, Y Z, taken on the line Y X at right angles with the wall-face. Now any point,  $d'$ , taken on the base circle of the cone, will have its plan,  $d$ , on the line A C; and on the section (Fig. 175) its elevation,  $d'$ , will be at the same height above the ground-line Y X as  $d'$  (Fig. 174) was above the ground-line A C.  $S'd'$  will be the projection on the section of a generator of the cone; that generator prolonged cuts the wall-face in D' (Fig. 175), the plan of which is D (Fig. 174) on the



generator  $Sd$ . Similarly, a series of points are found which give the intersection of the wall-face by the soffit of the arch.

Instead of drawing the elevation of the raking wall-face, we turn down the wall-face itself round its horizontal trace, so as to get the real shape and dimensions of what is delineated on its surface. In doing this the points  $(DD')$ ,  $(EE')$ , describe arcs of circles, of which the radii are  $D'Y$ ,  $E'Y$  . . . the planes of these circles being at right angles with the hinge of rotation  $AB$ . This gives us  $D'E'$ , . . . the real shape of the face-arch is, therefore, the curve  $AE'D'B$  (Fig. 176).

The tangent to any point,  $D'$ , of this curve is the intersection of the plane of the wall-face with the plane tangent to the cone in that point. To find this intersection, draw the trace of the tangent plane to  $d'$  on the base of the cone; where this trace cuts the line  $AC$  the horizontal trace of that plane will pass, another point being the apex,  $S$ . Then draw the horizontal trace, and through the point where it cuts the line,  $YB$ , draw a line to the point,  $D'$ , on the curve; this will be the tangent required.

In the point  $A$ , the plane tangent to the cone is vertical, its intersection with the wall-face is  $AS$  on plan, and  $YZ$  on the section (Fig. 175). To draw it on the turned-down wall-face (Fig. 176) take a point,  $x$ , on plan, and  $Z$  on elevation, and draw its position in Fig. 176;  $Ax'$  (Fig. 176) is the tangent to  $A$ . The tangent to  $B$  is found in the same way. These two tangents must necessarily intersect one another on the vertical drawn from  $S$ .

To find the highest point of the curve, the one where the tangent is horizontal, note that the trace of the tangent plane will pass through  $S$ , and be parallel to the ground line,  $AB$ . Draw that trace till it cut  $AC$ , and from the point of section draw a tangent to the circular base of the cone; this will give  $u'$ , on the generator of which is  $U$ , the highest point of the face-curve. As the point of section may be too far, we need only find the mid point,  $\omega$ , which we would use to draw the tangent according to Fig. 182. This would give us the point,  $U$ , on the circle.

A still shorter method of finding the highest point of the curve is based on the following property of conic curves; the two tangents,  $AS$  and  $BS$ , taken through the extremities of the chord,  $AB$ , must intersect one another on the diameter conjugate to  $AB$ ; and the tangent in that point of the curve will be parallel to  $AB$ . Therefore, join  $S$  to the mid-point,  $W$ , of  $AB$ , and  $SW$  will be the diameter which will contain the point,  $U$ .

The bed-joints are taken through the centre line,  $SOI$ ; but the joint lines of the arch must neither be equidistant on the face-arch, nor on the circular section of the cone. In the first case the soffits of the arch stones would be of strikingly different widths. In the second case the joints on the face-arch would be too irregular. The best way is to draw both systems of division, and then take intermediate points which give a sightable division. Then the arrises of the bed-joints on the face-arch will be  $ID'H'$ ,  $IE'F'$ , . . . which are stopped by the horizontal joints of the wall. The face mould of one of these arch-stones is, therefore,  $D'E'F'G'H'$  (Fig. 176), from which the horizontal projection can be drawn by taking down perpendiculars to  $AB$  until they meet the lines  $IE$  and  $ID$ . It will be safer to bring the points back by arcs of circles on the section,  $XY$ , and then deduce from this the plans of the points.

*The Eye of the Corbel Arch.*—If the bed-joints were carried back to the apex of the cone, they would present an unsafe feather-edge in that point. It is usual to stop them at a distance of 8in. to 10in. from the apex, and form the remainder of the vault out of one stone; this is the eye of the arch. To make the joint-line of the eye parallel to the face-arch, cut the conical soffit by a plane  $zyab$  parallel to the wall-face. On Fig. 175 the generators of the cone are cut in  $n''$ ,  $m''$ , . . . of which the planes are  $n$ ,  $m$ , . . . This gives the projection  $anmb$  as the joint line of the eye where the soffits of all the archstones will stop. The surface of the joint itself must be normal to the soffit of the arch. Therefore, find the normal in the point  $m$  by turning down the generator  $sm$  on  $SB$ ; the point  $m$  will then come to  $m''$ . The normal  $m''L$  will be the turned-down normal, and as  $L$  is on the centre line, the normal itself will be projected in  $Lm$ . Similarly, normals through any number of points can

be found, and thus the skew surface of the eye-joint will be defined.

To complete the eye-stone we must let it be comprised from front to back between the vertical planes  $ab$  and  $VP$  (without yet determining its lateral faces), and then find the intersection of the top plane of the stone with the skew surface of the eye-joint. Use as elevation plane the circular section of the arch, for on that plane the normals are projected on the radii of the circle. Let the upper face of the eye-stone be on elevation the line  $R'M'$ ; then the intersections of that line with the radii of the circle give us the elevations of points of the intersection required, from which we deduce their horizontal projections on the plans of the normals, and draw the curve  $MNR$ . In case the projecting lines met at too sharp an angle to be able to define exactly the point, as is the case for the point  $N$ , then turn down  $N'$  round centre line  $OS$ , and get  $N''$  on the turned-down normal  $Kn''$ ; then turn back to  $N$  on  $Kn$ .

To avoid a break in the joints of the arch-stones where they come in contact with the eye, make each of the side arrises of the eye coincide with a bed-joint. Therefore adopt  $MP$  and  $RV$ , drawn parallel to the centre line  $OS$ , as lateral faces of the eye. To finish the eye-stone we have to find the intersection of these lateral faces with the skew joint of the eye. The normals  $aa$  and  $rr$  are cut by the lateral face in the points  $a$  and  $R$ , the last of which, when turned down on the mould, comes to  $R_2$ . Constructing several intermediary normals, and finding their intersections, we obtain the lateral mould  $aR_2V_2V$ . Similarly we obtain the other lateral mould  $P\beta M_2P_2$ ; lastly, to cut the eye-stone, the real shape of the joint line  $arnmb$  is required, for which turn down plane  $zyab$  round  $ab$ , as we have done for the curve  $AE'D'B$ .

Now, to cut the eye-stone, form the prism which contains it; then cut off the front plane with the help of a bevel of angle,  $zyX$ . On that face mark the outline of the curve  $arnmb$  (Fig. 177). On the upper plane place the mould  $V_2RNM_2P$ , and on the lateral sides the moulds  $V_2aR_2V_2$  and  $P\beta M_2P_2$ . Then work the skew surface of the eye-joint by means of a straight edge guided by the outlines drawn and by guiding points, such as  $Rr$ ,  $Nn$ ,  $Mm$ , . . . marked on the moulds. On the lower plane place the triangle,  $aSB$ , taken from the plan (Fig. 174), and work the conical soffit with a straight edge.\*

*Bed-moulds of the Arch-stones.*—The arch-stones abut partly on the skew surface of the eye-joint and partly on the upper plane or the side planes of the eye. The bed-joints will, therefore, be finished by portions of normals to the soffit, and by straight lines parallel to the centre line,  $SO$ . For instance, for the arch-stone  $DEFGH'$  on the wall face, the projections of the beds will be  $FEnNQfF$  and  $HDmMPH$ . To get the moulds thereof turn them down round,  $SO$ , and note: *firstly*, that each point describes a circle perpendicular to the hinge,  $SO$ ; *secondly*, that  $K$  and  $L$ , where the normals cut the hinge, remain unmoved; *thirdly*, that the lines  $IEF'$  and  $IDH'$  will always pass through the point  $I$ , and have their true lengths shown in the lines  $IE'F'$  and  $ID'H'$  (Fig. 176). The moulds are then  $F''E''N''Q''f''F''$  and  $H''D''m''M''P''h''H''$ .

*Soffit Operation Planes.*—In cutting the arch-stones, to avoid a great loss of material, we must begin by working an operation plane on the soffit of each stone, and start from this plane to work the bed-joints, and the wall-face by means of bevels. Instead of developing the cone which forms the soffit of the arch, develop the pyramid formed by planes stretching from joint to joint. The easiest way to produce this development is to use the chords of the divisions to the base circle. Take, therefore,  $AS$  (Fig. 174) as radius, and draw a circle (Fig. 178), on which carry the lengths of the chords  $Cd$ ,  $de'$ , . . . (Fig. 174); connect these points with the centre  $S$  (Fig. 178), and you have the direction of the joint-lines. On these lines carry their real lengths  $SB$ ,  $SD''$ ,  $SE''$ , . . . equal to the lengths given by the bed-moulds (Fig. 174); then connect the points  $B$ ,  $D''$ ,  $E''$ , . . . by straight lines, which will be found to be equal to the chords drawn on Fig. 176. From the joint-lines will have to be left out the lengths  $Sb$ ,  $Sd''$ ,  $Se''$ , . . . which belong to the soffit of the eye.

\* In our diagram the lines relative to the eye are shown full, as if the eye were drawn alone, uncovered by the arch-stones.

In order to work the skew surface of the joint where the arch-stone abuts upon the eye, we must get the intersection of the soffit operation plane with that skew surface. To do this, cut both the operation plane and the cone by a plane passing through the centre line and through a point  $\gamma'$  taken anywhere on the chord  $d'e'$  (Fig. 174). The section of the operation plane will be  $S\gamma$ , and of the cone  $S\delta$ , which meets the curve of the eye in  $\epsilon$ . Produce the normal  $\epsilon\lambda$ ; the point  $\phi$  where it cuts  $S\gamma$  is a point of the intersection  $n$ ,  $\phi$ ,  $m$  of the operation plane with the eye-joint.

To draw this curve on the operation plane (Fig. 178), turn down the line  $S\gamma$  to  $S\gamma'$  (Fig. 174); then the turned-down normal  $\lambda\epsilon''$  will cut  $S\gamma'$  at a distance  $S\phi'$ , which carry on the line  $S\gamma'$  (Fig. 178), by which you obtain one point of the curve  $n''\phi''m''$  required. In practice only these last operations are delineated, and the projection  $n\phi m$  is not drawn.

To work the wall-face of the stone with a bevel, the angle comprised between the soffit operation plane and the wall-face must be found. These two planes and that of the bed-joint form a triangular pyramid, of which the apex is the point  $E$ , and of which the angles comprised between the arrises are known; therefore we can find the angle comprised between the planes. In Fig. 178 draw angle  $D'E''F'$  equal to the angle  $D'E'F'$  of Fig. 176, and another angle  $SE''F''$  equal to the same angle on the bed-mould. When these triangles turn round their respective sides  $SE''$  and  $E''D''$ , the points  $F''$  and  $F'$  meet on a vertical over  $\omega$ ; the vertical over  $\omega$  forms with  $\rho\omega$  a rectangular triangle, of which the hypotenuse is equal to  $\rho F'$ ; this triangle, turned down round the line  $\pi\rho\omega$ , gives us the triangle  $\rho\omega\zeta$ , and the angle of the bevel is therefore  $\zeta\rho\pi$ .

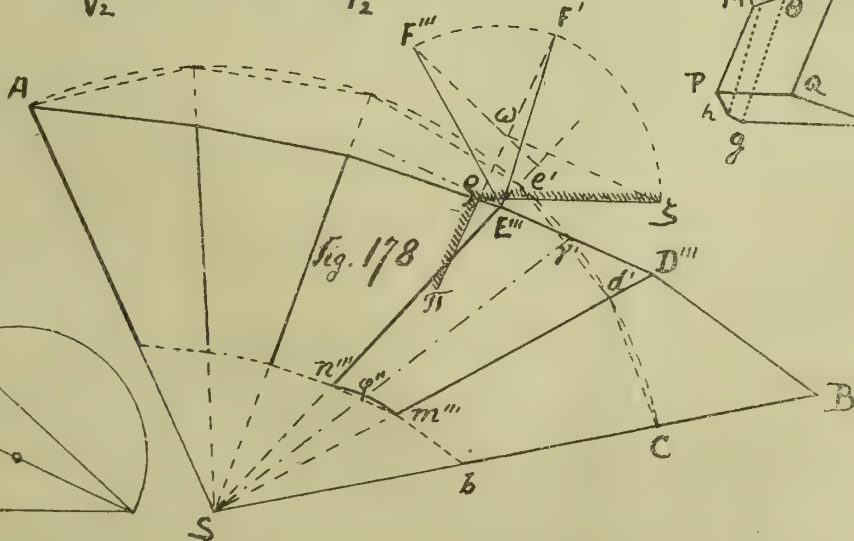
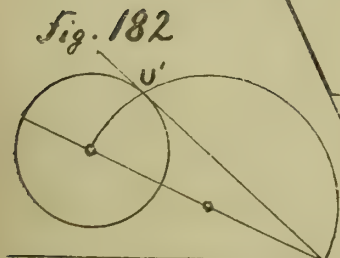
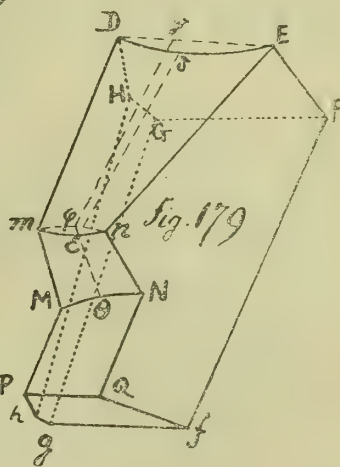
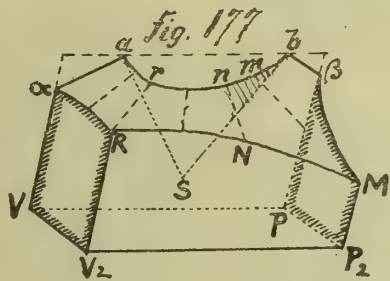
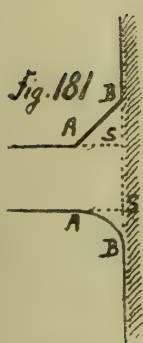
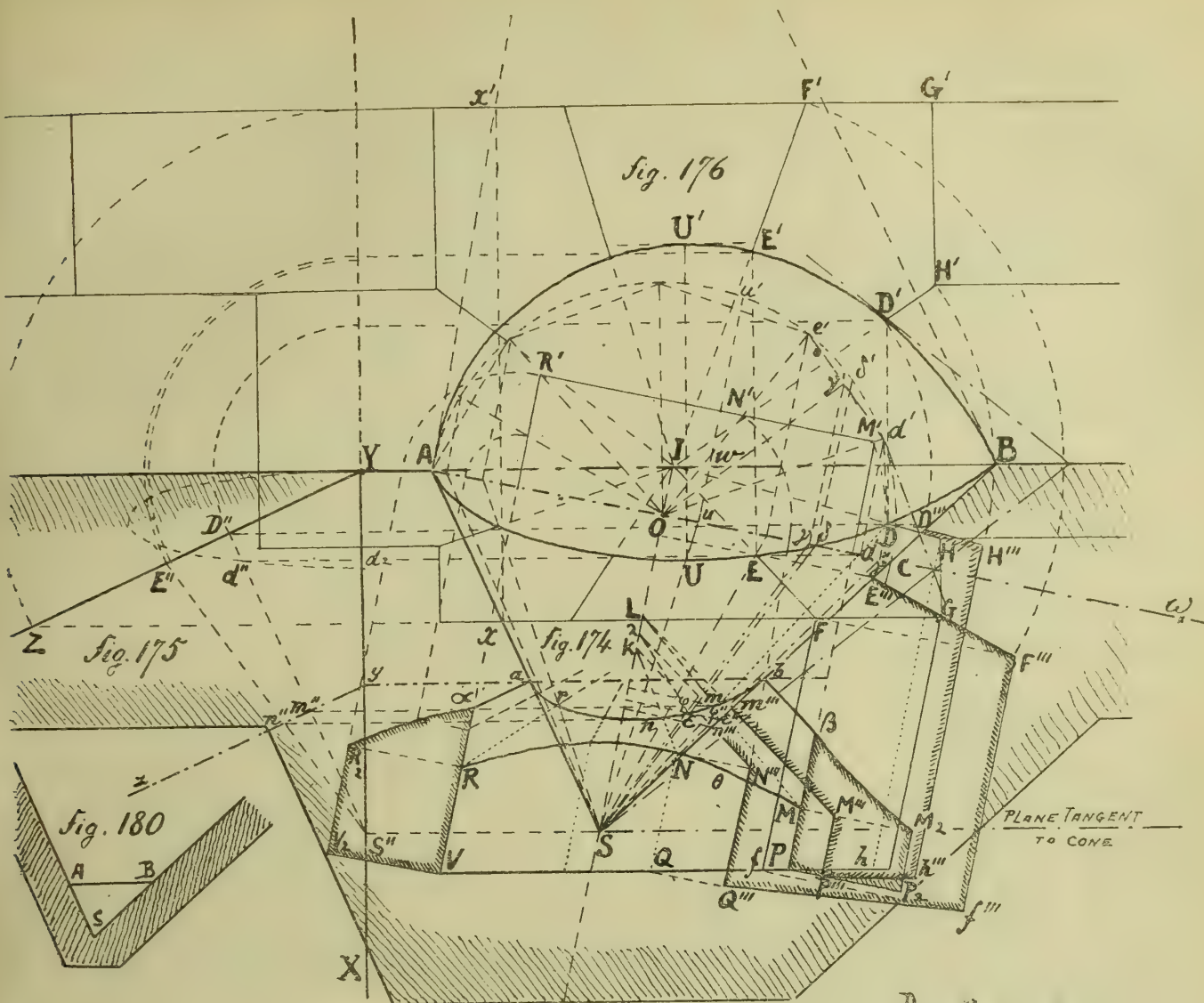
*To Work the Stone* (Fig. 179),  $D'E'F'G'H'$  on face, select a stone that will comprise it, which must be judged from the projections on Figs. 174 and 175. Dress the face of the soffit operation plane, and with the help of the mould (Fig. 178) draw thereon the outline  $Dm\phi nE\gamma D$  (Fig. 179). Then with a bevel of angle  $\pi\rho\zeta$  (Fig. 178), work the wall-face of the stone, one branch of the bevel sliding on the operation plane, while the other branch is held normal to the chord  $D\gamma E$ . On that plane of the wall-face draw the outline  $DEFGH'$ ; then work the plane of the upper bed-joint through the lines  $En$  and  $EF$  marked on the stone, and draw thereon the mould  $EnNQfF$ . The bed-joint might also be dressed with the help of a bevel equal to the angle comprised between it and the soffit operation plane, an angle easily found in Fig. 178. The lower joint is worked in the same way as the upper joint, and its mould is also drawn thereon.

Now, guided by the lines of the bed-joints, work the plane  $PM\theta NQ$  gradually until the template  $\theta N$ , taken from Fig. 174, can be placed thereon. Then work the skew surface  $Mm\phi nN$  with a straight edge, guided by the curve  $M\theta N$  and  $m\phi n$ , and passing by the connecting-points  $M$  and  $m$ ,  $\theta$  and  $\phi$ ,  $N$  and  $n$ , taken from Fig. 174. On this skew surface delineate the curve  $m\epsilon n$  by carrying on each generator  $\phi\theta$  the length  $\phi\epsilon$  equal to  $\phi'\epsilon'$  of Fig. 174. Lastly, excavate the conical soffit of the stone guided by the lines  $m\epsilon n$  and  $D\delta E$ , keeping the straight edge upon the corresponding points  $D$  and  $m$ ,  $\delta$  and  $\epsilon$ ,  $E$  and  $n$ .

The foundation stone was laid at West Hartlepool, on Friday, of a new Baptist chapel to be erected on the corner site of Tower and Archer streets, from designs by Mr. J. Garry, architect, of that town, by Mr. Davison, contractor, Stockton-on-Tees. The Tower-street frontage will be 41ft., and that in Archer-street 64ft., and it will be in the Gothic style of architecture, and will seat 264 on the ground floor and 250 in the galleries. The building will cost £1,800, and will be supplemented by additions costing £400 more.

The first of the new branch libraries and reading-rooms to be established in Liverpool was opened on Jan. 30. The new building stands on a portion of the recreation ground in Kensington—a rapidly-growing neighbourhood—and has cost £3,000. It occupies an area of 400 square yards, and comprises a reading-room, 38ft. by 32ft., a lending-library, librarian's rooms, &c., the plan being so arranged that the librarian from his desk can control both the reading and lending departments. The style chosen by Mr. Thomas Sheldermine, jun., the corporation architect and surveyor, is stated to be German Renaissance. The contractor was Mr. Edmund Gabbett, of Oaks-street, Liverpool.







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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—"A HARVEST FESTIVAL."—THE DURHAM PASTORAL STAFF.—BOARD SCHOOLS AT BECKENHAM.—ST. MARGARET'S CHURCH, ABERDEEN.  
—NEW CREMATORIA AT PARIS AND ZURICH.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.

SEE description on page 221.

## "THE HARVEST FESTIVAL."

This design for the decoration of a public building, by Miss Gertrude Demain Hammond, was awarded the Royal Academy Prize, as we stated last week, when giving her cartoon of the central group. The general composition now reproduced from the artist's water-colour drawing, will show how these figures come in the design. Mr. Akerman, though working from a painting in which yellows and blues predominated, has very successfully rendered the several values in the picture. We name this so that other contributors may know that we are now able to reproduce almost any style of drawing, whether in colour or not, provided it is clearly defined and properly delineated.

## DURHAM PASTORAL STAFF.

The pastoral staff of which we give an illustration was presented last October (in an incomplete state) to the late Lord Bishop of Durham, in Bishop Cosin's library, by the Earl of Durham. The work is of silver gilt, jewelled, with enamelled heraldry, and is now just finished. It is executed by Messrs. Carrington and Co., from a design by Mr. William Searle Hicks, of the firm of Hicks and Charlewood, architects, Newcastle-on-Tyne. The figures are modelled by Mr. G. W. Milburn, the sculptor, of York and London, and they represent on the obverse of crook the Crucifixion, the Blessed Virgin Mary, and St. John; and on the reverse the Good Shepherd, with SS. Peter and James. Below the crook is the "Agnus Dei," with the inscription "Et ego cognosco eas et sequuntur me." Round the main tower are the figures of SS. Cuthbert, Aidan, Oswald, Bede, Hilda, and Chad. The heraldry of the diocese of Durham and Bishop Lightfoot are on the knop at the base of the crook. Below the jewelled knop is a richly-ornamented hexagonal portion, bearing the words of our Lord's pastoral charge to St. Peter—"Pasce agnos meos," "Pasce agnos meos," "Pasce oves meos."

## THE ARTHUR-ROAD SCHOOLS, FOR THE BECKENHAM SCHOOL BOARD, KENT.

This school was won by Mr. John Ladds in a limited competition, for which Mr. E. R. Robson, the architect to the Educational Department, acted as referee. Accommodation is provided for 240 boys, 240 girls, and 320 infants, and the schools are capable of enlargement to accommodate 360 boys, 360 girls, and 480 infants. There is also a caretaker's house. In consequence of this proposed future enlargement, it was

thought advisable to arrange the schools in three separate buildings, or rather two, the boys and girls being connected in one place although they have no internal communication. The materials to be used are stock bricks and Broseley tile roofs. The class rooms will all be well lighted, the floors will be of wood blocks, and the heating and ventilating will be by means of Mr. D. O. Boyd's patent ventilating grates. The contractors for these works, which have just been started, are Messrs. Willmott and Sons, of Hitchin.

## THE AYLESBURY-ROAD SCHOOLS, FOR THE BROMLEY SCHOOL BOARD, KENT.

This school will at first provide for 250 boys only; but the Board contemplate a further enlargement by the addition of the same number of girls and infants respectively, and in the recent limited competition architects had to show in what way they proposed to make this addition. A caretaker's residence was also included in the competition. Mr. R. Norman Shaw, R.A., acted as referee. The arrangement of the school, which was also designed by Mr. John Ladds, who gained the first premium in the competition, is simple and compact, and the design plain and unornamental. The buildings will be of stock bricks throughout, with large, plain windows giving plenty of light, the lower portion fitted with double-hung sashes, and the upper part casements, hinged to the transom to fall inwards, and closed by means of Leggett and Co.'s patent casement openers. The floors will be of wood blocks throughout; the roofs covered with slates, and the gables rough-cast. The Board have accepted the tender of Mr. Thos. Crossley, of Bromley, for the erection of the school, subject to the approval of the Education Department, and the works will be put in hand shortly.

## ST. MARGARET'S CHURCH, ABERDEEN.

This drawing of the church of St. Margaret of Scotland, Aberdeen, shows the interior as it will be when the proposed alterations and additions are carried out. The view is taken from the western chapel of St. Nicholas, which was completed and consecrated last October. The nave and chancel are at present only half the height shown in the drawing and are of a temporary character, having been designed only to serve as a chapel-school, though eventually to be consecrated as a parochial church. While from the narrowness of the site the building must still retain its chapel form, it is proposed to give it a dignified proportion and character by means of internal buttresses carrying a vaulted roof, and, at the same time to extend it to its furthest limits at the East end. Messrs. Bucknall and Comper are the architects, and the drawing given was exhibited at the Royal Academy last year.

## CHIPS.

Further enterprise in anticipation of the development of the London and South-Western Railway Company's works at Bishopstoke, Hants, has shown itself by the purchase of the Chickenhall Estate, a freehold property of some 115 acres, situate within a half-mile of Eastleigh Station, till recently familiar to South-Western passengers as "Bishopstoke Junction," and in close proximity to the new sheds and workshops. The property has been acquired with the intention of development as a "Model labourers' dwelling estate," allowing to each house, to be built either separately or in pairs, large gardens.

The annual meeting of the Cambrian Archaeological Association will take place next August at Holywell in Flintshire, under the presidency of Lord Mostyn.

The new chapel erected at Fulham Union Workhouse has been dedicated by the Bishop of London. The structure is Gothic in style, was designed by Sir Arthur W. Blomfield, A.R.A., and cost about £4,000.

Professor Stuart, M.P., has resigned the Professorship of Mechanism and Applied Mechanics, which he has held in Cambridge University since 1875.

Three stained-glass windows will be placed in Manchester Cathedral in the course of a few weeks. Two will be placed in the extreme west of the north wall, beside the porch recently completed, and the third will be erected in Brown's Chapel. The old scholars of the Manchester Grammar School propose to erect another window to the memory of Hugh Oldham, the founder of the school. The lowering of the entire floor of the Cathedral will be proceeded with, in order to expose the exquisitely-carved plinths of the pillars supporting the arcades of the nave.

## NEW CREMATORIA AT PARIS AND ZURICH.

THE movement in favour of this system of dealing with the remains of the dead grows daily, and continues to interest a very large section of the community both in Europe and America; indeed, in New York an endeavour is being made just now to erect a new mausoleum or Campo Santo in connection with crematoria on a large scale, and the company promoting the scheme has for its mission the disposal of the dead by desiccation, which, in plain terms (not to use the word fire), is the art of preventing putrefaction by forcing over and around the body a continuous current of dry air, the agency of evaporation. The ancient Peruvians, the Colchians, and the Tartars, as well as the Ethiopians practised desiccation by suspending their dead in the sun, or by drying them on an elevated spot. In India and China the method of burning is still in vogue. The Capuchin Monks of Palermo are said to have adopted less crude methods by baking their dead in ovens constructed in the catacombs there. Modern science has developed the ancient Roman idea, and special edifices adapted to the process are being built in many places. We give an illustration of two recent examples to-day. The crematorium from the central cemetery at Zurich is built on the plan advocated and invented by M. Emile Bourry, engineer, of Saint Gall. There is nothing in the external appearance of the structure to denote its purpose, as will be seen by the view given herewith; but the interior sketch shows the furnace top and the sliding table, with a coffin in position ready to be placed in the desiccating chamber. The door beyond, to the left of the drawing, leads to a waiting-room or vestry. The chimney from the furnace is hardly visible on the outside. The Paris building was designed by M. Jean Formigé, architect, of Rue Coëflogon, and as the plan, elevation, and section will explain, seems far more suitable, architecturally, for the purpose for which it is intended. There are three crematoria placed in chapel-like recesses at the end, and separated from the main part by an aisle or lobby. The central compartment of the three has an apsidal end, and the light is admitted by windows entering through the barrel vault. A double dome surmounts the main building, and the external treatment, as well as the inside, seems cleverly designed. We are indebted to "La Construction Moderne" for these drawings, and those of Zurich were borrowed from the *Schweizerische Bauzeitung*.

## COMPETITIONS.

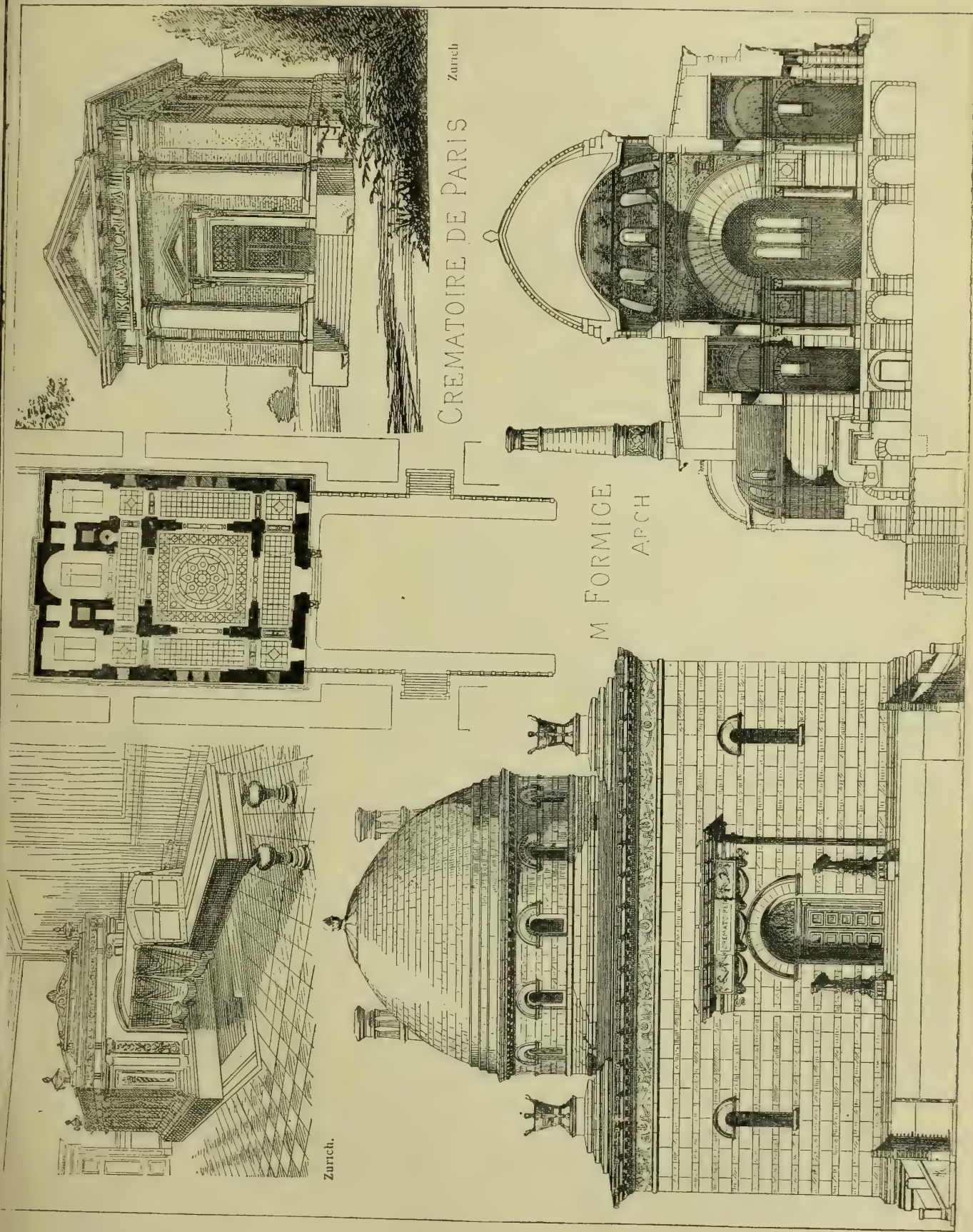
HULL.—At a meeting of the directors of the York Union Bank, Limited, held in York, the plans of Messrs. Smith and Brodrick, architects, of Hull and Goole, were selected from the designs submitted in a limited competition for the new branch banking premises to be erected at Hull. The building will be stone, and in the Flemish Renaissance style, and will be erected at the corner of Lowgate and Bowlalley-lane. The ground floor will be occupied by the banking premises of the York Union Bank, above which will be offices for letting purposes. It is proposed to commence the building forthwith.

WESTON-SUPER-MARE.—Local and other architects were invited to submit plans in competition for a church to seat 800 persons which it is proposed to build in the Locking-road (opposite the Potteries). Several designs were sent in, and that under nom de plume "Crux," by Mr. S. J. Wilde, architect, of Weston-super-Mare, was unanimously selected. The accepted design is in the Early English style of architecture.

At Patrick Dean of Guild Court the plans have been passed of a new orphanage which is to be erected by the trustees of the Glasgow Institution for Orphan and Destitute Girls, on ground at Whiteinch, west of Victoria Park. The building will have a frontage of about 150ft. The main portion, which will be three stories in height, will have a frontage of 90ft. to a new street, and will extend westwards a distance of 80ft. The estimated cost is over £5,000.

The opening services of the new Wesleyan chapel situated in Ogden-lane, Higher Openshaw, Manchester, were held on Friday. The new building is in the Classic style, and is built in red-faced stock bricks with stone dressings. The cost has been about £2,700.







## WAYSIDE NOTES.

IT was only to be expected that your article on "Wholesale Contracts" would call forth some correspondence; and it will not be surprising if very many hasten to give their opinions on the subject in your columns. Naturally enough, the builder and contractor regards any adverse criticism of the recognised system of contracting, as only an attempt to take bread out of his mouth, which, however, no one really wants to do. Under whatsoever arrangement modern buildings are carried out from architects' designs, there will be work and employment for all heretofore engaged. It is moreover unnecessary that any heated argument should take place in any controversy there may be on this subject, for write and talk as one may, the existing methods will continue in vogue. Progress in these matters is so slow that the utmost one can expect is that here and there endeavours may be made to work on the system advocated—namely, that where the first care of all shall be the work in hand, and not the profit and loss account.

I think that both your correspondents, who last week gave the results of their experience, in a measure failed to take the proper view of your position. No one imagines that *sub-contracts* are going to remedy the shortcomings inherent to the *wholesale contract*. The evils of sub-letting were realised by architects years and years ago, as the anxiety about the inclusion of the "no sub-contract" clause in specification goes to prove. If the question is between contracts and sub-contracts, I beg to retire altogether from its discussion. The system I have in my own mind is that where a master builder is engaged to superintend the works, the purchase of materials, the workmen, and everything to do with the building—a system akin to that employed in days gone by—the system upon which Monsieur Paul and the "grand cousin" erected the château for "madame," and one daily employed with success in England, though more often in other countries. We want the old *master builder*, and if a few of our contractors, instead of dragging out a life of chronic anxiety and worry to make both ends meet, and periodically causing other men to suffer through their bankruptcy, would boldly make a speciality of the trade of a master-builder, they would ultimately find it to their benefit. Such men would have to possess all the business qualities of the genuine contractor, and the knowledge of trades, manufactures, and the manners and customs of the British workman acquired by a competent foreman, together with the attributes of the clerk-of-works. Who will say that, in these days of extensive buildings involving heavy responsibility in their erection, men of this stamp would not find constant and lucrative employment, and lead a happier life than that of erecting buildings by contract at ruination prices? I make bold to assert that those who had the pluck to commence, immediately, systematic and long-continued advertising of themselves as *master-builders*, would in time and by steadfast integrity gain for themselves a special line of business. In days to come, plenty of private individuals and civic corporations to whom price is a secondary question to that of obtaining first-class work, will be on the look-out for men with a reputation for carrying out works on the system advocated. Only the advertisers must be all I have suggested as regards qualifications, or their services will be dispensed with at the end of the first week, and six days be the span of their careers as master builders of the old type. I may be mistaken, but there seems an idea here of which builders, contractors, and clerks of works might take advantage.

The Society of Engineers listened to the address of their new president early this week. Mr. Henry Adams, the indefatigable and energetic, has the honour of holding the presidential post this year, and under his auspices the society should do well.

Another attempt has been made to jog the memory of the County Council with regard to the proposed Blackwall Tunnel, the people of East Greenwich having met together on Monday evening last and done a good deal of talking. I have said before that wonder and reverent regard for great constructional undertakings is becoming a thing of the past, and that even the infant of

the 20th century will regard with positive disdain the marvels of the "puff-puff," and other triumphs of science and engineering. At the East Greenwich meeting, Mr. B. Mitchell, the chairman, said that, "while a Channel bridge and a Channel tunnel were talked of, it seemed ridiculous to say it was impossible to construct a tunnel under a narrow stream." The "narrow stream" is to be observed. When Mr. Brunel was at work beneath old Father Thames, a *mighty river*, was doubtless the only wear. Now the Thames is a "narrow stream." And the cause of this disdainful view of the river is the hypothetical bridge and tunnel which are to join England with the Continent, according to some, but which, according to reasonable persons, will never be constructed. I dislike a want of reverence for things created by God or man: it evidences littleness and conceit.

I cannot, however, understand where the idea about the impossibility of constructing the proposed Blackwall tunnel came from. It has evidently grievously affected the inhabitants of the district that expects to be benefited by the construction of the subway. That it would be made only at an enormous expense and with considerable risk one may imagine; and that it is not a desirable undertaking we may also well believe. It would be rather interesting to know exactly the history of happenings that have led the inhabitants of East London to make so much of the "impossibility" incident. It appears to me to be of the nature of a myth. The Board of Works were fully alive to the arduous nature of the undertaking; but it is difficult to imagine anyone in authority to have stated it to be an impossibility. The County Council, perchance, deem it best to go cautiously to work because of the outlay involved, and, in so doing, one cannot but think that they are well advised.

A rather unusual incident has occurred in connection with the competition for the Swedish Houses of Parliament at Stockholm. In addition to giving liberal premiums, we learn that the authorities have thought fit to purchase, for the sum of 1,000 kronor each, two other of the designs submitted in the competition. This is honest and manly of the Swedish Government. They want to include some features in the ultimate design that these two competitors have schemed, and to that end they pay 2,000 kronor. We are not all so honest or liberal. If some people want to do the same thing they simply crib and plagiarise with an admirable coolness and "face." I recommend to the notice of competition inaugurators the action of the Swedish Government. In the past history of architectural competition we have too often seen cases where the whole affair is a mere fiasco, prearranged so that the largest amount of ideas may be obtained at the lowest possible cost—a veritable process of architects' brain-sucking.

The County Council are unfortunate in the matter of engineers. What with death and resignation, it must be a constant source of anxiety and trouble to fill the post. At Tuesday's meeting at the Guildhall, Sir John Lubbock announced that Mr. Dunscombe, the Council's engineer, had tendered his resignation on account of ill-health. I am inclined to think that the burden of responsibility must lie heavy on those holding this berth, and that only men of iron constitution are fitted to discharge its duties. Unfortunately, the engineer of to-day is a man of figures and mathematical calculations, the attainment of proficiency in which means, generally, health destroyed, mental application and study in early manhood. Yet no one can hope to attain great success and a great name as an engineer who has not physical stamina. As a type for an engineer I would take Sir Frederick Bramwell, whose remarkably hale and hearty condition in advanced years bespeaks the care bestowed through life on matters of health. If only students of arts and sciences would early recognise the futility of the *mens sana*, unless it be really in *corpore sano*, it would be well for the life of the individual and the nation. I cannot picture to myself a great engineer unless he be a man of fine physique, with bodily powers at all times equal to those of the mind. This digression may or may not be pertinent to the subject that caused me to reflect. Anyhow, I am extremely sorry for Mr. Dunscombe that he should find it necessary to resign his position, and trust

that by persevering the County Council may at last get an engineer who will become an old servant.

Another correspondent has felt himself bounden to contribute to the daily press a protest against the action of authorities in leaving the stones of the Burlington House Colonnade to go to rack and ruin. "In a swamp at a remote corner of Battersea Park." We shall all sympathise with "S. H. B." in his letter to the *Standard* of the 5th. But I hear from friends who have lately explored the region of this howling wilderness of desolation, that the stones are quite spoilt beyond any hope of piecing them together again. It is some years since I amused myself by examining these curious and once beautiful relics, but can well believe, remembering their then condition, that gaming youngsters and wantonly destructive young urchins have done their worst.

It has been suggested, as within the bounds of possibility, that the cholera, lately prevalent in the trade routes of the East, may follow the influenza in the warmer weather. What price will our system of sewer-ventilating into streets exact from us if this takes place? Day and night, night and day, the germs of the pestilence would be issuing from the myriads of street ventilators and spreading disease broadcast, even as they do now with other scourges that are the punishment of dirt and filth. Considering what this means in a population of four millions, one is inclined to think that the antiseptic property of London fog is our only safeguard. If the vast clouds of particles of free carbon are to be some day swept away by municipal reform, simultaneously the sewer-ventilators must be sealed, and the sewer air passed over furnace fires, or the Metropolis will be decimated by the first serious pestilence that creeps in from the Eastern countries.

GOTH.

## CHIPS.

The Bishop of Plymouth opened on Thursday in last week the chapel built in the grounds of St. Vincent's Orphanage for Boys, Teignmouth-road, Torquay. The new chapel is a small, plain, brick building, with stained and varnished boarding inside, and three small stained-glass windows over the altar; it provides accommodation for a hundred worshippers. It has been erected, from the designs of the Bishop, by Mr. Lethbridge, of Plymouth.

The Court of Common Council discussed at their last meeting a motion by Mr. Treloar that it be referred to the Library Committee to consider the desirability of opening the Guildhall Library, Museum, and Art Gallery on some part of Sundays, and to report their opinion thereon to the Court. After a long debate, in which the arguments in favour of and against the opening of museums on Sundays were advanced, the "previous question" was carried by 83 votes against 43.

The Duke of Westminster has undertaken the expense, estimated at over £1,000, of putting stained glass in the windows of the fine collegiate church of St. John's, Chester.

Personalty to the value of more than £115,000 was left by the late Mr. James Duneau Doulton, whose will has just been proved by Sir Henry Doulton, the brother, Ronald Duncan Doulton, the nephew, and James Doulton, the cousin, the executors. After making various bequests to the members of his family, the testator directs his executors to distribute £1,500 among the managers, clerks, travellers, and foremen in the employ of Messrs. Doulton and Co.

Goole parish church, after undergoing restoration, was reopened on Tuesday. A new peal of bells, a new organ, vestries, choir stalls, altar rails, and silver Communion service have been provided at a cost of over £2,000. The new vestries were designed by Mr. H. B. Thorp, of Goole; while Messrs. Smith and Broderick, of Hull and Goole, were the architects for the other improvements. Mr. William Denison, of Normanton, was the contractor for the structural alterations and extensions.

The Waterworks Committee of the Cardiff town council has come to an arrangement with Mr. Jones, the former contractor of the Cantref Reservoir, as to the moneys due to him. Mr. Jones's original claim was £56,000, which was brought down to £27,513, and he has now agreed to accept £22,320 in settlement.

The church of St. John the Evangelist, Breck-road, Everton, erected through the munificence of Mrs. Turner, of Dingle Head, to the memory of the late Mr. Charles Groves, was consecrated by the Bishop of Liverpool yesterday afternoon.



## CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

CONTINUING our gallery of photographs, we print to-day our fifth sheet of portraits, with each of which a few particulars of the work done by the several architects represented are given.

Mr. John McKean Brydon, F.R.I.B.A., was a pupil of Messrs. Hay, of Liverpool. He served afterwards in the offices of Mr. David Bryce, Edinburgh; Mr. Campbell Douglas, Glasgow; and Messrs. Nesfield and Shaw, in London. Among his principal works are the Mansion Houses of Lewins, in Kent, with its home farm; Pickhurst, in Surrey; additions to Holmwood, in Kent, for Lord Bramwell, and Summerfield, near Roehampton; also two houses at Haverstock Hill; house at Airlie-gardens, Campden Hill; house and studio, St. John's Wood, for M. Jas. Tissot, the French painter, and since rebuilt by Mr. Alma-Tadema; houses at Rustington, in Sussex, and Hatfield Broad Oak, in Essex (now building); St. Peter's Hospital, Covent Garden, opened by the late Duke of Albany in 1882; the New Hospital for Women, Euston-road, to be opened by the Princess of Wales in April; the Ladies' Residential Chambers, Chénies-street; the Town Hall, Chelsea, won in competition, and the Central Library in Chelsea, also gained in competition, and now building; the Lecture Hall of the Dulwich Presbyterian Church; and joint architect with Mr. Jas. Cubitt of the large Congregational Church at West Kensington. Mr. Brydon gained the first premium in the competition for the Streets Improvement Scheme at Croydon, but which was never carried out; his design for Kensington Vestry Hall we remember as the best submitted, but it was not chosen. He was elected a Fellow of the Institute in 1881. His photograph is by Mr. Bassano, of Bond-street.

Mr. Thomas Graham Jackson, M.A., F.S.A., sometime Fellow and now Honorary Fellow of Wadham College, Oxford, was a pupil of the late Sir George Gilbert Scott, R.A. His principal works comprise the New Examination Schools of the University of Oxford, which were begun in 1876 and completed in 1888, by the addition of the building for the non-collegiate students of the University; the restoration of the Bodleian Library; new quadrangles for Trinity and Brasenose Colleges, the latter with a frontage to "the High"; new buildings for Lincoln, Corpus, and Hertford Colleges, and for the Ladies' College at Somerville Hall. Restoration of the old sacristy and of the exterior of the chapel at Merton College; enlargement of the choir of the chapel at Oriel, with a new organ gallery and organ case; an organ gallery and organ case at Wadham College chapel, and an organ case for the Sheldonian Theatre. The New High School for the City of Oxford, and the High School for Girls at Oxford, which was built for the Girls' Public Day School Company. He also designed Mr. Cruikshank's boarding-house at Harrow School, new schoolhouse and class-rooms for Uppingham School, new boarding-houses and other buildings for Brighton College, and new buildings for Cranbrook School, Radley College, and the Military College at Cowley. Several private residences in London and the country. The new Town Hall at Tipperary; new churches at Wimbledon, Anerley, Stratton, Worthington, Narberth, Homblyton, Curdrige, the memorial church of Bishop Patteson on Norfolk Island, refitting and decoration of the choir of St. John's Church, Hampstead, and the restoration and refitting of the chapel of Blenheim Palace. Extensive alterations and additions to Messrs. Powell's glass works at Whitefriars. Blocks of model dwellings for artisans and labourers at Hampstead, and a street of model cottages, with a coffee-house attached, at Sevenoaks. Mr. Jackson was one of the nine British architects distinguished at the Paris Exhibition of 1878. He was awarded a medal at the Sydney Exhibition, also a medal and diploma of the first order of merit at the Adelaide Exhibition of 1887. He was one of the six architects invited to compete for the Imperial Institute, 1887. He was not an exhibitor at Paris, 1889. Among his literary works are "Modern Gothic Architecture" (H. King and Co.), "Dalmatia, the Quarnero and Istria," in 3 vols. (Clarendon Press, Oxford, 1887), "Ragusa" (in Italian), Zara, 1886, and various pamphlets, lectures, and articles in periodicals on architectural sub-

jects. His portrait is printed from a photograph by Messrs. Russell and Sons, of Wimbledon.

Mr. Basil Champneys, B.A., whose photograph comes next on our sheet, was the architect of Mansfield College, Oxford, recently opened. He built the new buildings for New College, and the Indian Institute at Oxford. At Cambridge he was architect to the Archaeological Museum, the Divinity and Literary Schools; and for Newnham College his works comprise the Old Hall, Sidgwick Hall, and Clough Hall, Cambridge. At Harrow he erected the Butler Museum and classrooms; and at Bedford the Harper Girls' School and new Grammar School buildings. Among Mr. Champneys's new churches are St. Luke's, Kentish Town; St. Peter-le-Bailey, Oxford; St. Mary Star of the Sea, Hastings; Havering-atte-Bower, Essex; Matfield, Kent; Stonefold, Lancashire; and Glas-cote, near Tamworth. He has restored a good number of old churches, and built numerous new houses and vicarages about the country. Mr. Henry Holiday's house at Branch-hill, Hampstead, was an early example of his domestic buildings; and his own house, "Manor Farm," Hampstead, built in 1880, was illustrated also among our series of "Artists' Homes" on July 9th of that year. The Fawcett Memorial, erected by the women of England in the gardens of the Thames Embankment, was designed by Mr. Champneys, who has also made a design for a vast block of residences in flats at Kensington, called "Park Mansions." He is well known as a contributor on architectural subjects to the magazines and reviews, and in this way wrote strongly on the completion schemes for St. Paul's Cathedral. Last year he read a paper before the R.I.B.A. on the proper treatment and more frequent use of ornamental plasterwork for decorative building. The photograph of Mr. Champneys was specially taken by Mr. Thomas Fall, of 9 and 10, Baker-street, Portman-square, W.

Mr. William Henry Crossland, F.R.I.B.A., pupil of Sir George Gilbert Scott, R.A., was the architect of the Royal Holloway College at Egham, and the Holloway Sanatorium, both buildings of the first magnitude. He designed Rochdale town hall, the Post Office, Huddersfield; a clubhouse; the Church Institute and the Ramsden Estate buildings in the same town, besides some blocks of offices, warehouses, and shops there. His new churches are St. Stephen's, Copley, Halifax; Trinity Church, Ossett, Wakefield; St. Mark's, Sheffield; four churches at Huddersfield; another at Flockton; Christ Church, Staincliffe; St. Chad's, Headingley, Leeds; St. John and St. Mary chapels at Ripon. He restored the parish churches of Birstall, Masham, Elland, Almondbury, Womersley, and Kellington. He has built several schools and parsonage houses, and his mansions include Longley Hall for Sir John W. Ramsden and Rishworth Lodge for the late Mr. Henry Savile. He also designed Akroydon at Halifax. His portrait is the work of Messrs. Maull and Fox, of Piccadilly, W.

Mr. John Belcher, F.R.I.B.A., Member of the Institute Council, is the architect of the Institute of Chartered Accountants now erecting in Finsbury. In conjunction with his father, the earlier work of the firm comprises houses on the London Bridge approaches, King William-street, Eastcheap, Indian buildings (now the Cannon-street Terminus), and other premises built in Cannon-street; a church and almshouses at Northfleet; the Royal Insurance Buildings, &c., Lombard-street; the Commercial Union Fire Office, Cornhill; the Public Hall, Croydon; country seats at Epsom, Windsor, Gomshall, &c.; alterations to South Hill Mansion; Shirley House, Croydon; Encombe House, Dorsetshire; schools and house, Kingston; factories at Kentish Town and Ratcliffe; warehouses Botolph-lane and Thames-street; and some paper-mills at Dartford. More recent works include the Carriers' Hall, London-wall; Mansion House-buildings for Messrs. Mappin and Webb; some premises in Newgate-street; No. 1, Poultry; the Catholic Apostolic Church, Camberwell; and premises in Wood-street, Cheapside. Mr. Belcher, jun., has erected Morden Grange; Stowell Park; Holcombe Wood, Chatham, Kent; some houses on Chiswick Mall for Mr. Thornycroft; a house near Blackheath Hall; Norwood District Cottage Hospital; stables, North Leach, Gloucestershire; studios and stables, Weirleigh; and other country buildings. He made a design for some art galleries at Kensington, and a church

at Maida Vale, both shown at the Royal Academy. He restored South Marston Church, Wilts. His design for the tower and spire to the late Raphael Brandon's great Irvingite Church in Gordon-square, exhibited years ago, has not yet been carried out. Last year Mr. Belcher read a paper on "the Development of the Organ for Churches" before the R.I.B.A. His portrait is photographed from a bust exhibited at the Grosvenor Gallery a year or two since, by Mr. Hamo Thornycroft, R.A., and never before published. Mr. Belcher, in sending it, says:—"It may possibly prove of more interest than the subject, being the work of so eminent a sculptor. The portrait is said to be very good indeed."

Mr. John Gordon, I.A., the President of the Glasgow Institute of Architects, has been in practice as an architect for about 28 years, during which time he has built a considerable portion of the warehouse and business properties of Glasgow and neighbourhood, inclusive of mills, stores, factories, &c. He has also a fairly extensive practice in mansions, villas, and other country houses. Among his works are Clevedon, Ravelston, Westmount, and Gordon Lodge, Kelvin-side; Oakleigh and Creggandaroch, Blairmore; Woodlands, Haselbank, and Milverton, Pollok-shields; Crookston and Calton Public Schools, Baltic Works, Grove-park Mills, and Kingston Stores, Glasgow; Regent Mills, Partick; Lace factory, Newmilns; and additions to the Wool Exchange, London. The portrait is by Messrs. Adamson Bros., Glasgow.

## BEHAVIOUR OF IRON COLUMNS SUBJECT TO FIRE.

THE many experiences during fires in large city warehouses have proved that iron columns and girders subjected to fire or heat, and afterwards cooled, have given way and rendered the preservation of the structure hopeless. Generally it has been assumed that cast iron is the most untrustworthy metal in this respect; but experiments have proved that cast-iron columns withstand the action of fire and water better than wrought-iron columns. Both were loaded and heated, and then suddenly cooled by jets of water, and it was found that the cast-iron columns continued to support the load even when red hot and cracked, whereas wrought-iron columns collapsed when similarly treated. These experiments were conducted in Munich. There were some grounds for thinking that cast iron was more liable to crack and fly to pieces than wrought iron; but if these results are as reported, there is more danger in the employment of wrought iron. In Berlin, the building regulations in force insist that cast-iron columns, not protected from the action of fire, may not be placed under the main walls of buildings, but instead of them wrought iron may be used, a rule showing how firmly the above assumption is held.

The reredos of Lillington Church, near Leamington, has now been completed by the addition of side wings of Caen stone, with marble columns and mosaic panels, designed to harmonise with the central portion, or reredos proper. A description of this—which consists of a large panel of Caen stone, embellished with a representation of "The Last Supper," carved in high relief, and enriched with columns of Devonshire and Derbyshire marbles—has already appeared in this paper. The effect of the whole structure is extremely rich. These additions were intrusted for execution to Messrs. Jones and Willis, of Birmingham and London.

Major Marindin, on behalf of the Board of Trade, made the official inspection of the new Stockbridge Cable tramway at Edinburgh on Friday. Mr. W. N. Colam, the engineer of the Edinburgh Northern Cable Tramway Company, was in attendance, and the Corporation of Edinburgh, as the Local Authority, was represented by Bailie Steel, the Borough Engineer, Mr. Cooper, and the City Road Surveyor, Mr. Proudfoot, being also present. The portion of the line inspected was that extending from the depot in Henderson-row to Stockbridge, the remainder of the route having been officially examined and passed a considerable time ago.

The annual meeting and distribution of prizes in connection with the Devizes School of Science and Art took place on Friday evening. The report of the committee referred to the continued success of the school under the management of Mr. William C. Coles, the head master. The total number of students was 97, a decrease of five on the previous year. An address on art was afterwards given by Professor J. E. Hodgson, R.A.



## Building Intelligence.

**BROMLEY, KENT.**—On Tuesday last the new baths, grand hall, and theatre were partly opened. The entire scheme is unique, the building being cut into a hill in the rear of the High-street, and 35ft. below the level of the High-street, so that although the baths are under the theatre, the floor of the theatre is about level with the pavement in the High-street. The building is executed entirely of concrete, even to the floor of the theatre. The total site of the building is 110ft. by 55ft. wide; the size of the bath is 80ft. by 35ft., and is lined with white-glazed bricks. The floor over the bath is of compound-iron girders, 250lb. to the foot, resting on 9in. C.I. columns; the whole of the ceiling over bath is rendered in Robinson's cement upon wirework, thereby rendering it absolutely fire-proof. There is box accommodation for forty bathers; while the lavatory accommodation here, as in other parts of the building, has been thoroughly considered. The method of emptying the bath into the sewer is by a receiver 30ft. deep below the bath, from whence it is pumped into the sewer. The machinery is being fitted for heating the bath to 70 or 75deg., pumping all the water supply from a well, which has been sunk upon the site to a depth of 300ft., emptying the receiver into the sewer, in addition to heating the hall, and is a thoroughly-developed plan by Messrs. Russell, of Oxford-street, W. The spacious hall and theatre, 80ft. by 35ft., is built lofty, and has a domed ceiling, the lighting being on the most improved system, with two immense sun burners, well ventilated. The main entrance from the High-street is by a wide corridor and crush-room, 35ft. by 22ft., with efficient doorways to hall, with additional exit doors on each side, for which a verandah of iron has been erected at one side leading to the road and fields in rear of premises, all the doors being fitted with panic fittings. A large and lofty stage, with excellent arrangement for working the scenery, the stage front having a fire-resisting curtain, while a large orchestra is provided at the other end to meet the requirements for orchestral entertainments, serving as a gallery during the theatrical performances. Mr. W. A. Williams, A.R.I.B.A., is the architect, the works having been well executed by Messrs. Thos. Gregory and Co., of Clapham Junction, S.W.

**COVENTRY.**—A meeting of the general committee for the restoration of the spire and church of St. Michael's, Coventry, was held on Friday. Lord Leigh presided. Mr. J. Oldrid Scott, the architect for the restoration, stated that the stone groining in the tower was completed, and would be a very beautiful feature in the tower. The whole of the restoration proper was finished, but the carved figures had to be placed in their niches. Mr. Seymour (hon. secretary) gave a financial statement, showing a sum wanted of £5,839. Mr. Scott said there was no true provision for ringing in the tower, but it was possible to re-hang the bells at a height of 110ft. and chime them. Mr. Caldicott moved that the bells be rehung in the tower and chimed. Mr. Mander seconded. Mr. G. Woodcock argued that the people of Coventry and the county would not be satisfied with chiming merely; they would want them rung. This would necessitate a new bell-tower, which would cost £10,000 in round figures. He proposed that the bells be not rehung until the feeling of the whole of the inhabitants was ascertained by testing their willingness to subscribe £5,000 towards a new bell-tower. Lord Leigh strongly deprecated the erection of a new and separate bell-tower, and said many subscribers shared that view. After a protracted discussion, it was decided that the matter be allowed to rest till after the next election of churchwardens, who, with the vicar, were the legal custodians of the bells.

**LONDON COUNTY COUNCIL.**—At the meeting of this body on Tuesday the chairman intimated that he had received a letter from Mr. Clement Dunscombe, late of Liverpool, who was only recently appointed the chief engineer to the Council, in succession to the late Mr. Joseph Gordon, resigning his post in consequence of ill-health. After some discussion, it was agreed to refer the matter to the standing committee, in consultation with the chairmen of the main drainage, highways, improvements, and bridges committees, to recommend to the Council a suc-

cessor to Mr. Dunscombe. The post has attached to it a salary of £1,500 a year. We understand that the joint committee will recommend to the Council the appointment of Mr. A. R. Binnie, water engineer to the Bradford corporation. The main drainage committee reported that, in accordance with a resolution instructing them to secure the "services of an eminent civil engineer to join the engineer of the Council in a thorough examination of the whole sewerage system; that the engineers be desired to include in their report an approximate estimate of the cost of taking the whole of the sewage to sea," they had obtained from Mr. Benjamin Baker his consent to act with the engineer of the Council, his fee to be a retaining fee of 50 guineas, and 15 guineas per day occupied, the whole not to exceed 500 guineas. The arrangement was formally approved. The election took place of an assistant engineer in the place of Mr. Lovick, at a salary of £600 a year. Sixty-seven applications had been received, subsequently reduced by a committee to forty-four, and ultimately to three, Mr. W. Santo Crimp, of Wimbledon, Mr. A. B. Allan, burgh surveyor of Govan, N.B., and Mr. H. A. Roeckling. A division being taken, Mr. Crimp received 47 and Mr. Allan 46 votes, the former engineer being elected by a bare majority.

**NEWPORT, MON.**—The foundation-stone of new model lodgings was laid on Wednesday week by the Mayor on a triangular site abutting on New Dock-street and Corn-street. The edifice—a plain one—will rise to three stories, and will be Italian in style. Ornamentation will be secured by projecting windows of buff brick, a curb roof, with dormer windows breaking the sky-line, and ventilating on the roof. The fronts will be in Risca blue Pennant rock work, relieved with Ebbw Vale brick and Bath stone. In the basement there are to be two large cellars. The ground floor will consist of a dining-kitchen, 40ft. by 20ft., with a scullery 20ft. by 12ft., together with entrance-halls from Dock-street and Corn-street; a main hall, open fireproof stairs continuing to the top of the building, ticket-office, and rooms for the manager. At the back will be a large yard for light and ventilation. On the same floor there will be a shop, with plate-glass front, to Dock-street, 30ft. by 18ft. On the three upper floors will be dormitories, divided off for men and women. On the first floor the bedrooms will be 11ft. high from floor to ceiling, but on the others 10ft. The premises may be registered for 200 inmates. The contract for building has been let to Mr. John Linton at £2,460, but, with furnishing and fittings, the total cost will be brought up to over £3,000. The work is being carried out from designs of Mr. E. A. Lansdowne, architect, Newport.

**PETERBOROUGH.**—The restoration of the choir, lantern tower, and transepts of Peterborough Cathedral having been completed by Mr. John Thompson, builder, of Peterborough, from the plans of Mr. J. L. Pearson, R.A., the Dean and Chapter are now in want of funds to furnish the choir. Several stalls have been promised and a fund has been opened to present two stalls on behalf of the Freemasons of England as a memorial of the Masonic ceremony which took place on the occasion of the laying of the foundation-stone of the central tower by Lord Carnarvon in May, 1884. The Restoration Committee have decided to issue another appeal for funds to proceed with the work.

**PRESTEIGN.**—The restoration of the fine old parish church of Presteign, Radnor, commenced last spring, is making good progress. Mr. J. L. Pearson, R.A., is the architect, and Mr. T. Collins, of Tewkesbury, is carrying out the contract (taken at £2,896) for the first section of the work, including the restoration of roof, fabric, and floors of aisle and nave, and his tender has just been accepted, at £424 10s. for repairs to the tower and the construction of a chamber for warming apparatus. The Saxon windows and arches which have been discovered in the north wall of the church during the restoration are being scrupulously preserved by Mr. Pearson. Remains of the south wall of the old Saxon church have also been found in removing soil from the nave of the present church. Also the removal of the plaster has revealed some frescoes over the north arcade of the nave. It is hoped that these will be found to be sufficiently perfect to be restored. Apparently the figures represent "Life

and Death." The entire cost of restoration, including carved oak stalls, seats, &c., Mr. Pearson estimates at nearly £8,000.

**TAUNTON.**—On the site of the old vicarage of St. James's the Taunton Electric Lighting Company have erected premises as a central station. Through the enterprise of Mr. H. G. Massingham the electric light was introduced into Taunton as an experiment nearly four years ago, the Parade and a few of the principal business establishments being lighted by the Thomson-Houston system. The town council eventually accepted a tender for the lighting of the chief streets of the town. A large stack 120ft. high, 10ft. 6in. at the base, and 5ft. 6in. at the top, denotes the locality of the works. The boiler-house, which is 100ft. by 40ft., is fitted with two of Babcock and Wilcox's water-tube boilers, each of 150H.P. The engine and dynamo-room is 100ft. by 50ft. The wires outside will not only be insulated on fluid insulators, but will have a quarter of an inch covering of pure indiarubber, and the wires are to be placed at a height of 30ft. Mr. H. J. Spiller has carried out the building contract, the architect being Mr. F. W. Roberts.

**TORQUAY.**—The second section of the new Church of All Saints, Torre, was opened on Friday last. The church has been built from designs by Mr. J. L. Pearson, R.A., at a total cost of £11,000, and the first, the eastern portion, was opened in 1886. All Saints is cruciform on plan, having a nave 88ft. long by 24ft. wide, with north and south aisles each 12ft. wide, transepts measuring 65ft. from north to south, and secondary transepts of similar dimensions at the west end of the nave. The chancel forms an apse 36ft. deep, with polygonal termination of the same width as the nave. The architecture is the fully developed Decorated style of the middle of the 14th century. Local red sandstone has been used in the building, which is faced externally with local limestone, the dressings both inside and out being of Bath stone. The chancel is lighted by a corona of seven windows of two lights each. A specially constructed organ has been built by Messrs. Vowles, of Bristol, on the north side of the chancel, and a special case in harmony with the interior of the church has been designed by the architect. The general contract has been carried out by Mr. F. Matthews, of Babbacombe, Mr. E. T. Price being the clerk of works. Some of the carving, including the bishop's chair with the arms of the diocese, is by Mr. Harry Hems, of Exeter.

**THE HOUSE OF COMMONS.**—During the recess a number of alterations have been made in the House of Commons, with a view to providing Ministers and members generally with additional accommodation. Some officials have been removed to the buildings adjoining Westminster Hall, and their rooms—five in number—will be placed at the disposal of members. A new smoking-room and an additional reading-room have been provided on the terrace; and in Palace-yard an ornamental shelter has been provided for the horses of members, in lieu of the shed which formerly flanked the entrance to Westminster Hall. A new ladies' dining-room has also been provided. The grand committee-room, erected on the site of the old Law Courts, is now practically ready for use. The space in front of this structure is to be laid out. In the mean time a low wall is to replace the existing 10ft. wooden hoarding.

**WESTMINSTER: THE CHURCH HOUSE.**—At a meeting of incorporated members and supporters of the Church House, London, held at Norwich on Saturday, the permanent secretary (Mr. Percy Crosse) explained the plans in detail. The Church House buildings, he said, would occupy an acre of ground, which had been purchased for £28,000, besides which £2,000 had to be paid for adapting two houses to the purpose for which they were required. Other houses were paying them rent to the amount of £960 a year, and other leases would fall in shortly. Sir A. W. Blomfield had been selected by the council as architect, and the plans were submitted to the council last Thursday. The elevation had not been drawn yet, and it was thought desirable not to publish the plans till this was forthcoming. The entrance to the Church House would be from Dean's-yard, and a little to the right would be the entrance arch, which would lead into a small square. In the centre would be a quadrangle; on the right would be the entrance-hall, with a large staircase leading to the first floor, where



the principal rooms would be placed. On the ground floor would be the secretaries' offices, refreshment-room, and committee rooms. On the first floor would be provided rooms for the Houses of Convocation, divided by partitions, which might be thrown into one; there would also be a room for the House of Laymen. Arrangements had been made for the erection of a small chapel on pillars if it were found necessary, but this would not interfere with the corridor or cloisters on the ground floor. The approaches to the large rooms would be by four different entrances, so that ingress and egress would be easy, and the great hall when thrown open would accommodate 2,000 persons. A library would also be provided beneath the large hall, but at present the houses in which 8,000 valuable books had already been placed would be utilised for the purpose. The third floor would be approached by a lift, and would be devoted to offices for Church societies. Altogether £70,000 had been received, and this had been expended with the exception of about £16,000. The annual income, however, reached an average of £3,000 or £4,000.

### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**MANCHESTER ARCHITECTURAL ASSOCIATION.**—The last meeting of this association was held at the Diocesan Buildings on Tuesday. Mr. J. H. Woodhouse, President, in the chair. Mr. J. A. Gotch, F.R.I.B.A., of Kettering, read a paper on "The Homes of Queen Elizabeth's Courtiers." After giving a general sketch of the domestic arrangements of the homes of the nobles prior to this period, he pointed out that it was about this epoch that house planning took a new departure; here, as formerly, safety from invasion was the chief object to be attained even at the sacrifice of convenience. Internal comfort began to be studied, light was admitted by large window openings in place of narrow slits. In speaking of Hardwick Hall, with its large and numerous windows, Lord Bacon remarked, "there was too much light, it was impossible to get out of the sun always streaming through the windows." The paper was illustrated by views shown by an oxy-hydrogen lantern. A vote of thanks was proposed by Mr. Booth, seconded by Mr. Davies Colley, and supported by Messrs. Mould, Mee, Hodgson, and Chadwick.

**DUNDEE INSTITUTE OF ARCHITECTURE.**—Under the auspices of this institute on Friday a lecture on "The Historical Aspect of English Architecture During the Middle Ages" was delivered at the Y.M.C.A. hall by Mr. Mark Hunter, B.A., Oxon. Mr. T. Robertson presided. Mr. Hunter said the study of architecture occupied a place in general history altogether out of proportion to its real importance. One of the chief differences between the mediæval and modern man was that the first invariably found in his simple surroundings conscious strivings after beauty, whilst the latter carelessly contemplated a host of makeshifts. The architect more than any other artist was bound by the law of supply and demand. He had to give the public what the public demanded, and the public was scarcely competent to demand the best. The conditions of modern life were hostile to the development of a noble school of architecture. The necessity of such a society as the Society for the Protection of Ancient Buildings should make them blush for their boasted enlightenment. It would be advisable if the architectural and artistic aspect of history found a place in their schools alongside that record of futile and obsolete legislation which was generally served up to the young under the name of history.

A new Post-office was opened on Monday in Saville-street, opposite the new Market, North Shields. The premises meet a want long felt in the borough of Tynemouth. On the ground floor are the public office, sorting office, postmen's kitchen, store-rooms lavatories, and battery-rooms. On the first floor are the instrument-room, telephone-room and lavatory. On the second floor are the caretaker's apartments and lady clerks' retiring-rooms. Behind the premises is accommodation for vehicles. The contractors for the building have been Messrs. Tyrie and Graham, Gateshead, the fittings being supplied by Mr. Joseph Elliott, contractor, North Shields. The architect is Mr. Henry Tanner, of H.M. Office of Works, London, and the clerk of works is Mr. Searchfield, of the same department.

## Engineering Notes.

**PRESTON.**—At the last monthly meeting of the town council, a formal resolution for the promotion of the new Ribble Bill was carried without opposition. An agreement between the corporation and the executors of the late Mr. T. A. Walker, contractors for the Ribble Works, for resuming and completing the river and dock works at an addition for interruption of 20 per cent. (£19,000) on the work still to be completed was adopted. In explaining the reasons for making this agreement, Ald. Forsham said he went to London to offer 5 per cent., but owing to the advance of material he increased the offer to 10. He was told Sir Edward Watkin had advised the executors not to accept less than 30 per cent., and he found they would either have 20 per cent. or go to two arbitrations. Mr. A. F. Fowler, of York, was unanimously appointed resident engineer for the Ribble Works, in accordance with the interim report of the Ribble Navigation Commission.

**SOUTHAMPTON.**—The Harbour Board have determined to construct a new pier, which is estimated to cost about £20,000. The present pier has become totally inadequate for the traffic, especially upon concert nights in the summer season. The plans include a new railway station, with covered platforms and a new orchestra. The actual area to be covered by the new structure is 2½ acres. There will be 7½ miles of girders used, about three miles of iron piles, 1½ mile of wooden fender piles, 12½ miles of bracings to the piles, and the wood joists placed end to end will be equal to a distance of 21 miles. There will be 90,000 drillings for the bolts and rivets in the wrought ironwork alone, and about 17,000 rivets, 37,000 bolts, nuts, and washers, and 3,000 screw bolts. For a length of 250ft. southward from the quay wall and east of the present entrance, a concrete wall will be constructed joining with the railway embankment, the back of which will be filled in, so as to make the pier for that distance a solid structure. The widening of the pier will allow of a promenade 20ft. in width. On the east side of the new entrance will be a main carriage entrance, and to the eastward an inclosure will be set apart for the penning of cattle. Six landing stages will be provided for steamers on the new pier. Four alcoves will be constructed at intervals along the pier, with cast-iron standards and back, glazed with clear plate-glass, and about 8ft. in height. The west side of the widening will be fenced in by cast-iron railings, with a handrail. An entirely new railway station will be erected, with covered platforms and long open platforms for the convenience of passengers. Around the band stand will be fixed some sheltered seats in polygonal form of twelve equal sides. The house proposed to be rented by the Royal Southampton Yacht Club will be erected on the top of the pontoon bridge, and will consist of club room, lavatories, and covered verandahs. The plans have been prepared by Mr. Poole, surveyor to the Harbour Board, and the quantities, which have been issued to contractors this week, were prepared by Messrs. J. H. Blizard, of Southampton, and H. J. Weston, surveyor to the Freemantle local board.

The memorial statue of Mr. Bright, which is to be erected in the Town Hall-square, Rochdale, and which is to be the work of Mr. Hamo Thornycroft, R.A., will be of bronze, 9ft. in height, placed on a moulded grey granite pedestal, 11ft. high. The sketch model for the statue has been accepted by the committee, and it represents the right hon. gentleman speaking before an audience, with the right arm raised, while the left is lower, and holds the notes for the speech; and the orator is wearing a frock coat, which is blown back as if facing the breeze.

A new model lodging-house in Grassmarket, Edinburgh, was formally opened on Wednesday week. It is of four floors, the ground story being occupied by a dining-hall 55ft. by 47ft. and 20ft. in height, and also by reading-rooms and kitchen. The three floors above are dormitories partitioned off into 384 cubicles. Mr. Jardine, of Edinburgh, was the architect.

On Saturday the students of engineering in the University of Edinburgh, accompanied by Professor Armstrong and Dr. A. C. Elliot, visited the Leith Docks. The party was conducted by Mr. Peter White, M.Inst.C.E., engineer to the Leith Docks Commissioners.

### SCHOOLS OF ART.

**ROYAL FEMALE SCHOOL OF ART.**—The annual distribution of prizes to the students of this school took place at Goldsmiths' Hall on Wednesday week. The hon. secretary to the school, Mr. Francis Bennock, read the thirtieth annual report of the committee, stating that during the past year 159 students received art instruction. Works to the number of 687 were sent in for examination and competition to South Kensington. In the competitions the students of this school in many instances achieved success. Only five sets of hands drawn from the life were selected from among all the works sent in for exhibition at the national competition, South Kensington, and of these four were from the Female School of Art. Two of these drawings were purchased by the Department. Excellent reports have been received of the success in various parts of the world of former pupils. The chromo-lithographic studio, at which pupils are taught and afterwards employed, has continued to show progress. New buildings have recently been added to the school; but there still remain debts to be liquidated. The committee therefore appeal for contributions to complete the sum of £2,000 which is required. The Queen's scholarship has been awarded to Edith M. Flack, and the Queen's gold medal to Edith Harwood for a drawing from the antique of the Venus of Milo. Mr. Roscoe Mullins delivered a short address to the students.

**SALISBURY.**—The annual distribution of prizes to the successful students of the Salisbury School of Science and Art took place on Thursday evening, the 30th January, at the Art Gallery. The Mayor, Mr. Geo. Nodder, occupied the chair. The annual report stated that the number of students had been 120, an increase of six on the previous year, and the grant showed an increase of £7 in science and £12 in art. A large amount of interest was awakened by the fact that the meeting was being held in the new Art Gallery, which has been built at the cost of Dr. Roberts on the site of the old theatre, from plans by Mr. M. Harding, carried out by Mr. Hale.

### CHIPS.

As the Surrey County Council will be unable, after two years, to use the Sessions House at Newington-causeway, it was resolved, at a special meeting of that body on Tuesday, to take steps for providing accommodation for the transaction of the future business of that body, including a Council Chamber, Committee Rooms, County Offices, Record Rooms, and a Quarter Sessions Court, and a committee was appointed to select a site for the new buildings within the county's administrative area.

Two donors have contributed a thousand pounds each towards the proposed fund of £15,000 now being raised by the Bishop of Peterborough for erecting churches at Leicester. Three churches are to be commenced immediately, and sites for two of them have been given.

The North-Eastern Railway Company are seeking Parliamentary powers this session for extensive works of reconstruction in Newcastle. The alterations include the extension of the Central Station, by which, with the works now in progress the area of the station will be increased by one half. A new loop line to be constructed entirely on lofty arches, will be carried from the foot of the High Level bridge to the east of the Central Station, passing between the Old Castle and the Moot-hall, while the existing lines through the city both east and west are to be doubled in width.

The Croydon town council have unanimously confirmed a resolution passed at a previous meeting, to promote a Bill in the present session of Parliament to acquire property to widen High-street and abolish Middle-row, at an essential cost of £146,000. Negotiations have taken place between the Council and the Brighton Railway Company, which have resulted in an agreement for the purchase by the Corporation of the Central Railway Station site for £12,000, for the purposes of a new town hall.

A portion of the Cloth Hall site in Leeds, containing 5,525 square yards, has just been purchased of the corporation of that borough by H.M. Office of Works for £44,200, for the purpose of erecting thereon a new and larger and more convenient Post-office than the existing one in Park-row.

At a vestry meeting held at the parish church, Weston-super-Mare, on Friday, plans for the addition of a south aisle, prepared by Messrs. Hans Price and Wooller, of that town, were approved. The aisle will complete the church, and will accommodate 200 persons at an estimated cost of £1,350.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and SIXPENCE for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI, XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—W. and R. C. L.—S. S. B.—B. and C. L. B. J. C. G.—E. K.—B. and Co.—C. N. and Co.—J. C. E.—J. B.

## "BUILDING NEWS" DESIGNING CLUB.

FAIRPLAY. (We fully considered your point before making the award.)—P. BROCKBANK. (No w.c. or lavatory are to be provided, or such would have been stated. Follow the instructions.)—COSMOS. (If you will send your drawings unstamped we cannot take them in.)

## Correspondence.

## THE MOSQUE OF TOULOUN.

To the Editor of the BUILDING NEWS.

SIR,—In my first Royal Academy lecture, published in your issue of the 31st ult., I said, "The Koptic architect who built the brick mosque for Touloun in the 9th century . . . possibly was the introducer of the small arches that take the place of pendentives in the dome." My friend, Mr. R. Phené Spiers, has pointed out that these arches are not coeval with the original mosque.

Mr. Stanley Lane-Poole, in his "Art of the Saracens in Egypt," says of the brick dome, at p. 54, "It was built, however, a century later than the mosque itself"; and at p. 64, "There is such a cupola over the niche in Ibn-Tulun, though this is probably of the date of the restoration by Lagin in 1296, to judge by the wooden stalactites which are found in no other part of this mosque."—I am, &c.,

G. AITCHISON.

150, Harley-street, W., Feb. 4.

## BRUGES.

SIR,—I noticed, during a visit to this place last week, that a large number of the ordinary old house-fronts were being restored, and was informed that an impetus had been given to this work by the offer of the municipality to pay one-third of the cost of the façades, provided the work be properly done. My authority for this

statement is M. l'Abbé Isaak, of the Augustinian Convent.

Some restoration is proceeding behind a hoard in the upper part of the tower of Notre Dame, and I understand further restorations are unfortunately contemplated to the beautiful group of buildings at the east end of it, lately used for the Mont de Piété.

A very large block of buildings has been erected in the neighbourhood of the Basin for a normal school, and this, with the railway-station and the State buildings of the Grand Place, are all designed in the local 15th-century style. Altogether there has been considerable briskness in building operations in the old Flemish city during the last twelve months.—I am, &c.,

J. TAVENOR PERRY.

## BARTON TURF AND FRITTON SCREENS, NORFOLK.

SIR,—The admirable reproductions which you gave lately from the folio printed by the Norfolk and Norwich Archaeological Society of the Randworth screen were most beautiful and interesting. I had often endeavoured to obtain a copy without success. Could you not give some of the plates issued by the same enterprising society years ago of Barton Turf and Fritton screens? Although not so rich as the Randworth example, they are both well worthy of illustration in your pages.—I am, &c. A DECORATIVE PAINTER.

[We should be happy to carry out this suggestion if some one would lend us a copy of the two folios of plates referred to by our correspondent, and we have already obtained the permission of the Norwich and Norfolk Archaeological Society to republish them.—ED.]

## CHIPS.

The West Cornwall Hospital for Women, which has recently been erected on a site adjoining the Miners' Hospital at the West End, Redruth, was formally opened on Wednesday week by Mrs. Basset, of Tehidy. The outlay on building and furnishing has been £1,500.

According to *Truth*, the Americans' love of gigantic tombstones and monuments is highly profitable to the Aberdeen granite merchants, who send £60,000 worth of stone every year to the United States, nearly the whole of which finds its way to the cemeteries in which wealthy Americans are buried.

The Crown are at present engaged in planting Greeba Mountain in the Isle of Man, and Messrs. Wm. Fell and Co., nurserymen, of Hexham, have received an order from her Majesty's Commissioners of Woods and Forests to plant 110,000 transplanted Scotch firs, as well as a large quantity of other hard woods to plant along with them.

On Saturday a new water supply for the village of Stanley, seven miles north of Perth, was turned on by the Duke of Athole, K.T., Lord Lieutenant of the county. A drainage district was formed some time ago, and it was resolved to tap the springs of the Shochie, a stream which takes its rise at Shenval, near Glenshee, on the Duke of Athole's estate. Plans were prepared by Mr. James Ritchie, C.E., Perth, and the work has been carried out at a cost of nearly £3,000.

The village of Pinxton, Derbyshire, is about to be seweraged at a cost of £2,550. Mr. H. Walker, of Nottingham, is the engineer, and Mr. J. F. Price the contractor.

A new club has been erected at Swindon, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator, and fresh air admitted by improved air inlets.

A reredos erected in the Scandinavian church at Grimsby has just been unveiled. It is in the Early English style, and in the centre a large space is occupied by a fine old oil painting by F. Boye, executed in 1815: subject, the "Crowning of Christ with Thorns." Above is a stained-glass window with a representation of the "Resurrection of Christ."

The work of rebuilding the Taliskers Distillery in the Isle of Skye is being pushed on rapidly from the designs and under the direction of Mr. Charles C. Doig, architect, of Elgin. A recent fire destroyed so much of the old buildings as to render the erection of new necessary. The latest improvements and appliances are being introduced.

Plans are being prepared for additions to the mansion, Thirkleby Park, Thirsk, by Messrs. Wm. Lewis and Son, architects and surveyors, Stonegate, York, for Lady Payne Frankland.

## Intercommunication.

## QUESTIONS.

[10220].—**French Chateaux.**—Could any of your numerous readers give me a list of about a dozen of the most typical French Chateaux, with, if possible, date of erection and name of architect?—M.

[10221].—**Staining Marble.**—I have a handsome white marble (grey veined) mantelpiece which I want to stain a full yellow tone, as the effect is too cold. Will anyone kindly tell me how to make the stain, or what to use? I have asked a marble-mason, and he can't tell me; yet nothing is more common than to see yellow stains on marble which the owners are unable to get rid of.—SIGMA.

[10222].—**Billiard-Room Floor.**—Would some kind and capable reader oblige by letting me know if 12in. by 3in. red Swedish or pitch-pine joists, fixed 12in. apart, are strong enough for a billiard-room floor of 25ft. 6in. clear span; one room is to be 43ft. long on the first floor, and to carry three tables. Under each set of table legs we propose fixing two joists bolted together, and to further stiffen floor by putting in three courses of bridging, in the centre course with 3in. or 3in. iron bolt running the 43ft., with 12 by 1½ bridging, and in the two spaces between centre bridging and walls to fix cross-bridging, with two courses of hoop-iron to each, going over top of one joist to under of next, and so continued throughout, so forming diagonal ties from joist to joist, and tightening the two courses of cross-bridging. Would floor thus formed be sufficiently strong for the usual load on room of this size and class? Prompt answer would indeed oblige.—K.

[10223].—**Trade Union Rate of Wages.**—Will some reader kindly tell me the union rates of wages in the building trade in London, or where I can obtain this information.—M.

## REPLIES.

[10215].—**Wood-Block Floor.**—It is now not far from 40 years ago that I first invented the flat wood-block paving. I may, therefore, be entitled to reply to "Saw-set." It was, however, some years later, after unpleasant experiences, that I discovered the necessity of laying them absolutely free from moisture in any form; and again, subsequently I learnt the need of greater care than is commonly used to have any concrete or cement beneath not only thoroughly set, but properly dried out before laying them. The wood is certain to absorb the moisture as it dries out, and if any earthy or vegetable matter be present, it will induce decay. The blocks swell with moisture, and on drying again, wide cracks are formed, which loosen them, and let in more wet. Moreover, if the concrete be wet beneath, it will inevitably throw up through the joints any tarry substance in which the blocks may be set, and make them dirty and black. I have found "Boreham's coarse black varnish" a good material for laying them; and, when laid, a dressing of Carbolinum Avenarius, put on hot. This, however, sometimes takes nearly a week to set properly. In setting it is greasy, not tacky; and till properly set it persistently resists varnish, or other finishing coat.—WILLIAM WHITE, F.S.A.

[10215].—**Wood-Block Floor.**—The wood blocks ought to have been laid in a composition specially prepared; the wood blocks that are rotten were no doubt cut from unseasoned wood. The composition is a bituminous mixture; but common pitch and tar would have prevented the rottenness. Take up decayed blocks, and relay on Lowe's system.—G. H. G.

[10215].—**Wood-Block Floor.**—I have several mes pointed out in your correspondence columns that it is a great mistake to bed well-seasoned blocks in cement mortar, for they are certain to come loose, and sooner or later have "dry-rot" in them. The heat from the hot-water pipes sets up more quickly the action of "dry rot," and these blocks will be the worst sufferers. To remedy the defects, and to make sure "dry rot" will not return, the whole of the present blocks will have to be removed and the top floating of cement hacked off, so that a fresh floating of cement-mortar may be put down. When this has become hard, fresh blocks should be laid. Several systems of laying are before the public; but if your correspondent will communicate with me, I will assist him out of his difficulty.—ROGER L. LOWE, Wood-Block Works, Farnworth, near Bolton.

[10217].—**Architect, Client, Builder.**—1. If the architect gives a certificate, the client cannot refuse to honour it. 2. A client, on the receipt of a final certificate, cannot reduce the amount. If it is reduced with the sanction of the architect, the builder has a fair ground to bring an action for collusion if he can prove the facts.—G. H. G.

[10218].—**R.I.B.A. Exam.**—The stipulation for probationary works to be of a definite size is of quite recent introduction, and is somewhat absurd in the face of the announcement that drawings need not be specially prepared for the purpose. If drawings of any size are submitted, with a letter giving a reasonable explanation of the reason for this rule not being complied with, they will be accepted; or, at least, they have been at recent Exams.—G. A. T. MIDDLETON.

[10218].—**R.I.B.A. Exam.**—Judging from what candidates assert as to procedure at recent examinations, I do not think the examiners will reject drawings a few inches smaller than the size required if they are carefully prepared.—G. H. G.

[10219].—**Damp.**—I suspect the dampness of the wall referred to arises from the sand having been impregnated with salt—perhaps sea-sand. The only cure is to strip off the plastering and to use cement; or it would be more satisfactory to battan the wall inside.—G. H. G.

[10219].—**Damp Walls.**—Has "Philo" tried Carbolinum? I have found it very efficacious in expelling damp. But if there be much moisture in the walls, it may take a month or two to effect this. And, till then, it will not itself dry.—WILLIAM WHITE, F.S.A.



## LEGAL INTELLIGENCE.

**IN RE THE EAST AND WEST INDIA DOCK COMPANY.**—In the Chancery Division, on the 29th ult., Mr. Justice Chitty delivered judgment in the petition presented by the East and West India Dock Company, under the Railway Companies Act, 1867, seeking for the confirmation of a proposed scheme of arrangement. The petition was opposed by Messrs. Lucas and Aird, judgment creditors for some £60,000, and Messrs. Kirk and Randall, claiming £650,000. His Lordship said that he was satisfied that the scheme had been duly assented to according to the provisions of the Act by the debenture holders and ordinary shareholders, the former representing more than £3,000,000, and the latter £2,385,500. The scheme had been prepared in good faith by the company, and was not unfair to the outside creditors. The position of the outside creditors was certainly very unfortunate, and their prospects of payment apart from the scheme were not hopeful. He was satisfied that no sufficient objection to the scheme had been established, and he accordingly confirmed it.

**ERECTION OF BUILDINGS CONTRARY TO BY-LAWS.**—(Hopkins and Allen v. the Smethwick Local Board.)—In the Queen's Bench Division on Friday—before Mr. Justice Denman and Mr. Justice Wills, sitting as a Divisional Court—the case of Hopkins and Another v. the Smethwick Local Board came before the Court on appeal from a decision of Baron Pollock, who tried the case with a special jury at the last Staffordshire Assizes. The plaintiff Hopkins is a builder, the other plaintiff—Mr. Allen—is the leaseholder of a plot of ground at Smethwick upon which Hopkins proposed to erect a number of dwelling-houses and shops. The plans were sent in to the Local Board surveyor in due course, but were objected to, on the ground chiefly of the insufficient sanitary arrangements, there being only four privies to eleven houses, the drainage being defective, &c. The plaintiffs, without waiting for the plans to be approved, proceeded to erect the houses. After some progress had been made with them, the defendants' surveyor gave them notice to pull them down. This they neglected to do, and the surveyor sent a body of men, who pulled down the hoarding which inclosed the buildings, and also demolished five houses and one shop. The plaintiffs then sued the defendants for trespass. Baron Pollock held that the defendants had complied with the provisions of the Public Health Act, and directed the jury to find for the defendants, which they did, and his lordship gave judgment accordingly. The plaintiffs now appealed, and asked that judgment be entered for them on the ground that Baron Pollock had misdirected the jury. The following cases were cited for the plaintiffs:—"Cooper v. Wandsworth Local Board" (14 C. B. N. S. 180); "Masters v. Pontypool" (9 Ch. Div. 677, 47 L. J. Ch. 799); "Robinson v. Barton Eccles Local Board" (8 App. Cases, 798). For the defendants "Baker v. Mayor of Portsmouth" (47 L. J. C. P. 223) was relied on. Their lordships came to the conclusion that the defendants were wrong; it was not enough to give the plaintiffs notice to pull down the houses, but they should have given them notice calling upon them to show cause why the houses should not be pulled down, and, further, they should have fixed a date for a meeting of the Board, at which the plaintiffs should have been notified to attend and show cause. That not having been done, the defendants were not entitled to pull down the houses. The judgment of Baron Pollock must, therefore, be set aside, and judgment entered for the plaintiffs, damages £60, the amount agreed upon in case the judgment should be reversed. On the application of Mr. Young, execution was stayed for a week, in view of an appeal.—The effect of this decision of the Court of Queen's Bench is, that before a local board can destroy houses which are being built contrary to the by-laws, they must not only give notice to the builder to pull them down, but further appoint a date on which the builder may attend before the Board to show cause why they should not be pulled down.

**THE SERIOUS CHARGES AGAINST A SURVEYOR.**—At Westminster Police-court on Saturday, John Hill, 41, a surveyor, of Broadstairs, formerly an architect and surveyor at Brighton, was again brought up in custody to further answer charges of embezzlement and forgery. The prisoner, from March, 1888, until the beginning of 1889, was associated in a business capacity with a Mr. Hans Scharien, a builder and house agent, of South Kensington and Trafalgar-square. Mr. Scharien alleged that the accused received a considerable sum of money on his behalf, and that he endorsed a cheque "H. Scharien and Co." without authority and misappropriated the proceeds. Some additional charges were gone into, and accused was committed for trial to the March Assizes, all witnesses being bound over in £40 to appear.

**IN RE GREEN AND LEE.**—(London Bankruptcy Court, Jan. 27. Before Mr. Registrar Hazlitt).—The debtors, John Green and Frank Lovell Lee, carrying on an extensive business as builders and

contractors at Anton-street Works, Amherst-road, Hackney, applied to pass their examination. They attributed their failure to losses on contracts and to other causes, and the joint statement of affairs showed unsecured debts £10,985, with assets (after providing for preferential claims) £4,545. The bankrupt Green, in the course of his evidence, stated that he began business in May, 1887, in partnership with Mr. Lee. A balance-sheet was then taken, which showed his capital to be £3,554, and that of Lee £2,000. Lee also paid £1,000 premium, and subsequently brought in £1,000 additional capital, and they filed their petition in November, 1889, the deficiency upon the trading then amounting to £6,400. Mr. Clayton, for the Trustee: So that during a trading which extended over two years and five months you lost £13,000. The bankrupt Green said he attributed his losses mainly to excess of expenditure over profit, and to unprofitable contracts. The firm sometimes tendered for contracts at prices below the estimates made by their clerks. They entered into a contract for £35,000 in South Audley-street, and incurred a loss of £3,000 upon it. If he had followed the figures of his estimating clerks he would have made a profit, but he reviewed the figures and struck off a percentage, and a loss ensued. Difficulties also arose in carrying out the contract, owing to their having to do the work piecemeal, and also to delay in the delivery of terracotta. On a Langham-street contract a loss arose of £890. His private expenditure had amounted to between £1,600 and £1,700. The debtor Lee was also examined, and stated that he had lost £4,000 of his own money in the business. Mr. Registrar Hazlitt allowed the debtors to pass their examinations.

## CHIPS.

Mr. J. M. Gething, architect and surveyor, of Kidderminster and Stourbridge, has been appointed architect for the proposed free library at Kidderminster, the adjoining schools of science and art having been erected from his designs.

Mr. George Pearson, builder, of Ross, Herefordshire, died last week at the age of 67 years. He was one of the leading contractors in the county and carried out, some years since, the restoration of Ross parish church.

The Evesham rural sanitary authority has called in Mr. J. E. Wilcox, C.E., of Birmingham, to report as to the best means of obtaining an adequate supply of pure and wholesome water for South Littleton.

An examination of candidates for registration by the Plumbers' Company has been held at Bristol, under the auspices of the district council, when only 20 per cent. of the candidates succeeded in satisfying the examiners.

Sketch plans for a working men's institute to be erected in Fore-street, Lostwithiel, on a site given by Lord Robartes, were submitted by the architect, Mr. A. E. Skentelbery, of Lostwithiel, last week, and were adopted by the committee.

At a meeting held at Trinity College Lodge, Cambridge, on Wednesday, it was decided to commission Mr. W. B. Richmond, A.R.A., to execute a portrait of the late Dr. Lightfoot, Bishop of Durham, to be hung in the hall of Trinity College as a memorial.

The commissioners having urged the necessity of enlarging the Joint Counties Asylum at Abergavenny to provide infirmary accommodation in the male department, the committee at their last meeting appointed Mr. Alfred Swash, M.S.A., of Newport, Mon., as architect for the contemplated additions.

The Vyrnwy water supply committee of the Liverpool district have decided to make a complete rearrangement of the staff. After the completion of the Vyrnwy works Mr. Joseph Parry, at present assistant water engineer, will be promoted to the position of engineer and supervisor of the new works, at a salary of £850 a year, and Mr. G. F. Deacon, the present water engineer, will be appointed the consulting water engineer, receiving an annual fee of £500, and a sum of £1,750 for his services during the current year; while Mr. A. Duncanson, the deputy water engineer, will also assist in the management of the Vyrnwy works with Mr. Parry, receiving a salary of £500 yearly.

A visit was paid on Friday to the studio of Mr. John Rhind, sculptor, Cambridge-street, Edinburgh, by a sub-committee of the Lord Provost's Committee of that city, in order to inspect the model in clay of the statue of the late Dr. Chambers. The figure is 11ft. high, and is draped in civic robes. The committee expressed themselves as well satisfied with the statue, which will be immediately cast in plaster, and sent off to London for reproduction in bronze. The pedestal will be mainly of red sandstone, with four panels on the plinth containing symbolical figures. The statue will be ready for inauguration in the course of the summer.

## WATER SUPPLY AND SANITARY MATTERS.

**EAST MOLESEY.**—A Local Government Board inquiry was held on Thursday and Monday at East Molesey, before Major-General C. Phipps Carey, R.E., into the application by the Local Board of East Molesey for leave to borrow £19,000 for carrying out a system of drainage in the district. The scheme, which has been prepared by Mr. J. C. Melliss, C.E., proposes to drain the area by a system of chemical deodorisation and precipitation coupled with downward filtration through specially prepared land. Two systems of sewers will be necessary, a high and a low level, the sewage being lifted underground by means of Shone's automatic ejectors in order to save the erection of unsightly pumping stations. It is proposed to deal with the sewage in the neighbouring district of West Molesey, the residents of which strongly object to bringing into their district the drainage from other areas. The scheme is also opposed by the rural sanitary authority and the West Molesey School Board.

**VYRWY WATERWORKS FOR LIVERPOOL.**—THE OSWESTRY RESERVOIR.—Another stage in the completion of the new Liverpool waterworks has now been reached. The great reservoir at Oswestry has now attained the overflow level, and contains, according to the estimate by Mr. G. F. Deacon, the engineer, of its capacity, 46,112,000 gallons of water. The reservoir is situated about a mile and a half from Oswestry, in the natural basin below Orley Hall. The water from Lake Vyrnwy is entering it through the tunnel, nearly a mile long. It is bounded on its south and south-east side by an embankment, about 500 yards in length. Between this reservoir and the town of Oswestry are a series of filter beds (the largest ever erected), the clear-water tank, receiving chamber, buildings, and other works, the contract for which, amounting to about £70,000, has been carried out by Messrs. Davies Bros., of Wrexham. The works will be opened in the course of next summer.

On Sunday special services were conducted in St. Mark's Church, Peterborough, dedicatory of the large addition which has been made to the west end. The new narthex opens into the main body of the church by three large Gothic arches with moulded pillars. For the present it is used as a vestry, and is cut off from the body of the church by large red curtains. It can, however, on special occasions, be used for the accommodation of worshippers, of whom it would seat 100. The cost has been about £600. The architect is Mr. H. M. Townsend, and Mr. John Thompson is the builder.

The Local Government Board has sanctioned a scheme for a large extension of the outfall works, pumping station, and main drainage of the borough of West Ham, as designed by the borough engineer, Mr. Lewis Angell, at a cost of nearly £100,000. The original system of drainage was laid out by Sir Robert Rawlinson in 1860, also at a cost of nearly £100,000, and much added to since; but so great has been the development of the district that it has been found necessary to practically reconstruct the sewerage system.

A three-light memorial window in memory of the late G. B. Hanbury was fixed in St. Nicholas Church, Hereford, during last week. In the side lights are representations of St. John and St. Luke, the central light representing Our Saviour's Ascension. There is likewise a reredos in carved oak, with richly illuminated panels fixed beneath. The window has just been placed at the expense of Mr. Hanbury's friends and patients, and the reredos is the gift of his widow. Both memorials were designed and executed by Messrs. Cox, Sons, Buckley, and Co., 29, Southampton-street, Strand, London.

The first sod of the Holsworthy and Bude Railway was cut on Friday at Bude. The total length is just under ten miles, and the railway will descend from an altitude of 491ft. at Holsworthy nearly to the sea level at Bude. The authorised capital is £160,000. Mr. Fairbank, the contractor, undertakes to complete the line by 1891. Few engineering difficulties present themselves, the chief being the Stratton Viaduct, which will be 220 yards long and 80ft. high. The new railway will complete the route from London to Bude.

A large roller flour-mill has been erected in Morpeth for Messrs. R. Oliver and Sons. The architects were Messrs. Boulds and Hardy, of Morpeth and Blyth, under whose personal supervision the buildings have been erected.

Mr. F. H. Andrews, a former pupil of the Birkbeck Institute, has been appointed Vice-Principal of the Mayo College of Art at Lahore.

In the senate hall of Edinburgh University on Friday Dr. Campbell Fraser, for the past thirty years Professor of Logic and Metaphysics in the University, was presented with his portrait, painted by Mr. George Reid, R.S.A.



## Our Office Table.

WE regret to record the death of Mr. Edward William Stephens, F.R.I.B.A., of Maidstone, which event occurred on Thursday, Jan. 30th, at his residence, Sittingbourne-road, in that town. Mr. Stephens, who was in his 56th year, had suffered some time from an internal complaint. He was the third son of Mr. John Cribb Stephens, for many years a solicitor in Maidstone, and who filled the office of Mayor in 1859. Among Mr. Stephens's principal works in Maidstone are St. Faith's Church, St. Paul's Church, St. Philip's Church (tower and restoration), King-street Congregational Church, a new church at Burham, the Maidstone Grammar School, the Maidstone Girls' Grammar School, the Maidstone Church Institute, schools at Burham, Halling, and Aylesford, Messrs. West and Wright's mill at Maidstone, the Medway Brewery at Maidstone, the Nurses' Home in connection with the West Kent Hospital, Maidstone, and many private houses in all parts of the town. Mr. Stephens, together with a former partner, the late Mr. Peck, is more widely known as a joint architect of the Agricultural Hall, Islington, and he won, in open competition, the award for the design for the proposed Maidstone Lunatic Asylum, work, however, which was not carried out, owing to the passing of the Local Government Act. Another undertaking executed by the firm of Peck and Stephens was the laying out of the Maidstone Cemetery. At Cambridge, several well-known buildings were erected from Mr. Stephens's designs. He became a Fellow of the Institute of Architects ten years since. The deceased leaves a widow, but no family.

THE Bridges Committee of the London County Council having considered the report of Mr. Wolfe Barry, engineer, on the Blackwall tunnel scheme, have made their report to the members of the Council. They recommend that body to proceed with the construction of a tunnel for vehicular and foot traffic on the lines laid down by Sir Joseph Bazalgette, engineer to the late Metropolitan Board of Works. The subway, which, in the event of the Council at its meeting on Tuesday next adopting the report of the committee, will be almost immediately put in hand, will be open night and day, and will pass under the river from Poplar to Blackwall Point, East Greenwich. The Council have already expended several thousands of pounds in purchasing land for the purposes of the approaches. Mr. Wolfe Barry, in his report, pointed out the difficulties in the way of constructing such a tunnel on account of the nature of the bed of the river, and of its close proximity to the top of the subway. He considers, however, that the scheme is practicable, and in that opinion he is supported by such eminent engineers as Sir Frederick Bramwell, Mr. B. Baker, as well as by Sir J. Bazalgette. The cost of the tunnel, for which Londoners east of London Bridge have been agitating for many years, will be about a million and a half of money, and it is calculated that its construction will permanently benefit over a million people on both sides of the river.

At the seventy-seventh annual meeting of the Newcastle Society of Antiquaries a sharp discussion arose on the reading of a letter from the Rev. I. W. Milner, vicar of St. John's Church, Newcastle, demanding that the piscina which belonged to the church, and which was in Newcastle Castle, be restored to them. Mr. Milner pointed out that such property could not be sold or given away, and therefore the society could not have legal possession of it. It was the intention of the churchwardens and vicar to replace the piscina in the church if it was given back. The secretary to the society admitted that the piscina was given to them during the restoration of St. John's Church; but one of the by-laws forbade the society from giving away any of its possessions unless they were duplicated. Canon Franklin moved that the piscina be given back, observing that it was virtually stolen property. Canon Hicks seconded the motion; but Mr. C. C. Hodges said the proposal opened a very large question. The destruction that had gone on in the churches through the action of vicars and churchwardens was sufficient to make their hair turn on end. If church authorities would throw things out of the churches, they should not ask for them back again. They had no right to the

piscina. The contractor for the work of restoration would be entitled to the old material; he could give it away, and the churchwardens, in signing the contract, gave up their right to it. The piscina was worth very little, but he objected to its restoration on principle. After a heated discussion the matter was adjourned for a month, and the secretary was instructed to write to Mr. Milner asking for evidence that the piscina ever belonged to his church.

THE fifth annual report of the National Footpath Preservation Society shows steady progress. 106 new members were enrolled during the year, the total number being now 623, and the number of public bodies affiliated to the society has increased from 63 to 75. The income also has risen from £206 to £241, but even now does not meet all the necessary expenses, although the outlay does not increase with the membership. Some 94 cases of footpath stopping and encroachments were made known to the officials of the society during the year, and the Secretary, Mr. Henry Allnutt, has visited and inspected several localities where public rights of way were alleged to have been interfered with. As the Committee very pertinently remark, the advantage of such a society cannot in all cases be openly seen; doubtless its influence has prevented many attempts to close footpaths, and it is becoming known throughout the length and breadth of the land that encroachments on highways will no longer be tolerated. In many instances the sending of the society's prospectus to a gentleman of whom complaints have reached the office has had the desired effect.

THE street pavings of the Metropolis, though less noisy and shaky than they once were, when granite pitching was common, are yet anything but satisfactory during damp and slippery weather. Why cannot the City Commissioners and the vestries combine together to introduce some kind of paving which will give a good foothold to horses, who are now constantly falling down just at those points where the inclination of the roadway is steep? The cost would be trifling of laying down in these situations blocks of asphalt or concrete having corrugations cast on them.

At Nashville, Tenn., bricks are used creosoted, prepared by saturating common kiln bricks of hard quality with liquid pitch. They are laid on a foundation of rolled macadam, and bedded on edge in sand and then rammed. Roads of this material have lasted four or five years under considerable traffic, and show little wear. At Alleghany city it is stated fireclay bricks have been laid in two layers on rammed and rolled gravel and sand. The pavement has been in use some years under heavy traffic, and is stated to be very smooth and easily cleaned. Many other cities of the Union have brick pavements, after giving up macadam and wood.

THE annual general meeting of the Geologists' Association will be held at University College, Gower-street, to-day (Friday), at 7.30 p.m., when the president, Mr. T. V. Holmes, will deliver an address entitled "Notes on the Nature of the Geological Record." Dr. Johnston Lavis is preparing a report of the excursion of the association last autumn to the volcanic regions of Southern Italy. It will contain contributions from the eminent Italian geologists who guided the party, and will be illustrated with maps and plates.

## Trade News.

### WAGES MOVEMENTS.

BARNSELY.—During the last week several classes of builders' workmen in the neighbourhood of Barnsley have decided to take action in the matter of wages. The masons of the town and district have given notice to their employers of an intention to demand an advance of 1d. per hour, and it is expected that the bricklayers will take similar action. The carpenters and joiners had a meeting, and also decided to go in for an advance of 1d. per hour, making in each case a total of 8d. per hour; and the painters of the town have had the same question under consideration; but they have no society, and have been unable to come to any decision.

BRISTOL MASTER BUILDERS' ASSOCIATION.—The annual report for the year ending December last states that during the past year the association has been reorganised, which promises materially to improve its prospects. There is every indication that the accession in the number of its members, which

now practically include all the master builders of this city and district, will tend to develop its work. The unfortunate disputes which have arisen between capital and labour during the year have engaged attention; but the members, and also their employes, must be congratulated upon the amicable relationship that exists between both parties. The men have not been avaricious in their requests, neither have they threatened or resorted to strikes. From time to time a sub-committee communicated and conferred with several of the labour representatives upon the question of an advance of wages in the respective departments of the building trade, and the men, in consideration of many heavy contracts that members were engaged in, readily accepted the decision of the association—that an increase of 1d. per hour in all branches of the trade should take place on 28th March next. The members have had under consideration the manner in which tenders are received and opened at some architects' offices, much dissatisfaction having been expressed in relation thereto, and a suggestion was made that if architects would appoint a time and place for opening such tenders, members tendering would make it a point to be in attendance. The association have been contending for some time past for an arbitration clause in all forms of contract, and it is to be hoped that every member will endeavour to obtain the insertion of such a clause in future contracts. Notwithstanding the strikes and rumours of strikes in many sections of trade and commerce, there has been a thorough revival in trade throughout the country.

NEWCASTLE-ON-TYNE.—A notice issued on Monday by the Tyne District United Trades Committee to the employers in the house building trade in Newcastle and Gateshead, giving notice on behalf of the joiners for an advance of one penny per hour upon the present rate of wages, and overtime in proportion, to take effect on and after the 1st March.

KIRKCALDY.—The whole of the operative masons in the Kirkcaldy district struck work on Monday in consequence of the employers having refused to increase wages an additional halfpenny per hour. The trade is exceptionally busy, and men have hitherto been paid 6d. per hour.

### MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Clerks of Works Association. Annual dinner. Holborn Restaurant. 6.30 p.m.  
Royal Academy. "Roman Architecture," No. 5, by Prof. Geo. Aitchison, A.R.A. 8 p.m.  
Society of Arts. "The Electro-Magnet," Cantor Lecture No. 4, by Silvanus P. Thompson. 8 p.m.  
Surveyors' Institution. "Suggested Amendments in the Law and Practice of Compensations," by G. M. Freeman. 8 p.m.

TUESDAY.—Society of Architects. "Twenty-five Years of Architectural Progress," by James Hicks, of Redruth, Vice-president. 7.30 p.m.  
Society of Arts. "Cast Iron and its Treatment for Artistic Purposes," by W. R. Lethaby. 8 p.m.  
Institution of Civil Engineers. Discussion on "Bars at the Mouths of Tidal Estuaries." 8 p.m.

WEDNESDAY.—Carpenters' Hall Free Lectures. "Drawing—Geometrical and Perspective," by Prof. T. Roger Smith, F.R.I.B.A. 8 p.m.  
Society of Arts. "Modern Improvements in Facilities for Railway Traveling," by G. Findlay, General Manager L. and N.W. Railway Company. 8 p.m.

THURSDAY.—Royal Academy. "Roman Architecture," No. 6, by Prof. Geo. Aitchison, A.R.A. 8 p.m.]

FRIDAY.—Architectural Association. "Some Typical Greek Buildings," by R. Elsey Smith. 7.30 p.m.

Bradford Historical and Antiquarian Society. "The Pilgrimage of Grace," by J. Lister, M.A.  
Royal Institution. "Problems in Physics of an Electric Lamp," by Prof. J. A. Fleming, M.A., D.Sc. 9 p.m.

Architectural Association, 9, Conduit-street, W.—February 14, "An Account of some Typical Greek Buildings," by R. Elsey Smith, Esq. 7.30 p.m.

FRED. R. FARROW, } Hon. Secs.  
ERNEST S. GALE. }

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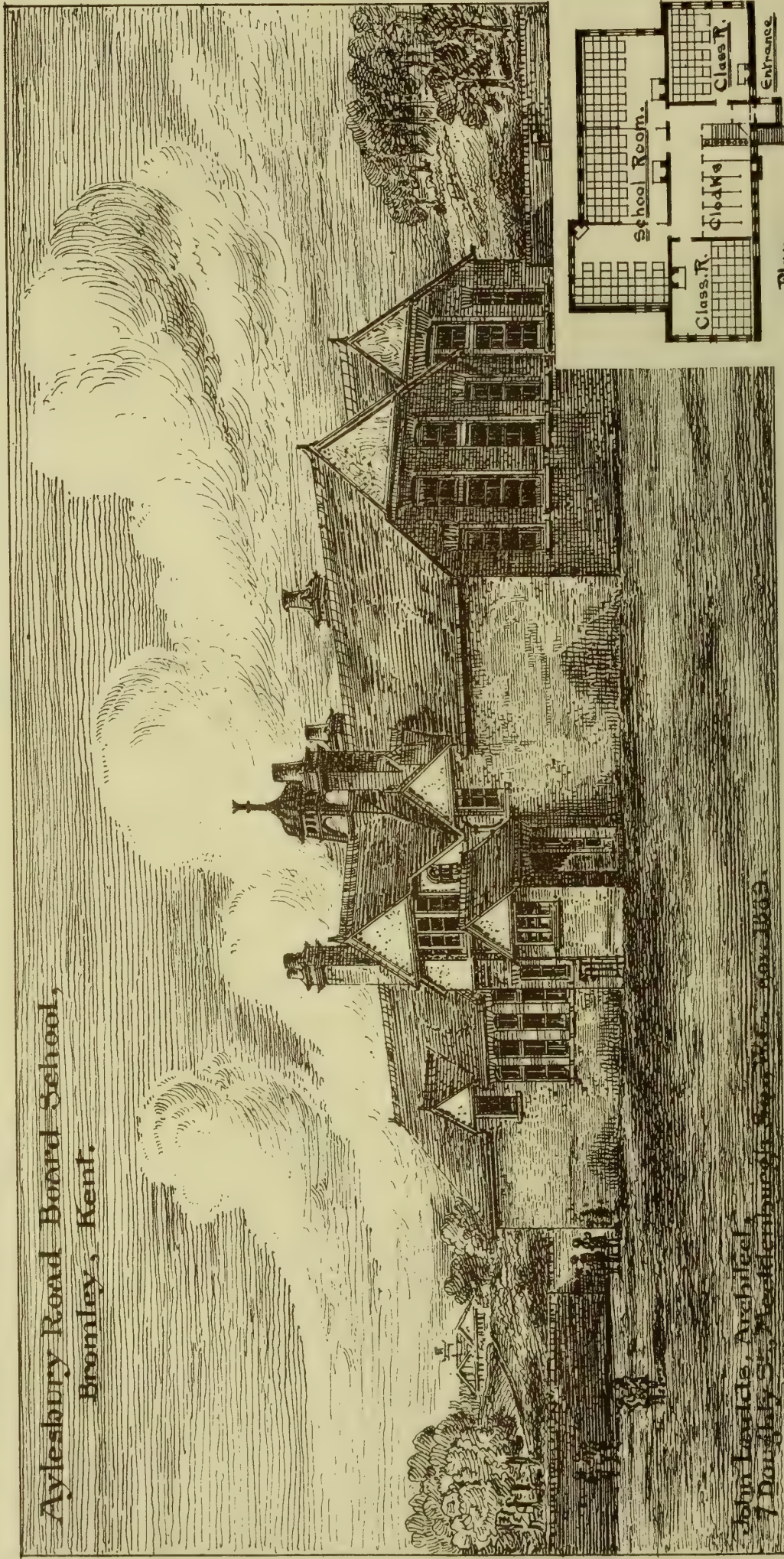




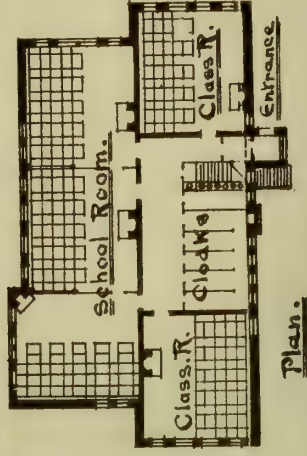


THE BUILDING NEWS, FEB. 7. 1890.

# Aylesbury Road Board School, Bromley, Kent.



John Laidlaw, Architect,  
7 Doughty St., Westminster, S.W.



## Sketch View. of Arthur Road Schools. Beckenham, Kent.

Infants School.



Girls School.



Boys School.











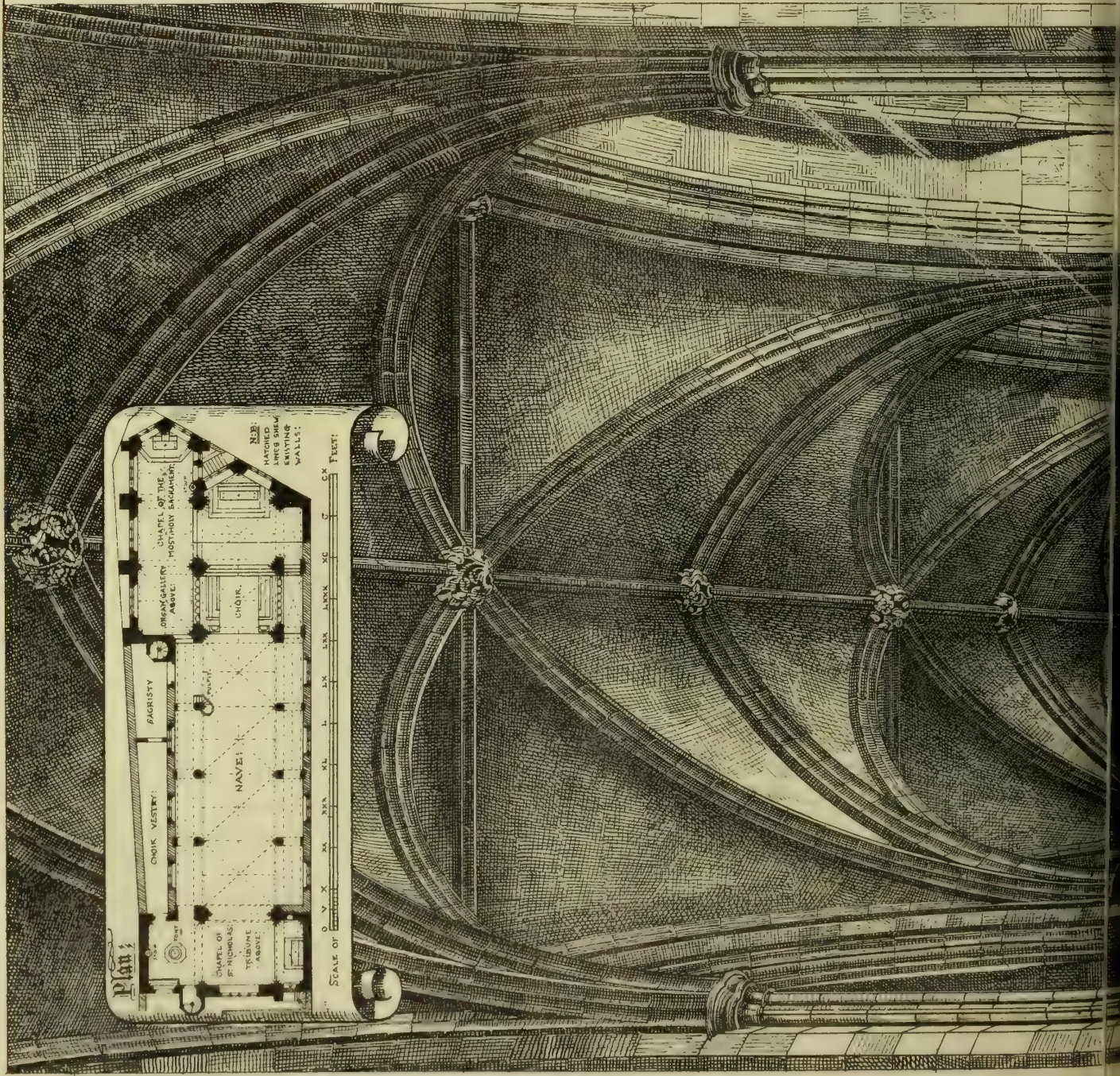
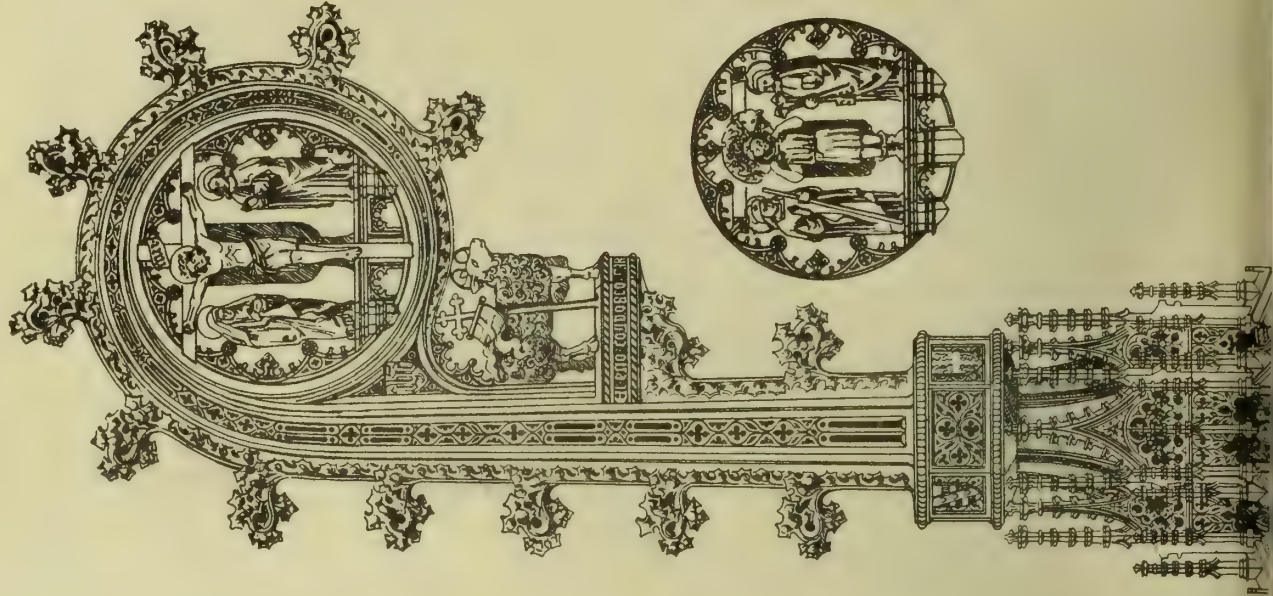




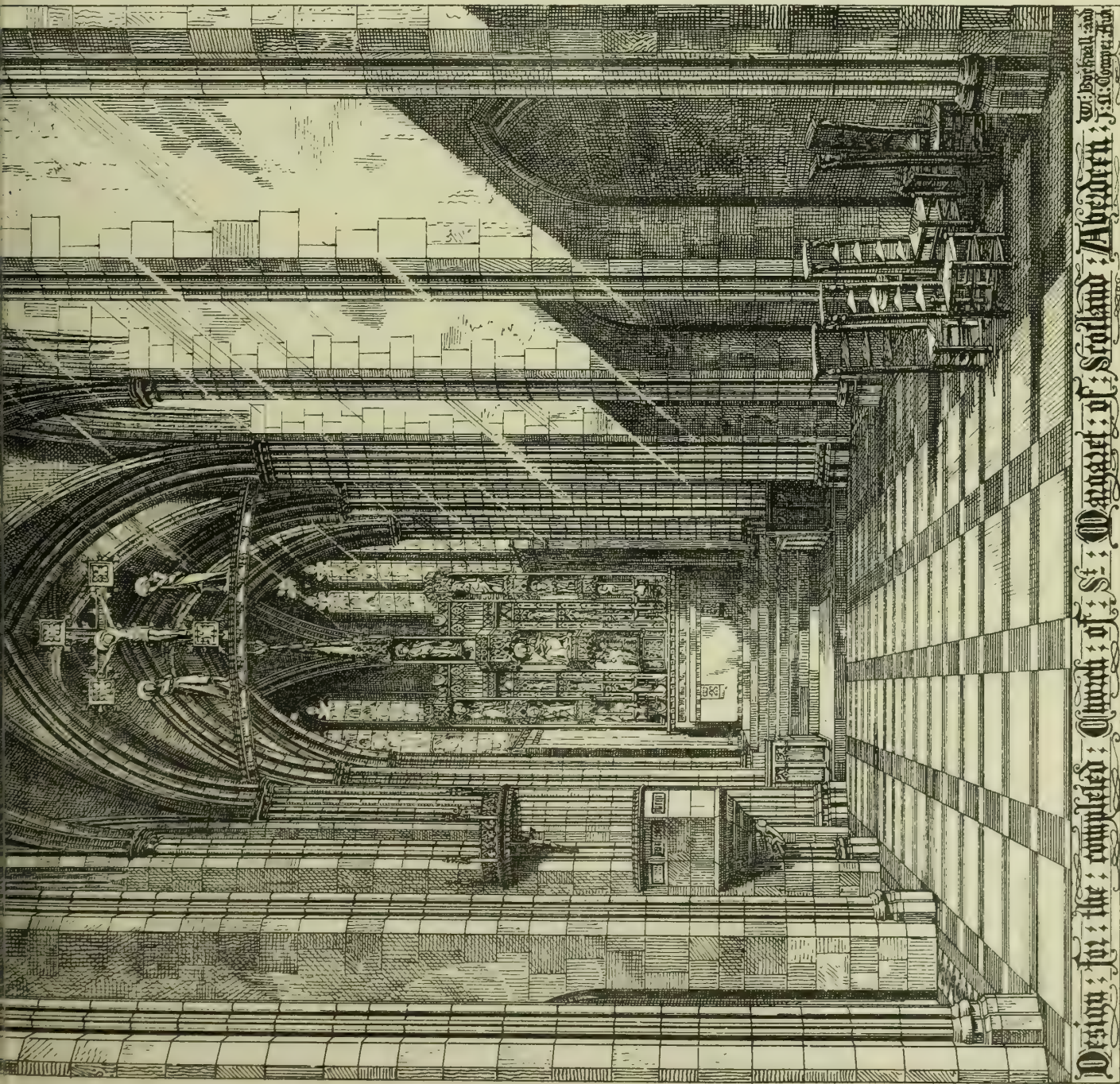


THE BUILDING NEWS, FEB. 7. 1890.

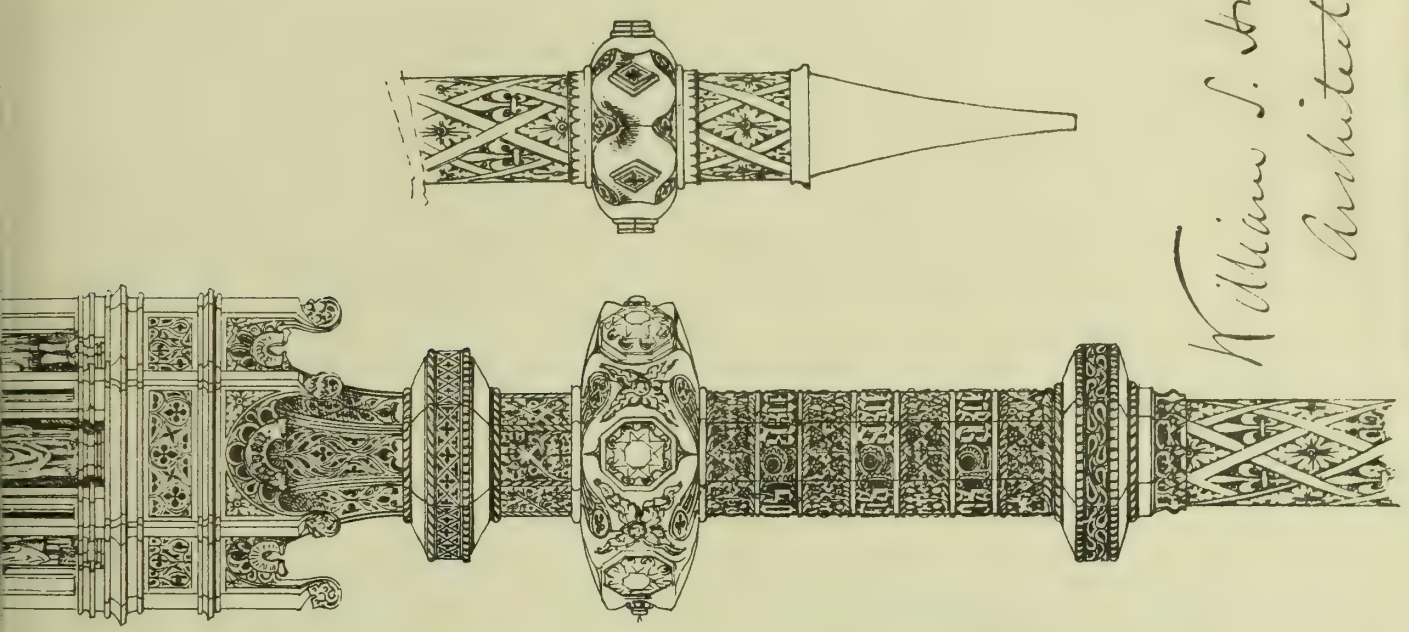
PASTORAL STAFF. PRESENTED  
TO THE LATE BISHOP OF DURHAM







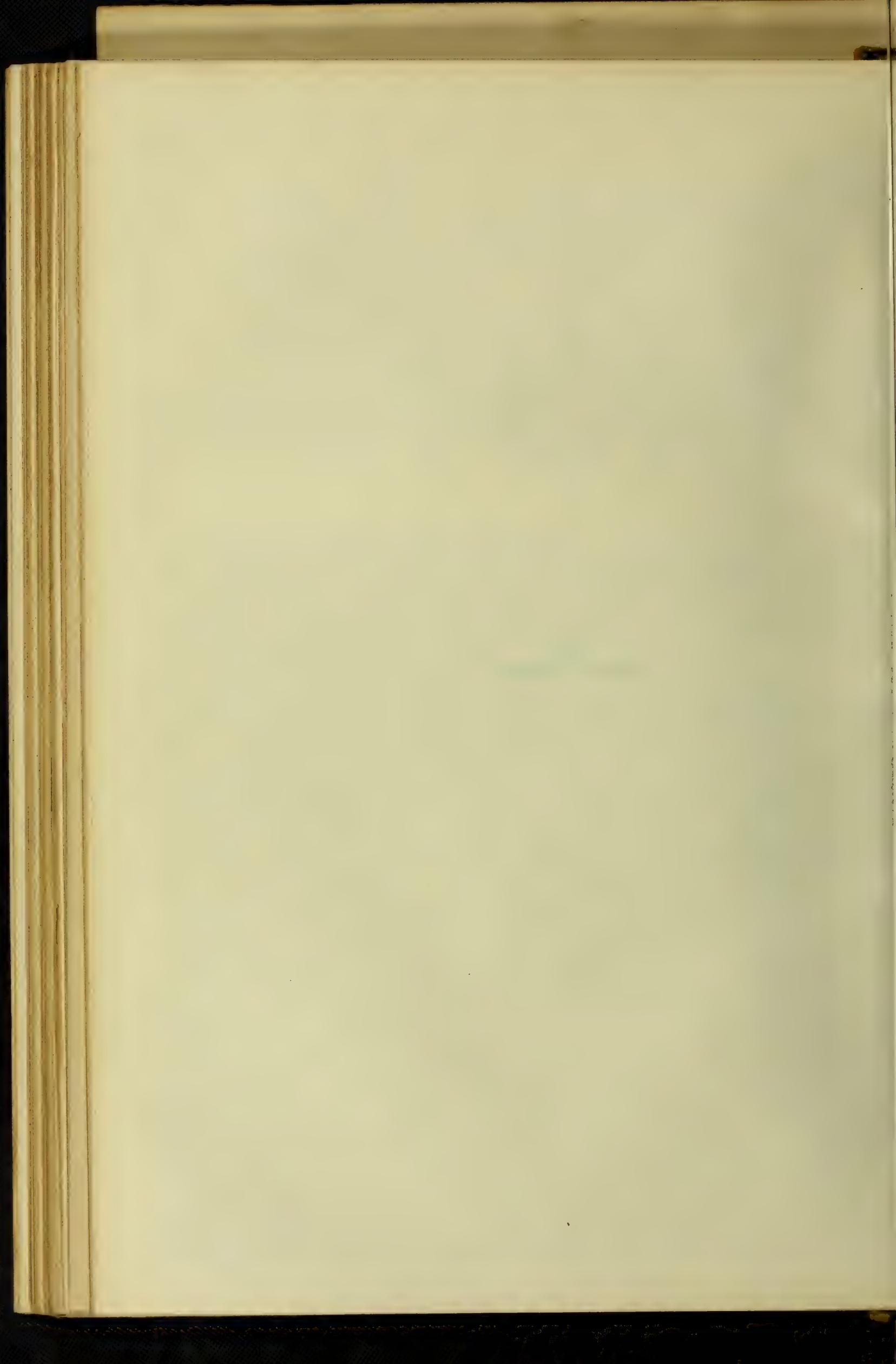
Design for the completed Church of St. Margaret of Scotland Aberdeen  
Wm. S. Smith and  
J. A. Campbell Esq.



William S. Smith  
Architect

Printed by Wm. S. Smith, Aberdeen, Scotland.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1832.

FRIDAY, FEBRUARY 14, 1890.

## WORKING DRAWINGS AND THEIR INTERPRETATION.

THE interpretation of drawings by artificers connected with building will be necessarily imperfect till the art is made one of the acquirements of the workman. In England the subject has never been brought down to the level of the workman's knowledge, and only of late years has there been any attempt to teach drawing to workmen in a systematic manner. The technical schools in France and Germany have long made drawing an essential mode of training the eye and hand. Every trade has to pass through the stages of drawing. Copying from paper examples is forbidden in some schools, and the system is to get the pupil to draw from models, so as to teach him to apprehend the meaning of lines in perspective, as well as to make him understand geometrical delineations. In our opinion drawing can only be properly taught by the aid of models, and a course of well-directed model drawing will do more to instruct the eye and mind than all the flat copies and diagrams of the textbooks. Professor T. Roger Smith's useful and suggestive lecture on "Drawing" at Carpenters' Hall, reported in full in our issue of to-day, presented the subject in the most lucid manner, and as an elementary exposition of the principles of geometrical and perspective drawing, it could hardly fail to draw the attention of the practical audience. Professor Roger Smith made a strong point of the value of drawing to the working man. "Every difficult piece of construction is worked out on paper," even our contracts and estimates are made on the basis of plans and drawings. The interpretation of working drawings is one of the things wherein the English workman is deficient or imperfectly instructed. We have even known otherwise good bricklayers and joiners, unable to read without some study and time a detail drawing, whereas the first sight of the drawing should be enough to enable the workman to grasp the general meaning of the design intended to be conveyed. To many artificers technical details are like a foreign language: they have to be interpreted by the foreman or clerk of works, or set out full size before they can be rightly understood. The instructive paper of Professor Smith put the subject before the workman in a very intelligible and familiar manner. Nothing was taken for granted—even the meaning attached to the term "geometrical" was clearly explained as representing the building "as it actually is," not as it appears to the eye. We have occasionally met with building tradesmen, and even small builders, who have a very confused idea of the distinction between a perspective and a geometrical elevation, and have even seen drawings made by them which represent both sides of the building or feature at once, though too ill-drawn to be taken as perspectives. Many useful remarks were made by the professor on the necessity of exactness, and the importance of a scale, which should be both described as well as drawn. Some workmen can understand the description of an "eighth scale" or "8ft. to the inch," but they cannot correctly take any distance from the drawn scale; and many, on the other hand, can use a drawn scale who cannot understand or read the description in writing. We quite agree with the remark that the most familiar scales should be used—such as 16ft. to the inch, 8ft. to the inch, 4ft. to the inch

—for general contract drawings; and that those divisions of the inch like tenths and twelfths that are less common tend to confuse. The value of the  $\frac{1}{2}$  in. scale is pointed out. No doubt that it, and the  $\frac{1}{4}$  in. to the foot, and the 3 in. to the foot, or the quarter full size, are the most desirable scales for detail drawings. The half full-size is certainly objectionable, and should never be employed, as it is too nearly the full size, and is very likely to misrepresent the actual results. The figuring of dimensions is another point to which reference was made. Dimensions to be useful ought to be scrupulously accurate, or they are worse than useless. The figuring of plans is done often without much system. If centres of openings or pilasters are taken, the method should be strictly adhered to throughout. Dimensions taken to the jambs of openings, and the width of openings, are generally adopted by draughtsmen; but unless there has been great care in making these detailed dimensions closely agree with the extreme length, the other method is less liable to lead to error. For the practical business of setting out buildings, we think the method of measuring solids and widths of apertures is the best, taking care to check accurately the equal division of windows or piers by the axial method. For instance, in setting out the plan of a church, the dimensions should not only be given between the buttresses, but be figured to their centres; there should be, in fact, two sets of dimensions—one giving the widths of piers and openings, the other set the distances between centres. Much confusion and many mistakes arise by depending too much on the separate or detail dimensions, and the figuring of wall thicknesses—a source of trouble to those who are not in the habit of checking the dimensions before the building is set out. The architectural draughtsman, as Professor Roger Smith says, likes to avoid a difficulty rather than attack it, and in making a drawing, if he has not got the information in his head, he cannot put it on the paper. We are inclined to think the ordinary draughtsman is apt to leave the headwork for others, and is tempted to pay more attention to the mechanical fineness and neatness of his drawing than to overcome difficulties as they occur. If he does not know, he could find out, as the lecturer says, but the labour of inquiry is uncongenial. Let us suppose something new is to be designed or drawn—say a cabmen's shelter. The competent designer makes his drawings only after the facts and data of his requirements have been obtained and thoroughly digested in his mind; the ignorant draughtsman draws without knowledge or facts, relying upon after-correction, and his plans are crude, and meet the requirements imperfectly. As for solution of difficulties, he does not trouble himself about them: he draws something that pleases him, and which he thinks will suit the purpose—it is not a drawing from knowledge, but a mechanical piece of penmanship. The most useful kind of drawing for workmen is that in which solids and sections of solids are concerned; simple projection is far more necessary than perspective, and therefore it is that we place model drawing in the foremost place. Some acquaintance with geometry is absolutely essential to a successful course of instruction. We admit that the textbook courses repel rather than invite: the exceedingly dry and abstract definitions of lines and planes are discouraging. We wonder when instructors of drawing for technical classes will see the importance of beginning their courses with concrete embodiments of form—such as taking the plans, elevations, and sections of a plain building—teaching the principles of projection, together with freehand model drawing, before descriptive geometry and perspective are thrust upon the beginner.

## ARCHITECTS' CERTIFICATES.

THE power of giving or withholding a certificate under a building contract invests the architect with an authority not easily disputed, though exceptional circumstances happening, it may place him in not a very enviable position; as when, for example, he has unknowingly given a certificate to a builder before the latter is properly entitled to receive one, and has thus placed his employer and himself in very awkward circumstances, should they find themselves compelled to call upon the builder to complete his work to their satisfaction. The extreme importance of being guided by personal examination of the progress and completeness of the work, whatever it may be, cannot be too strongly enforced on the architect. When a responsible clerk of works is engaged, the weekly or monthly reports sent in may be accepted; but when the architect is the sole judge of the value of the work executed, it is always an injudicious course to give a certificate from a bare recollection of the condition of the building. Certificates are of two kinds, intermediate and final; the former may be called "progress certificates," and are those which are given at intervals to the contractor as statements of the value of materials in the buildings and on the site and labour; the payments or advances made under them are provisional, and subject to readjustment. It is usual in the contract to state under what conditions, or when, the contractor is to receive any certificate, though this is not always observed with the scrupulous attention it ought to be. Sometimes a contractor, if of limited means, asks for a "draw" before he is strictly entitled to receive one, in order to enable him to proceed with the work. The wages may amount to a large sum, and an advance is of the greatest convenience to him. The architect, perhaps, responds to the appeal, and in so doing oversteps discretion, and places himself at the mercy of the contractor, who being paid fully up to the value, of material and labour, or in excess of that value, can decline to proceed. Payments are generally made at the rate of 80 per cent. upon the value of works executed and materials delivered, and, as our readers know, it is usual to name a certain expenditure upon which that rate of payment is made.

At other times the sum is left to the discretion of the architect. When the difference between the percentage and the value of the work executed amounts to a certain percentage (determined in the agreement) upon the amount of contract, the contractor is paid to the full value of the work executed and not included in any former payment. When the work is completed the contractor receives one moiety of the amount remaining due according to the valuation, and the final certificate for balance is to be payable within a certain stated time after completion of the works. This mode of distributing the payments leaves the employer on the safe side: after every instalment, there is a balance due, which increases till a certain percentage is secured upon the amount of contract. On the proper adjustment of these payments the fairness of this mode of making the instalments depends, for if after a contractor has executed, say, £500 worth of work he gets more than his 80 per cent., or £400, there is a risk of making subsequent payments so close to the value that the employer gets the worst of the bargain. We know that in many cases this rate is exceeded; very often the instalment is quite equal to the value on the building and site, and when the final certificate becomes due the expectations of the contractor are far greater than he is justified in realising.

Now it is impossible to fairly adjudge the sum expended, or the value on the building unless an estimate is made as the building proceeds, including a valuation of the materials on the site which are the building owner's



property. We have several times found little contractors tamper with these materials, or remove some of them for other works near, or even to their own premises for reuse: hence the necessity for the clerk of works or surveyor seeing that these materials are not touched, and that their value is ascertained as part of the valuation for a certificate. Valuations for this purpose are often of a rough kind, allowable in some cases where the building is a plain one, but unreliable when a quantity of different kinds of labour are involved. We have, for example, seen an approximate estimate made of the works—a sort of rough “quantities,” in which process, instead of analysing everything, as it is proper to do on accurately prepared quantities, the valuer lumps the items, by taking all the labours involved in one kind of work, such as brickwork, by including the items of facing, arches, &c., carpenters’ work, such as a roof, by making the value inclusive of every part of a roof, the slating as well as the timbering. Thus, a square of flooring or roofing would be valued complete, inclusive of every item connected with it; each window would be taken to include labour of reveals, sash and frame, glazing and painting, and in this manner a fairly approximate value of the work executed may be gained. Even the rougher plan of cubing has been resorted to for the purpose of a certificate—a very risky mode, and liable to considerable error. But, for works in progress, the clerk of works can adopt a readier method of finding out whether a certain amount of material and labour has been expended. He can measure the work as it proceeds at certain stages, especially those parts which are concealed; the variations which may be made as the building goes on are open to him, and should be measured in conjunction with the builders’ foreman, the dimensions being mutually agreed to. These dimensions are booked, and can be referred to at any moment, and a fairly approximate valuation made. Therefore little difficulty ought to be found in estimating the actual expenditure on a building at any given time, or when the contractor applies for a payment.

Disagreements between contractor and architect do not generally arise out of interim certificates, but often at the completion of the work on the giving of the final certificate. Suppose we consider a case where extras have been ordered, though the builder has not, as he should have done, obtained a written order for the work in accordance with the contract agreement. The building is proceeded with, and at the completion of the work the contractor hands in the statement of his account to the architect, who, after verifying it, includes it in his final certificate to the contractor. The employers decline to pay the extra charge because the contractor had not produced the order in writing as required by deed. The legal opinion of the matter has been expressed clearly in one case, that the certificate of the architect is conclusive and final, and the defendant is precluded from setting up as a defence that the extra work had not been ordered in writing.

An important decision as to whether, after certificates for a balance arising out of contract and also for additional works had been given to a contractor, the employers could refuse to make payment on them on the plea that the prices were too high, and there were penalties for delay against the contractor, was given in the Queen’s Bench Division in 1885, the defendant employers being the Isle of Wight Sanatorium Company. It was an appeal against a decision by a judge at Chambers to defend the action. The architect had given certificates for balance and for other works out of the contract; but differences arose between the parties. The contractor brought an action to recover balance due on the certificates, he contending, on the principle already stated, that as the

architect had given certificates, he was entitled to recover. The defendant company denied their indebtedness on the ground that the prices were too high, and that, owing to delay, there was little due. But the defendants never objected to the certificates being given; and it was further argued by the counsel for plaintiff that there was nothing to decide, as the certificates were final, and that there could be no defence against the architect’s certificates. Mr. Justice Grove and Mr. Baron Huddleston both heard the case, and a contention arose as to a clause in the contract that, in case of dispute, the architect’s decision was to be final. It was contended that the dispute between the parties was decided by the architect’s certificates. Baron Huddleston concurred in this view, and said that “it appeared to be an answer to the argument that the arbitrator is to decide any disputes between the parties,” whereas the defendants had never raised a dispute by objecting to the certificates. This case indeed appears to confirm the general idea that an architect’s certificate is conclusive, though the judges differed in opinion as to whether the defendant ought to have leave to defend. When there is a contract provision that the arbitrator is to decide any dispute, and the arbitrator (in this case the architect) makes a certificate for the amount, it is somewhat unreasonable to require the question to be referred to him again for a decision, as he must uphold his own certificate. Here the defendants had made payment on account, and had so far admitted their indebtedness, and, therefore, there is a strong presumption that the above view was the correct one. Justice Blackburn’s judgment in the case of “Wadsworth v. Smith” is important in this connection, and may be quoted, as he there points to the difference between agreements as to a certificate, and those in reference to any dispute. He there briefly observes: Where, by an agreement, the right of one party is made to depend on the determination of a third person, it is not a submission to arbitration; but where there is an agreement that any dispute about a particular thing shall be inquired into and determined by a person named, that may amount to a submission to arbitration, and the determination, though in the form of a certificate, be an award.

The arbitration provision ought certainly to make it possible to correct any mistake in certifying a larger sum than is really due, and if an arbitrator be appointed other than the architect, there would be no difficulty in doing so; but when the architect is arbitrator, his final certificate certainly makes it impossible to reopen any question of dispute that may arise. We have cited the above case to show the caution there should be taken in granting final certificates, especially when the provision for questions of dispute are referred to the architect himself, as in that case he may unwittingly be doing an injustice to his employers if it should turn out that, owing to delay in completion, or other evidence of overcharge for additional work, they had no means open to them of correcting a mistake or of being heard in defence. From the often-quoted case of “Goodyear v. Mayor of Weymouth,” an architect’s final certificate allowing extra work supersedes all written orders for extras, pointing to the importance of rigidly enforcing the usual clause for extra works to be ordered in writing. Irregularities occur in the giving of certificates. A correspondent refers to a case where an architect sends a final certificate to his client instead of to the contractor. The client wishes the architect to reduce the amount, which he does. The contractor naturally complains of the treatment, and is in a position to bring an action if he can prove that the architect has been indiscreet or unfair in giving a certificate so that he is thereby a loser. In such

a case it is necessary to prove a collusion between the architect and employer. Again, if it can be proved that the architect has, in collusion with the employer, withheld his certificate, though the amount is fairly due to the builder, the latter has the right of enforcing his claim against the architect. The case of “Ludbrooke v. Barrett” is in point. The certificate that the builder had executed the work satisfactorily was withheld by the architect, in collusion with the employer, and the builder sued the architect for damages.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of “Woodworking Machinery,” “A Handbook for Steam Users,” &c.

IT is not our intention here to deal with the constructive details of a brick-moulding machine, but it may not be out of place to mention a few of the points to be desired in one. As regards design, the chief points to be aimed at are strength, simplicity, and durability of the working parts, combined with effective production. Complicated machines, which may be theoretically perfect, are often subject to frequent breakdowns, and are quite unsuited to the rough usage of a brickfield. The larger machines should, in all cases, be mounted on a substantial foundation plate or base to withstand the various racking strains in working.

All the bearings and working parts should be protected from grit and dirt as much as possible, yet they must be readily accessible for adjustment, repairs, and renewals. The bearings and working parts should be made adjustable for wear where possible, and if a little increased cost is not an object, phosphor-bronze can be recommended for bearings. When subject to great strain or pressure, these should be of increased length to distribute it as far as may be. Gear-wheels should be very carefully moulded and fitted, or the friction and consequent driving power will be largely increased.

If crushing rollers are used, they should be of very hard chilled metal, readily adjustable for wear and to suit the nature of the clay being worked. The side frames should be of massive construction, well braced together, and a safety appliance fitted to relieve the rollers and prevent breakage, should iron or unbreakable material get between them. Steel can be recommended for pug-mill and other shafts, and either multiple collar or roller bearings to receive back thrust can be fitted with advantage when the duty is severe. As elsewhere remarked, in lieu of single shafts, double shafts and blades have been introduced into pug-mills, and it is claimed for this arrangement that greater homogeneousness in the clay is obtained.

Our illustration, Fig. 6, represents a three-process brick-moulding machine for plastic clay, from the designs of Messrs. Clayton, Howlett, and Venables, Harrow-road, London, who have had large experience in this class of machinery. It combines in itself the operations of crushing, pugging, and moulding, and is particularly suitable for strong clays that do not readily weather or take up much water. As will be seen from the sketch, the working parts are mounted on a box bed-plate to secure rigidity in working. The crushing rolls and pug mill are driven by powerful toothed gearing; the former are placed at the top of the machine, and not only crush the clay, but force it into the pug-mill. The pug-mill shaft is fitted with knives and screw-blades for mixing the clay and forcing it through the die. The important features claimed for this machine are the methods of constructing and operating the brick dies and cutting table, and these we propose to illustrate and describe separately. In addition to solid bricks, with a little alteration these machines will make perforated and tubular bricks, copings, drain-pipes, &c., at a speed of from 10,000 to 30,000 per day, according to the size of the machine.

#### BRICKMAKING MACHINE DIES, ETC

Although apparently of a simple nature, there is little doubt that one of the most critical points in the construction of a brickmaking machine is found in the dies and compressing chamber through which the clay is forced, and much ingenuity has been expended in trying to devise



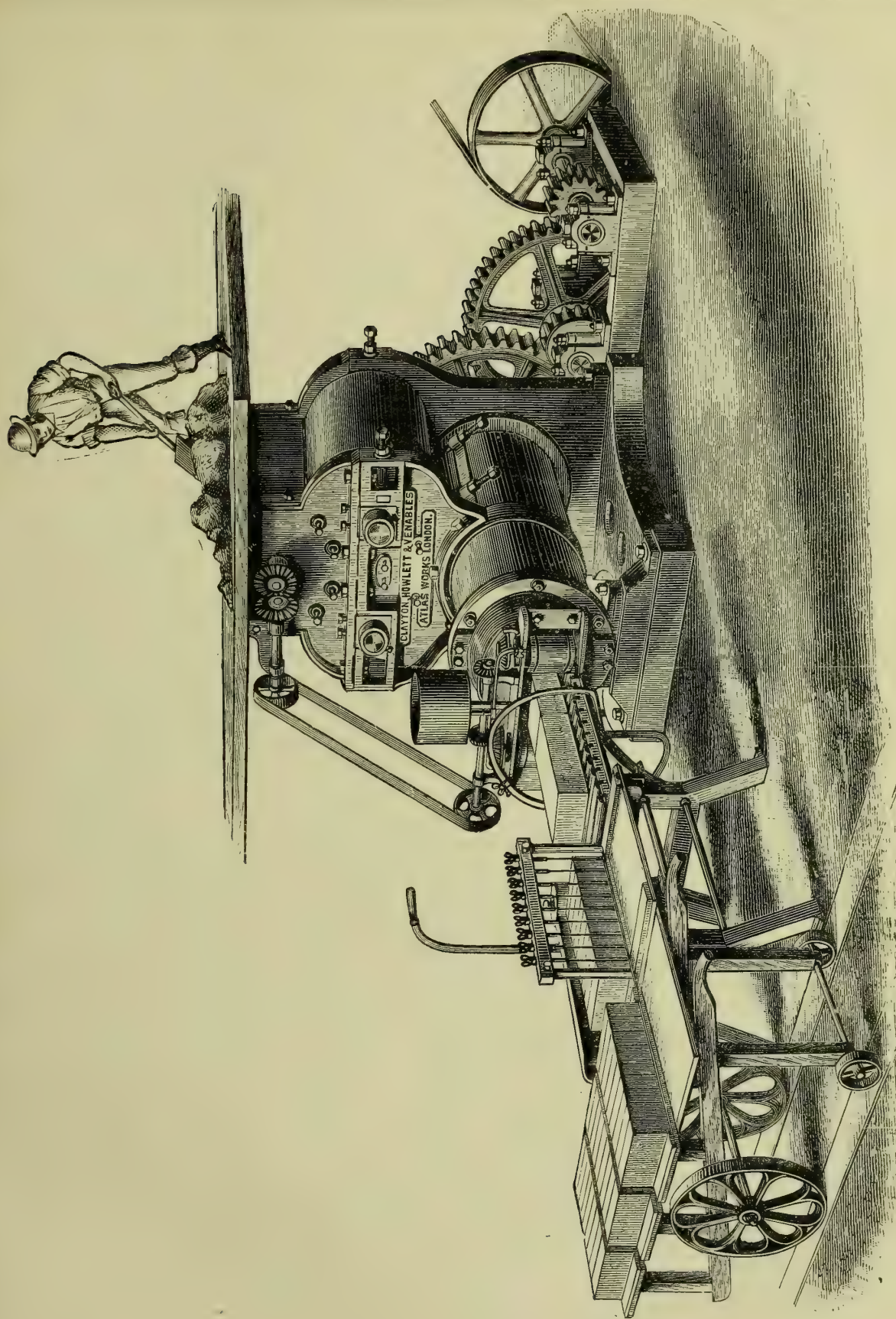


FIG. 6.

a die that will permit a steady stream of clay, perfect in shape, and of any nature, to pass through it. In moulding bricks singly by hand or by hand-power machine this difficulty is not so severely felt, although considerable skill must be exercised by the hand-moulder in filling the mould completely in all its corners. Hand moulds or dies are usually made of wood, either plain or lined with polished brass or steel plates, the object desired being that the brick shall leave the mould with as little friction and of as perfect a shape as possible. With some plastic clays of moderate tenacity little difficulty is found; but in the manufacture of London

stocks, which contain chalk, ashes, &c., and are sand-moulded on the face, and with mild clays generally, the operation is not so simple as it would appear.

To try and get rid of this difficulty many plans have been devised, and one which gives every prospect of being a commercial success has recently been introduced by Messrs. Eddington and Stevenson, of Chelmsford, in conjunction with a hand-power brick-moulding machine, which we shall illustrate elsewhere. This mould, which we illustrate by Fig. 7, is arranged to open or expand after the clay is moulded, so that the brick can leave the mould in good shape

and without dragging at the corners or elsewhere, and is delivered directly on the pallet-board for immediate removal. Wood is used for lining the moulds, and can be readily renewed when worn.

Referring now to the dies used in plastic machines, in which the flow of clay through them is practically continuous, here fresh difficulties arise. Owing to the friction of the clay on the sides and angles of the die, it is found in practice that the stream of clay flows faster in the centre of the die than at its sides; to equalise the flow as far as may be, various plans of reducing the friction of the clay have been intro-



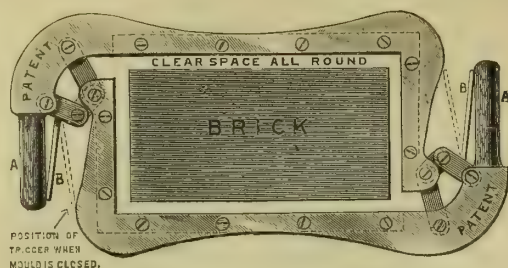


Fig. 7.

duced. One of the best known is Murray's patent. This die is not driven, but the sides and ends are made adjustable; the ends are arranged with vertical grooves and covered with fustian. The fustian is kept constantly lubricated by means of water, the supply necessary to insure an easy passage of the clay being regulated by its nature. As the die wears it can be adjusted to its original size, and the fustian easily renewed, as may be required. It is claimed for this die that mild and loamy clays can be passed through it with facility, and clean, sharp bricks produced.

With the object of equalising the speed of the clay at its centre and ends on its passage through the die, an ingenious arrangement of cheeks, compressing-chamber, and die has been patented, and introduced by Mr. J. Pinfold, of Rugby. In his invention the clay is pugged and fed forward in the usual manner by right and left-handed screw-blades to compressing rollers and a compressing-chamber consisting of that portion of the machine between the propelling mechanism and the die. It is claimed by the inventor that as the difference in the speed of the travel of the clay is not seen until it has passed the die, it has been generally concluded that the fault has been with the die itself, and the efforts of inventors have been expended in improving this; but as a matter of fact the difficulty has taken place before the clay has arrived at the die, and that it required assistance immediately after it had left the propelling mechanism. The object of the inventor has been to give that assistance; this he does through the medium of cheeks which are carried past the end of the propelling rolls and forward right up to the back of the die, and are fitted with an appliance for lubrication. In other machines where cheeks are applied they are arranged between the die and the propeller only. On turning on the water which is used for lubrication, the clay adjoining the cheeks becomes greasy or slippery, and thus the ends are eased and assisted as the clay travels towards the die, and no lubrication whatever is needed at the die itself. The inventor has found in working that a pressure of water of from 40lb. to 50lb. per square inch is necessary to overcome the pressure of clay in the back of the compressing chamber, and if a lower pressure of water is applied the cheeks will not work, owing to the pressure of clay on the lubricating orifices being greater than the water pressure. It is, therefore, usual to connect the lubricating water supply to the water space of the boiler used to drive the machinery. The die employed consists of an iron casting lined with hard wood, the inside surfaces being shaped to a definite angle, and in a peculiar form, so as to minimise the effect as much as possible of the difference of travel between the ends and middle of the stream of clay. The wood lining of the die is lined with brass, which is fitted with the lubricating portion of the die, which lubrication is applied in such a position as to aid the ends, whilst retarding the travel of the middle of the clay.

With the object of reducing the side friction of the clay on the die, Messrs. Clayton, Howlett, and Venables, of Harrow-road, London, have also introduced a rotary die. This consists briefly of a pair of large rollers, arranged vertically the length of the brick, and driven by suitable bevel gear. The top and bottom of the die are lined with brass, are stationary, and readily renewable when worn; water is used as the lubricant, and these are suitable for both plain and perforated bricks.

Although a great deal of ingenuity has been expended in making dies of various forms, none can be pronounced as the best under all circumstances, and for all kinds of clay. Mr. J. Hill, in writing on the subject, recommends a plain parallel water die made of soft wood as very effective. It is made of a depth of about 9in.

from back to front, and lined with fustian in one piece, tacked round the back of the die, and left perfectly loose towards its front. A groove is cut round the woodwork inside, about  $\frac{1}{4}$ in. wide and  $\frac{1}{4}$ in. deep, to allow the flow of the water all round the die between the wood and the fustian. It is claimed that by leaving the fustian loose, as above described, it is always perfectly smooth, and does not form creases as it does when the fustian is secured, nor does it wear out so fast. The pressure of the clay on the fustian prevents the water escaping too rapidly from the die.

#### CARPENTERS' HALL LECTURES.

##### I.—THE ARCHITECTURE OF THE WORLD IN ALL AGES.

A SERIES of six free lectures is being given on Wednesday evenings at the Hall, and under the auspices, of the Worshipful Company of Carpenters, London Wall, E.C. The first address was delivered on the 5th inst. by the Master of the Company, Mr. Banister Fletcher, J.P., D.L., F.R.I.B.A., who took as his subject "Architecture in all Ages," illustrating it by a series of nearly two hundred photographs and drawings hung on the walls, besides some diagrams lent by Professor Roger Smith. Primarily, Mr. Fletcher remarked, architecture arose from the necessity of providing a habitation for man as a protection against the climate and weather; but had it never progressed beyond this its legitimate object, it would never have risen beyond the level of building. Having quoted Viollet-le-Duc and Gwilt on the origin of human habitations, the lecturer described the rock-cut caves and temples of India, and then proceeded to sketch the various forms of architecture throughout the world, giving illustrations of the leading examples of each class and period. Beginning with Egyptian and Assyrian styles, he passed on to the Hindu, Chinese, and Mexican, returning to the Greek, Roman, and Saracenic, with its development in Syria, Persia, India, Turkey, and Spain. Thence he went on to consider the Romanesque, the Italian, and the Gothic, with examples in France, Belgium, and Great Britain. Continuing his survey of the history of the art, Mr. Fletcher pointed out that the Elizabethan style was fostered by the introduction of the features of Italian art; it consisted, indeed, of an adaptation of forms derived from a study of Roman models to the requirements of the times, occasionally mixed up with the remains of Debased Perpendicular. While it presented sometimes a somewhat incongruous appearance, it nearly always had a picturesque effect. The Elizabethan style, which was scarcely at all used in churches, of which few were built at the period, was the first introduction of Renaissance into this country. The Renaissance as afterwards developed was the designing of new buildings on the ancient forms of art, and in Italy passed through three phases—the Florentine, Modern Roman, and Venetian, each of which was described and illustrated. From Italy the style passed into France, where it was developed on the rules and principles laid down by Vignola, and at a later period was brought into England, being introduced from Italy by Inigo Jones, and carried on by Wren. Following the Renaissance at the end of the 18th century came a period of minute copyism of ancient Greek forms, a big example of which was St. Pancras Church, another the British Museum, and a third and still later specimen, Euston Terminus. The unsuitability of pure Greek buildings having been made manifest, an effort was made to escape from the thralldom of mere copying and to return to the true principles of art by designing new forms of buildings, and this led to the second revival of Renaissance.

More recently, Pugin, Street, Scott, and others had revived Gothic architecture, although we had no definite style that could be called a genuine modern or 19th-century style of architecture. In conclusion, the lecturer remarked that hitherto each new type was the outcome of some distinct impulse; but the impetus given to invention during this century by the utilisation of steam and electricity, although it created a new style in shipping, in architecture it had done practically nothing—a fact which he regarded as due to the great competition of the age, which led all to strive to turn out as great a result as possible with the smallest outlay of intellect or money.

##### II.—DRAWING: GEOMETRICAL AND PERSPECTIVE.

The second of the series of free lectures at Carpenters' Hall to members of the building trades was given on Wednesday night by Professor T. Roger Smith, F.R.I.B.A., who took, as his subject, "Drawing: Geometrical and Perspective." Drawing is becoming, he observed, more and more one of "matters relating to building." Every difficult piece of construction is worked out on paper. Our contracts are arranged, our estimates are made on the basis of plans and drawings, and these are consulted every hour during the progress of any important building, while the deposit of plans of sites, drains, and buildings, which modern laws and by-laws so often render necessary, has made it requisite to prepare copies, in duplicate or triplicate, of plans of almost every building, even the smallest. This is the case far more now than when the lecturer began to become familiar with building matters, and very far more than it can possibly have been a century back; while, before the use of paper had superseded parchment, or even before the time when paper was obtainable in large sheets, drawings were a rare luxury. No one can do much building work who cannot read a drawing with facility, while no one can hope to rise to any position of responsibility in connection with buildings who cannot make a tolerable drawing of anything that he has to deal with. Even those the nature of whose work makes it unlikely that they will be called upon to make drawings, will do well to learn to draw, in order that they may be able to understand and make use of working drawings. The phrase which I have just made use of—viz., "reading drawings," is constantly employed to explain this power of understanding drawings, and is very significant. To one man a drawing conveys information, just as a book in a language he understands will do; to another man a drawing is as much a puzzle as a book in a language which he has not learnt; and the man who cannot understand the drawings for a building is unavoidably shut out from much important employment in connection with it for which he might in other respects be quite fitted. Now, there is no way of learning to read surer than learning to write—no way of learning to read drawings surer than learning to make them. This alone ought to give draughtsmanship great importance to the members of an audience like the present. The subject naturally splits into two divisions, and I have attempted to mark them by the use of the two words, Geometrical and Perspective, in the title. Let us consider for a moment what is the nature of the distinction. I think it cannot be more tersely put than if we say that geometrical drawing represents things as they are, and not as we see them. Perspective drawing represents things as they appear to the eye, and not as they are. This sounds like a paradox, but it is the simple truth, and the paradox, and there be one, rests upon the singular circumstance that our sight, from which we derive almost all our notions of solid things, rarely, if ever, lets us see them as they are, but almost always modifies or distorts them in a manner which you will recognise the moment it is pointed out to you. Go into a great building with an open roof—say, for example, Westminster Hall, and look up at the trusses of the roof. You see them all—one beyond another—or at any rate you see a portion of each past those nearer to you, and each one as you look up at it appears below the one on this side of it, and smaller. The trusses appear to be diminished and lowered by distance, and in drawing such an interior in perspective, the draughtsman would put in each truss lower and smaller as it recedes from the eye. In real truth, however, as has just been said, the trusses are equal in size and all on a level, and were the draughtsman



showing the interior of Westminster Hall on a geometrical drawing, he would draw the trusses all of a size and all at the same level (in such a drawing as, for example, a longitudinal section). Take a geometrical elevation of St. Paul's Cathedral, and look at the relative positions of the great west portico and the dome. The geometrical elevation will show you what is the fact: that the dome is exactly behind the portico, so that a line which divides the portico into two halves, and cuts through the apex of the pediment, if produced, would divide the dome into two halves. Go to the building itself, and you will find that though when you are exactly opposite the two features are in the same relation to one another, the moment you move to the right the dome appears to move to the right also, and the apex, or point of the pediment, begins at once to move towards the left of the dome, so that a person taking a view of the cathedral from a point where the front and flank are both visible—for example, from the S.W. angle of the churchyard—must represent it, with this pediment towards the left and the dome towards the right. Perspective drawings then mean drawings of objects as the eye sees them, including, if you will, other things than buildings, though to buildings we shall chiefly confine our attention. Geometrical drawings mean diagrams which represent the actual shapes and arrangement of things, but represent them as we never exactly see them, but only as we know them to be—just in the same way as a map represents a country, a town or an estate—not as we see it from some neighbouring eminence, but mapped out to scale. The foundation of all geometrical drawing is the use of a scale and the power of measurement. Take the simplest and most familiar case—the ground plan of a house. Here you have what may very well be described as a map of the floor and walls exactly as they are to be, but as it is never possible to see them. Supposing this to be drawn to an eighth scale—i.e., a scale of an eighth of an inch to one foot, then the value and usefulness of the plan depend chiefly—I may say entirely—upon the dimensions of every part of it being exactly one ninety-sixth of the dimensions of the corresponding part of the building or intended building. You want to know how thick a wall is to be, you find it drawn a quarter of an inch thick, and you multiply that dimension by 96 (or more correctly, you perform the simple process of measuring with a scale, which is equivalent to multiplying by 96, without trouble), and you find that your wall is to be 2ft. thick. When you have once decided on your scale, you have to make use of it while drawing your plan, as you are to make use of your 2ft. rule, or your rods, or your tape on the real building, and when your plan is about to be carried into execution, you make the same use of the scale to inform you what to set out on the work. This, which may seem too obvious to need stating to some of you, but which could not quite be passed over or taken for granted, is the foundation upon which the whole system of geometrical drawings for builders rests; and, in actual practice, one cannot be too careful about having every part of every geometrical drawing correct to scale. If you fail in that, you fail at the outset. The next thing to point out is that it is only possible to show one aspect of the object illustrated in one geometrical drawing. In our view of St. Paul's Cathedral from the south-west, you see at once a glimpse part of the front and part of the flank. To give you some notion of this geometrical drawing you would require three drawings—a front elevation, a side elevation, and a plan. From this limitation of geometrical drawings to one aspect only in one drawing arises the need of the three sorts of drawings which are in common use in connection with buildings—plans, elevations, sections. A plan is a diagram or drawing to scale of one of the floors of a building or of its roof, showing also the inclosing walls and the openings in those walls. An elevation is a diagram or drawing to scale of the outer face of one of the walls of a building. A section is a similar drawing of one of the inner faces of the wall of a building, showing along with it the level of floors, the construction of roofs, and the depth of foundations. It is made by assuming an arbitrary line from front to back or from side to side, and imagining the building to be cut through on that line, and then putting into the drawing elevations of all those parts which would be disclosed by such an operation, while those portions which would be actually cut through are tinted or lined so as to make them dark, just

as the walls on a ground plan are tinted. These three sorts of drawing—plans, elevations, and sections—are all requisite if a building is to be shown with anything approaching completeness, and usually in a building of any size several of each sort are required as—e.g., a plan of each floor and of the roof, an elevation of each external face, and at least two sections. A fourth sort of drawings is also required on any building that is at all complicated—namely, detail drawings. These are to a large scale, and the more intricate the construction, or the more elaborate the work, the more numerous and important will they become. Detail drawings to elucidate important parts are partial plans, elevations, or sections, or often all three grouped on one sheet, drawn to a bold scale, or even full size, and representing a small part only of a building. Going back to my account of geometrical drawings—namely, that they correctly represent the building or the part of the building which they depict not as it appears, but as it actually is—it arises that it is of great importance when designs are being made that the shapes selected shall be good, the proportions pleasing, the forms well chosen; for upon this it really depends whether the work shall be satisfactory in appearance or no. A geometrical drawing gives a good clue to the real nature, and therefore to the appearance, of the future building, even though it does not represent it as it will be seen. If your drawing looks ungainly, so will the building. If the proportions of your building are to be right, let there be definite relations between the parts of your plan, and section, and elevation. It should, therefore, be part of a draughtsman's care in preparing drawings to be built from, that these drawings, which represent the exterior or interior—in other words, his elevations and sections—look as like as possible to the intended building. This, I assure you, is a most necessary thing to keep in mind. Drawings are far more often than not so got up as to present an appearance very different from that of a proposed building. They are often, intentionally or unintentionally, very deceptive. Little flat pilasters are drawn as if they were strong, bold columns, throwing a great, well-marked shadow; blank windows which will be executed as panels are coloured so as to look just like adjoining windows; materials that are of contrasted colours are drawn as if they were all uniform—or, on the other hand, materials of one colour are shown as if there was a contrast. In these and a score of ways many showy drawings are deceptive, and this practice is very much to be deprecated as on every account bad. Let your drawings be directed to giving as exact a representation as possible of what is to be built. First, then, let no drawing be turned out without a scale, unless it be a detail to a very large scale indeed. It is quite right to write the words, "eighth scale," "quarter scale," or if you wish to be precise, "scale of an eighth (or a quarter) of an inch to one foot." But draw it also. A drawing without a scale is a lock without a key. The convenient scales to use are those found on the two-foot rules in ordinary use, and are based on a division of the foot—our usual standard—into inches and eighths of inches. The smallest scale in general use is a fortieth of an inch to the foot, otherwise described as forty feet to the inch. This is the scale usually selected for block plans to show frontage, drainage, roadways, and the like. The next in practical use is sixteen feet to an inch, chiefly employed for first sketches of buildings, and for general plans of very large complex buildings. It is almost the smallest available scale on which the thickness of walls and the position and size of openings can be indicated with any approach to correctness. The most largely used of all scales is the next one—an eighth scale—i.e., an eighth of an inch to a foot. A great deal both of arrangement and construction can be definitely shown to this scale, and the plans of extensive buildings are almost invariably drawn to it. An eighth scale is also often used for small buildings. The next scale—a quarter scale (or a quarter of an inch to a foot)—disputes with an eighth scale the honour of being the most serviceable. There can be no doubt that many minutiae, which are only with difficulty either drawn or seen on an eighth scale drawing, can be clearly shown to a quarter scale, and that consequently this is an excellent scale to build from. But anything like a large building drawn to quarter-scale covers a great deal of paper, so that the plans are unwieldy and inconvenient. Quarter-scale is, there-

fore, the scale to adopt for moderate-sized buildings, or for important parts of large ones. Half-inch scale is an admirable scale for working drawings of portions of buildings. Nearly every detail of construction can be shown to this scale, and a great many points of architectural treatment and ornament can be settled on a  $\frac{1}{2}$  in. drawing; though it must not be overlooked that most of these things, whether they relate to construction or treatment, must have been to some extent dealt with before in earlier drawings to a smaller scale. The two scales next in rotation and in use for detail drawings larger than  $\frac{1}{2}$  in. are  $\frac{3}{4}$  in. and 1 in. The latter is not infrequently employed, the former only seldom; but they are both inferior in serviceableness to the scale of  $1\frac{1}{2}$  in. to the foot, or an eighth of full size. If there are parts of the work which cannot be properly shown to  $\frac{1}{2}$  in. scale, it is generally best to draw them to this scale, which is bold and allows almost everything that has to be shown to appear clearly. It is chiefly for details of joinery that drawings to so large a scale are required. After this should come full-size details. The joiner, of course, as all of you know, makes these for every important piece of joinery on the flat slips of wood planed up for the purpose. The architect usually supplies the profiles of mouldings, and sometimes the enrichments and ornaments to full size, and in doing this guides himself largely by the effect of his previously executed working drawings to scale, and especially by the  $1\frac{1}{2}$  in. scale drawings, or 1 in. scale drawings, if such have been made. Joiners' full-size details on rods having been mentioned: I should like just to hint in a modest way that I think they are often a little more crowded up and complicated than they need be. I am aware that they ought to be compact, and I am aware also that the work of different men differs in its clearness; but I think I am correct in saying that this work as customarily carried out is often needlessly compressed together, and as a consequence indistinct, not easy to understand, and of course, therefore, easy to mistake. There are scales to avoid. For buildings, it is undesirable to employ a tenth, a fifth, a sixth, three-sixteenths, or three-eighths of an inch, and chiefly because they are not scales usually to be met with on the rules in use, and are, as a fact, not familiar. There is one other scale more often employed which is open to great objection; I refer to half-full size. Nothing can be more deceptive than a half full-size drawing. The joinery, the mouldings, the enrichments which look satisfactory on such a drawing, come out clumsy and coarse in execution; and if they are to be satisfactory in execution, they must be so drawn, if drawn to this scale, as to appear too slight. A half full-size drawing is, in fact, too bold to be serviceable as a drawing to scale, and the eye is apt to suppose that what it represents is really full size and to be deceived accordingly. It may be worth while to observe in passing that for terracotta work details have to be drawn larger than full size, as everything in terracotta shrinks during the process of burning. A point on which the practice of architects and architectural draughtsmen varies a good deal is the figuring of dimensions; but I think that anyone with actual experience of building must admit that it adds very much to the usefulness of a drawing if the important dimensions are figured, so long as it be done correctly and in the way in which the workman wants it. What is required is that the dimensions needed for setting out and regulating the work should be supplied. Of course, where the plan has no dimensions, they have to be obtained by measuring, and a draughtsman is far more likely to measure accurately in the quiet of his own room than a clerk of works or foreman on the actual job with perhaps wind and rain, and certainly inconvenient office accommodation, to struggle with. The figures on the ground plan should show the length of each main wall, and the distance from the end of each wall to the centre of the nearest opening, and from that to the centre of the next, and so on; or, if more convenient, to the centres of the piers. Always work from centres in preference to giving the dimensions up to the jambs of an opening, and then its width. The thicknesses of the walls should be carefully figured, and so should the main dimensions—in the rough brickwork—of the rooms. Do not forget that the thickness of plastering or panelling has to be deducted from these before the finished size of the room is arrived at. The heights above the ground-floor level (and below it) to the



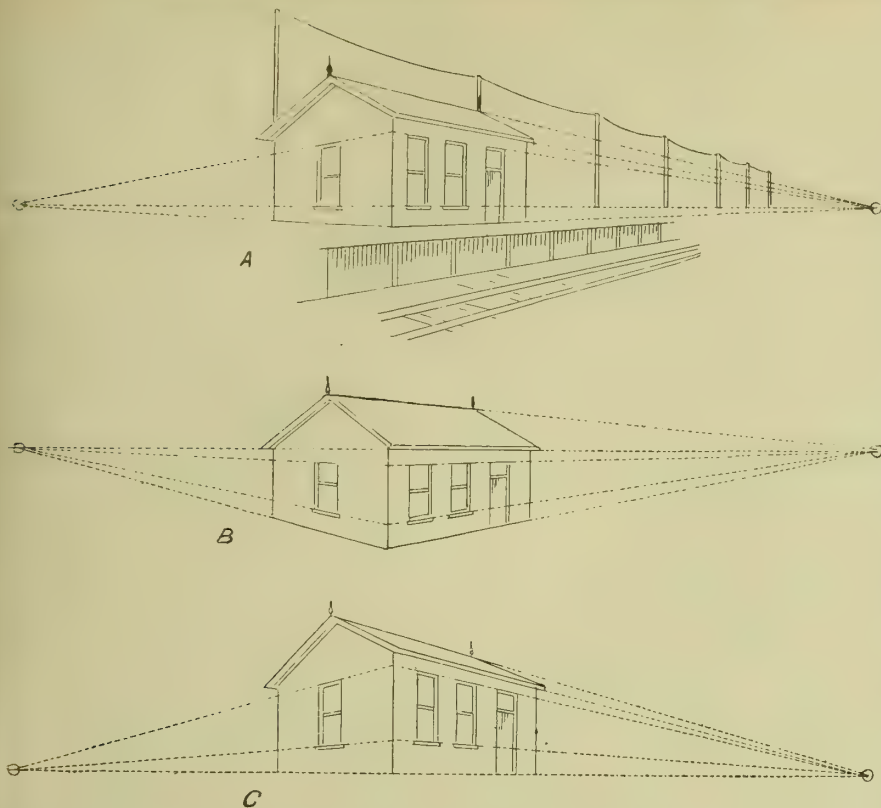
finished surface of each floor should be figured, also the height of that level above some fixed bench mark, and it is very desirable also to figure the height of the window-sills of each story above the floor level. Where an upper floor is differently divided from the lower floor it is also well to figure the altered dimensions of the rooms. What has been said of figured dimensions might perhaps have formed part of a more general maxim—namely, that the best drawing is the one which gives the most information. Though this seems a self-evident statement, I believe it to be very unpalatable to many people whose business it is to make drawings for buildings, for not a few of them seem to consider it quite right, if there is a difficulty, to avoid it in place of attacking it. Of course, when an ignorant person makes a drawing he cannot make it so as to afford much information, because he cannot put on to the paper knowledge that he has not got in his head; but I am presuming that the draughtsman either does know or could find out, and I say that the best draughtsman is the man who encounters and solves as many as possible of the difficulties that a proposed building is likely to present, and the best drawing is the one which gives most information, especially on the difficult points. Perhaps this applies more pointedly to the preparation of sections than anything else. It is often possible for the Idle Apprentice to select such a part of the building to cut through with his section line, that nothing but commonplace construction will be encountered, so that he produces a section indeed, but one which tells the workmen little or nothing that they could not have known quite as well without it. Had it been the Industrious Apprentice, he would have chosen those parts of the design to illustrate where there really was a good deal of elucidation required, and would have produced a drawing that would have been a serviceable guide in many of the difficulties and uncertainties that are sure to present themselves as a building proceeds. There is no better way of filling one's head with knowledge about buildings than drawing them, or parts of them, from the actual object. I dare say you are all aware that a part, and probably the most important part, of every architect's training for the practice of his profession is sketching and measuring and drawing out existing buildings. Everyone who has anything to do with building—either arrangement of buildings, construction of buildings, decoration, or design—should accustom himself to this practice. You look far more keenly at a thing when you are trying to draw it than at any other time; you study it more thoroughly; you understand it better; you know what it looks like on paper, and if at any time you want to do something like it, you have the sketch to recall it to your memory, and the fact that you made that sketch will help you to draw something like it, or, at any rate, in the same spirit. These remarks apply quite as much to construction as to design or ornament. The use of the pencil is the best means of learning how to construct, as well as of acquiring a knowledge of design. Let me, therefore, urge all of you who have the opportunity of going into buildings to draw every bit of construction that comes under your notice, and not to refrain because the thing seems simple and familiar. Ten to one you will find, while making your sketch and explanatory notes, that you turn up something which you did not know before, and which you could not have fixed definitely had you been called on to draw out or describe that particular construction. Take a case in point. The skirting of a room of good quality is familiar to most of you, and you might find no difficulty in making a detail of it if it were wanted. But suppose you sketch it in a good house, you may find it grooved to the floor—that is to say, the floor boards grooved to take it. There are more ways than one in which this could be done; but one is better than the others, and if you attempted to draw it you would probably find out which is the best, and why. It is of importance not only in work which is being done for your own improvement, but in taking plans and elevations of buildings about to be altered, that you should get the habit of drawing to scale on the spot. It is not difficult to acquire. It is extremely serviceable in making your sketches and drawings good ones, and, most important of all, it generally leads to your finding out if a dimension has been read wrongly—a mistake that cannot always be avoided, especially if you are using rods.

There is not much to be said about drawing instruments. You do not require many, but they should be good. The best are of English make, next to them are the better Swiss instruments; common Swiss ones and common English ones are both disappointing. Good second-hand instruments are more useful than new ones of second-rate quality. Those which turn into more things than one, as is the case with most sorts of pocket dividers, are attractive; but they are very rarely so steady, so durable, or fitted with such good pens as the ordinary instruments, where each one is only adapted to its own functions. For any ordinary work the refinements of needle points or spring bows, or double joints, are much more trouble than they are good. It is important that all drawings which have to stand wear and tear should be in ink, and this applies especially to all drawings signed as part of the contract. Detail drawings, which will not be long in use, may very well be on cartridge or lining paper, and, though it is desirable to put them into ink, it is not so essential; but general details, such as will be in use right through a building, such, for example, as half-inch scale details, should be on stout paper and in ink. It is desirable to use a firm, bold, strong line, clear, but not too fine, and the ends of lines, joinings, mitres, and so forth should all be truly and accurately put in. A rational system of colouring is very desirable, and the general principle upon which to arrange it is to adopt colours near to those of the material represented. To colour stonework blue, for example, as is often done, seems to me a great mistake. A complete scheme of colour will be found in Mr. Phéné Spiers' book on Architectural Drawing, of which a copy will be found in the library of the Carpenters' Company. This book, I may as well say, is well worth the attention of those who wish to make themselves good architectural draughtsmen, and that as much for its excellently-selected illustrations as for its sensible letterpress. The multiplication of correct copies of drawings is a subject of some importance in plans where several copies are wanted. Probably for a single copy, tracing is the best, and though the work of making tracings is not liked, it is a very good initiation into draughtsmanship for the tracer. Tracing cloth is better to use than tracing paper, as being more durable. Mounted tracings are unsafe, as they are often distorted in the mounting. When several copies are required, a plan now in use is to reproduce them by the aid of photography. The ferro-prussiate process—a photographic one—gives copies in which the lines are white on a dark-blue ground. In another method they are dark on the ordinary white ground; but the saving of time is so great that these processes are largely made use of where many copies of plans are wanted, as, for example, by the School Board for London. I am bound to add that sometimes the drawings so made, and which I have known to be issued to builders, are difficult to decipher, and not clear enough to build from without considerable trouble and consequent risk of mistakes. The clearest duplicates are obtained by lithography, either photo-lithography or the old-fashioned but excellent line lithography. Another plan, very serviceable, and not expensive, but not, I think, so applicable to very fine work as to drawings of a bold quality of which several copies are required, is to make the drawing in anastatic ink, on properly-prepared paper, and getting the lithographer who supplies the materials to print the copies. This is, in fact, one sort of lithography. It should not be forgotten that all these duplicates give the lines only, and each must be coloured by hand if colour is wanted. There may be some who aspire to become very good architectural draughtsmen among my hearers to-night. The first requisite for anyone who sets this aim before him, is general skill in drawing. You can never carry the art of the geometrical draughtsman to perfection without some fair amount of familiarity with other sorts of art. The best training is drawing the figure from the flat, the antique, and the life, and the man who has mastered that accomplishment to some extent, will find his reward in increased steadiness of hand, sureness of eye, and power generally. Then, to be a thoroughly good draughtsman, a man must have complete mastery of his instruments, must work with as much ease with the T-square, set-square, and bow pencil as if he had only a brush or a lead pencil in his hand, and must be able almost to forget that he is using instruments. He must

also master descriptive geometry, and be ready to use geometrical methods in laying down his plans and setting up his elevations and sections, and especially in fixing the proportions of his designs. Few things are, I think, of more importance to a draughtsman, who takes up the more advanced part of architectural drawing, than drawing from memory. To be sufficiently well acquainted with a feature, or all the features of a building, to be able to draw them fairly correct, without any memorandum before you, is to have your mind to some extent stored with architectural precedents, and trained to reproduce them when wanted. All students of schools of art who are examined for certificates in elementary architecture, are now required to be prepared to draw any of the orders, Greek or Roman, from memory, and very well as a rule many of them do it; but in addition they have opportunities of showing if they can recall buildings or features in buildings sufficiently well to draw them, and I must say that, though it is only a portion of the students who attempt this, there are always some who not only attempt, but succeed well in what I regard as an excellent exercise, and one which I strongly recommend you to practise in your leisure hours. This is hardly the time to speak of the difficult art of designing architecture, but this much may be safely asserted, that the man who hopes to become a successful architectural designer, must be a facile, and should be a finished, draughtsman of architecture; limiting ourselves, however, only to drawing, it is, I think, only needful to point to a few good drawings of good work, such as occurs from time to time in an architect's practice, in order to show what skill is required of the man who has to make them. Nowhere can you see a better selected set of examples of this than in Mr. Spiers' book, though were this lecture a conversation with a few of you in a room where it would be practicable to refer to small-scale drawings such as would be lost on these walls, the case could be made even stronger. I may, however, refer you to illustrations copied or photographed from architectural drawings which appear from time to time in our professional journals as examples of work requiring the greatest skill. In the matter of highly-finished drawings, English draughtsmen yield to none as far as line work is concerned; but when we turn to what are called washed drawings, that is to say, drawings shaded in sepia or Indian ink, and coloured drawings, we must admit that though these things are fairly well done sometimes in England, especially by men who have studied abroad, French draughtsmen, as a rule, are far more skilled in the method, employ it more often, and carry it to a higher degree of finish. The drawings prepared by architectural students who have gained the Grand Roman Prize, and go as travelling students to Rome, are, as a rule, wonderful specimens of draughtsmanship.

We will now turn to perspective drawing or pictorial drawing, the sort of drawing which has for its aim to represent solid objects as they appear. As I before said, geometric drawing produces diagrams to scale, each one giving only one face, one aspect, of a solid object. Perspective drawing is not to scale, and produces drawings which are pictures and not diagrams, and which attempt to show solid objects as the eye sees them. It is quite true that as applied to buildings perspective drawing is chiefly used to show what an intended building will look like when it is built, and we are not much concerned to-night with other applications of the art; but please understand that the laws of perspective affect every solid thing, and that landscapes, portraits, still life—in short, everything that a painter depicts, must be correct in perspective if it is to be a true representation, and that the study and practice of perspective are matters of a much more extended application than to the representation of buildings only. Suppose you go to a small railway station at some place where a straight run of line extends for miles, and you wait for a train. At first you see a mere speck far off, which it is difficult to make out. While you look the speck becomes more distinct. As it nears us it seems to grow and grow, and as you fix your eyes on the train during the last hundred yards or so it seems literally to swell, so rapidly does its apparent size increase, till it comes to rest at the platform. As it moves off the great bulk begins to shrink, at first rapidly, and then more slowly, till it once more has diminished to a mere speck. If we glance at the rails on which it has





draw a house, rectangular on plan, standing in such a position that you see both its front and flank, or if you get a good photograph of it and then prolong all the lines representing things that are level, you will find that they form two groups or series which actually do meet, and meet at two points on the horizon far apart, one to our right and one to our left. These, in perspective, are termed vanishing points, and in representing objects in perspective we must make use of such points and draw the lines tending towards them. We naturally, therefore, inquire where they will be found. We already know that they are on the horizon, and if you look towards the horizon in a direction exactly parallel with the direction with one of the two series of lines, say that series which consists of lines on the front of the building, you are looking to the vanishing point of these lines. If you now turn through a quarter-circle and look to the horizon once more, you will be looking in a direction parallel to the end of the building, and also looking to the vanishing point of the other set—namely, those lines which lie at right-angles to the front—those which are on the flank of the building. This is the case whether you are sketching an existing building in perspective or making out the outline in perspective of some intended building. When your objects are rectangular, as is the case with 19 buildings out of 20, your vanishing points are always 90°—a quarter circle—apart; and it may be easily understood that it is not always practicable to place both of them, or even one of them, on even a very large sheet of paper. There are various contrivances for drawing the lines of a perspective drawing towards a point away from the drawing (the best of them is the instrument called the *centrolinead*); but it is always simplest and best, if possible, to work at a large drawing-table; pin down the paper securely, and draw the lines towards the actual points (marked on it with pins) by the help of two long straight-edges. When the drawing represents an interior it is frequently, in fact usually, the case that only one vanishing point is required, and that point is on the paper and in the picture. In most good interior perspectives you will note that the lines are all drawn converging towards a point in front of the spectator. It is often usual to call this a point of sight; but it would be better not to invent a new name, as it differs in no respect from a vanishing point such as we have talked about. Suppose you were to take a picture-frame, the size of an intended picture, and put a glass in it, and fix the frame, and also fix at your station a card with a small aperture to look through, you might, if you had a kind of ink that would make lines on the glass, trace the outline of your objects on it, and of course a straight line—say a wire—stretched tight from the position of your eye to any point in the building would pass through, if it could penetrate the glass, just at the spot where that point in the building from which it starts is represented on that outline. The process pursued in making a drawing from plans and elevations of an intended building is a little like a representation on paper of what you would see if such a series of lines as I have suggested could exist. You make a plan of the building, or of so much of it as would be visible from the point where the spectator would be put. You mark by a line on the plan position of the picture, which it is convenient should touch the plan of the building at one or more points. You then draw a series of lines from all the corners, centres, openings, and other features of the building to the station of the proposed spectator, and where they cut the picture line on plan will give their position in relation to one another in the picture. You find the vanishing points by drawing two lines on the plan, starting from the position of the spectator and parallel to the front and side of the object, and continuing them till they cut the picture line. The heights are obtained by a little management, the basis of the mode of dealing with them being that every upright line, which on the plan would touch the picture, is to be drawn the full height of its geometrical representation, and all others shorter than that, as they are near to, or further from, the picture. The information you now possess, if I have made it clear to you, is almost all that is required for ordinary work by the perspective draughtsman; but then he must add to it a great deal of skill, and no small amount of practice. Perspective drawing may be made one of the most difficult and perplexing subjects, and it figures as such a subject in most books. I

come and gone, and which we know are laid accurately parallel, they seem to be converging towards a distant point, and each sleeper appears shorter than the one this side of it, and each interspace from sleeper to sleeper seems smaller as they get further off. We recognise thus that objects diminish in apparent size as they get further and further off. If this is so, that quoin of that part of some small station building across the line which is furthest from us must appear less in height than the quoin nearest us, and we recognise that it is so. The horizontal lines of the top and bottom of the station wall appear to be sloping—the top line sloping down, the bottom line sloping up. Of several windows all of the same size, each one looks smaller than its nearer neighbour, and larger than the more remote neighbour. Each telegraph pole seems to be growing shorter as the line recedes, and, like the eaves of the station roof, the telegraph wires also seem to slope. If we see the end as well as the side of the station building, the horizontal lines of that part of it appear also to slope, but in a different direction from that towards which the lines of the side slope. If all this is correctly drawn for us we recognise that it properly reproduces the appearance of the actual objects; and if a set of correct geometrical plans and elevations of the station, &c., are before us at the same time, we recognise how completely different the one thing is from the other, and we ask ourselves, On what does it all depend? What is the principle involved? Are there rules to guide us in imitating on paper these appearances? The principle involved in the perspective of solid objects is that light travels in straight lines. You may consider that the rays of light from the sun falling on the objects which he lights up are reflected from them in every direction in straight paths, and it is just those whose path lies straight from the object to our eye which enter the eye and paint a picture, so to speak, on the back of it. The path of light from any given point to the spectator's eye is a straight line. The wider the angle at which the two rays starting from opposite ends of an object enter the eye, the larger the image on the eye will be, and the larger will this object seem to be; the more acute the angle, the less space does the image of the object take in the eye, and the smaller will the object appear. Let us take our station building as an example. Suppose a pair of lines drawn from the near end of it through space to the eye of the spectator, and suppose another pair of lines, drawn from the further end to that eye. The apex of the triangle which the first pair of lines make, with the corner of the building as its base, is much more blunt than

that which the second pair of lines makes, consequently the two rays of light enter the eye from the nearer corner, at a much wider angle than those from the further corner, and the nearer corner accordingly takes up more of the field of vision and seems bigger. The same reasoning would apply to any other pairs of points on the building that might have been selected, and to the paths of light joining them and the spectator's eye; and as one result if the vertical line which is distant appears shorter than the one which is near the lines joining them, which represent the top and bottom of the wall, must appear to converge towards each other. We noticed, in fact, just now that in looking at a building its top lines appeared to slope down, and its bottom lines to slope up. At some point between the two, therefore, we should expect that a level line might occur on the building which would neither appear to slope up or down. This is so; such a line would have to be exactly level with the spectators' eye, and we call it the horizontal line; everything that you look at all down upon appears to be tending upwards towards the horizon—everything you look at all up to appears to be tending downwards. In nature the most remarkable display of the horizon is at the sea-side, where the apparent edge of the sea is the horizon. By changing your position, so as to be higher or lower, you alter the horizon line. Thus, if at our original little building you were to get a ladder, and go up it till your eye was on a level with the eaves of the roof, you would find that the eaves-line had become the horizon line, and appeared level, neither sloping up nor down, while the base of the building seemed to slope upwards much more than before. On the other hand, if you get down from the railway platform, on which we may suppose you to have been standing, on to the line itself, and stoop till your eye is level with the platform—i.e., level with what the station stands on, you will see that the base of the building now appears level, as it coincides with your horizon line for the time being, and the eaves line will now appear to slope down at a more rapid rate than before. If you watch our building once more, you will not be long in detecting that each of the sloping lines representing horizontal ones slopes more rapidly according to its distance from the horizon, and you will soon decide that all the horizontal lines on its front appear to be pointing towards one point, and that point somewhere on the horizon, and that all such lines on its flank seem to be pointing towards another point also on the horizon. If you accurately



strongly advise those who wish to learn it to get personal instruction, and that over a drawing board. You may probably find instruction in a class, where the teacher is practical, which will answer the purpose; but the best method is, after a very little study of the principles, to begin a drawing under the guidance of someone who is familiar with this sort of work. You will find it quite as difficult to learn perspective drawing by a book alone as to learn in the same manner to ride on horseback, or to play at cricket. It was stated early in the lecture that perspective has to do with other things beside buildings with straight walls and roofs. See a line of soldiers, straight, well set up, and perfectly in line. They look like a wall, and if you drew them you would draw them like a wall. Let the word be given to fall out, and the wall dissolves; but the men of whom it is composed, though they have dissolved into irregular groups, are just as much influenced by the laws of perspective as before, and their apparent size is just as much diminished if they are at the remote part of the parade ground as it was when they were at the remote end of a formal line. In drawing or painting the human figure, and in other artistic work, what is called foreshortening, which is one of the sources of artistic effect, is very much practised. This is perspective. Represent a man with his arm stretched out across the picture like a sign-post, and you have a bold figure not very difficult to draw; but let him swing his arm round and point right at the spectator, or nearly at him, and you tax the resources of the most skilful draughtsman to render correctly on paper the effect which this attitude produces on the spectator. Foreshortening, or in other words the perspective of the human figure, needs much practice to manage it well. Another use of the word perspective is to be found in the mouths of those who discuss paintings, especially landscapes. I refer to aerial perspective, for which phrase might be substituted "effects of atmosphere." Here is no longer any question of outline, but of those sobering effects due to the distance of an object, which rob its outlines of sharpness, its colouring of contrast, which hide much of its detail, and harmonise and blend together things that would be distinct and separate were the object nearer to the spectator. This is not, properly speaking, an effect of perspective at all, but it is an effect of distance, and it seems to have acquired a name which gives it some claim to mention when perspective is being considered. In taking leave of the subject, I wish to come back from any reference to the painter, or even the perspective draughtsman, to the sort of drawing which is more immediately the concern of most of us. I strongly recommend any who do not draw to make an attempt to learn. It is like acquiring a new language. After you have been practising drawing for a time, every drawing that comes into your hands has a new meaning for you, just as when you have done exercises in a foreign language for a time you begin to find that books in that language cease to be impenetrable mysteries to you, and find a voice with which to address you. When you get further, and are able to make good, useful drawings of intended works, you begin to feel like the man who has mastered a foreign tongue sufficiently to be able to speak in it; and it is not alone the sense of a new power which is desirable, valuable though that may be, but that power makes you a more useful man, and a more valuable man on a building, in whatever capacity you may be engaged, and will give you more certainty of employment and better prospects of good pay. Only let me urge on those who learn to draw to fix it in their minds that they must draw *well*. Your work, whether simple or otherwise, should be clear, vigorous, distinct, free from blunders, executed with a clean line, true to scale, and, in short, good in quality.

The Rev. W. Haworth, acting as surrogate to Lord Grimthorpe, presided over a Consistory Court, held at York Minster on Thursday, the 6th inst., when a faculty was granted the vicar and churchwardens of the parish church of Selby, to take down the modern roof over the two western bays of the south aisle; to fix a new roof to correspond with the ancient portion of the roof; to take down and re-fix an organ; and to make certain other alterations.

At Friday's meeting of the town council of Arbroath, N.B., it was decided to purchase the Abbey Lodge at a cost of £1,050, in order to maintain the amenity of the Abbey ruins.

#### WAYSIDE NOTES.

I NOTED no foreshadowing of a great benefit to the architectural profession in the Queen's Speech. An item of some interest, however, is the promised reintroduction of a Bill to facilitate and cheapen the transfer of land in England, which, as I have at times pointed out, should be a measure calculated to encourage gentlemen to build their own houses rather than to buy or rent houses erected by strangers. Then it is interesting to know that, having got a new Employers' Liability Act, means are to be taken to pass a Bill for ascertaining the liability of employers in cases of accidents, which would be better business for the employers than the employed. It is well, too, that measures are to be taken with a view of consolidating and amending the laws relating to the public health in the Metropolis. Something in this way has long been required. I am glad, above all, that Her Majesty should state that attention is to be drawn to a very urgent matter, and that is the insanitary condition of many of our camps and barracks, the latter of which too often of late have proved to be little else than hot-beds of malignant fevers.

Judging by what has come under my notice through the Press and private sources of information, the Dublin barracks are worse than any. I am told the whole of the existing arrangements there ought to be swept away, and new buildings erected for the accommodation of the troops. It is, I believe, a fact that the drainage system has been many times the subject of extensive repairs, &c.; but that, as might have been expected, no patching up of an old drain-system is of any permanent benefit. Doubtless there are very many other of our soldiers' homes that require most drastic alternative measures to render them really fit for occupation. With camps, as distinct from barracks, there should not be difficulty in rendering them thoroughly healthful, since they are generally composed of a number of small, low buildings, with light and air all round. But there is no excuse for the unwholesome conditions under which our soldiers are placed in many barracks. The buildings could be made as healthful as possible if more energetic measures were taken by the authorities.

The fact is, I believe, the existing drainage arrangements to be found in all but the most recently-erected barracks are altogether behind the times. Since these were planned, sanitary science has made great strides, and methods which a few years back may have been considered as good as could be are now condemned. I am assured that in many barracks the whole of the sanitary arrangements require to be thoroughly overhauled, and that means thorough reconstruction on scientific principles, which scientific principles moreover require to be in harmony with the manners and customs of Tommy Atkins. It is ridiculous to say that modern arrangements cannot be employed because carelessness and misuse will put them out of order. The arrangements should be so designed that it would be impossible to put them out of order. A modern drain-designer conversant with every improvement in systems and detail, knows that there is now no possible excuse for not rendering the drainage of any ordinarily-shaped building perfect in principle, safe against misuse, and capable of easy and rapid sweeping and cleansing in any and every part, be it pipe, trap, closet, or waste. I feel very strongly about this question of the sanitary conditions of barracks, and trust that the attention to be directed to the matter during this Session of Parliament, may lead to great alterations and a vast improvement in the sanitary condition of the buildings in which our gallant soldiers are housed.

A "Sanitary Registration" Bill is included in the list of private Bills to be introduced early this session. If drafted on a modified form to that of the first Bills brought into Parliament on this subject, the measure may prove useful. If merely brought forward by a syndicate, for commercial ends, it is best thrown out.

Now that Parliament has reassembled, let us beat the big gong and sound again the war-cry of Registration. I do not see any mention of a Registration Bill for Architects in the lists given; but I understood last year that steps were to be taken to bring it before Parliament at an early date in this session. I hope that all things are decently in order to this end, the Bill perfected as far as possible, additional

petitions signed, adversaries overcome, and other advances made. There is nothing like being early in the field where Parliamentary Bills are concerned, and no delay should be allowed to take place before the drafted measure is put in a skilful pilot's hands to steer through the always difficult course in the sea of Parliamentary criticism. The way of an agitation for the compulsory registration of architects is now well prepared, and happenings of the past few years must have put the public in a temper to believe that the architectural profession wants some sort of reorganisation. And as this reorganisation means ultimately increased education, as Mr. Robert Walker would have it, which is only to be attained through a system of compulsory examination and Registration, it would surely not be difficult for an able advocate to demonstrate in Parliament the need for the reform contemplated by the Architects' Registration Bill. Anyhow, I look forward to seeing the Registration Committee once more energetically astir, and renewing their striving for that which, in howsoever many years, must at last be attained in its completeness.

Touching the Blackwall Tunnel scheme, Mr. William Saunders, writing to the daily papers, proposes to substitute lifts for the inclined approaches to the subways. I hardly think the suggestion practical. Assuming that the tunnel is to be constructed, it will, it is hoped, be of such utility to so large a mass of trading citizens and others that continuous streams of waggons and vehicles would be passing along either subway. In which case, it is evident that no amount of provision in the way of lifts would suffice to keep the way clear of congestion. Neither would the various waggons, &c., descending, nor those ascending, be in sufficient quantities to make the utmost use of the tunnel. If the traffic through is to be always thin and desultory, it will be as well not to think any more about the construction of the tunnel, as it would be scarcely wise to expend from one and a half to two millions sterling on a work to benefit only a few East-end tradesmen. The County Council have been advised by their Bridges Committee to proceed with the scheme as planned by Sir Joseph Bazalgette; but they would surely be only showing ordinary caution if they first took pains to ascertain the amount of benefit to be conferred on the community at large by the construction of the tunnel before committing themselves to an enormous expenditure that must materially affect the rates. Having ascertained, beyond a shadow of a doubt, that the tunnel *will* be a public blessing, let them proceed to its construction as originally designed, avoiding the giving ear to suggestions about lifts and elevators.

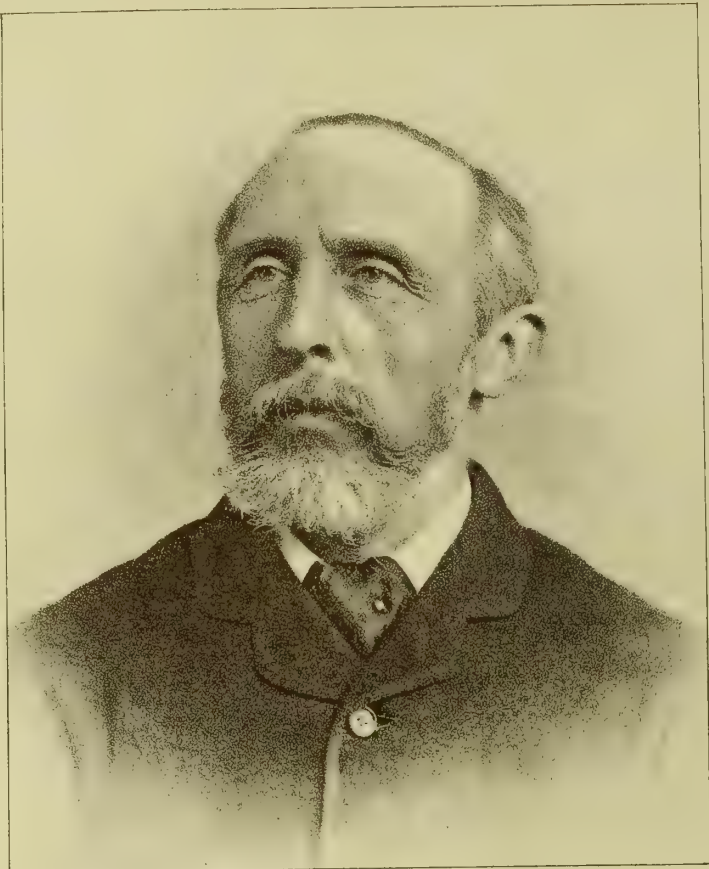
I hope that some kind friend will let you have the plates of the beautiful Norfolk screens, to which "Decorative Painter" referred last week. Doubtless, by this, you have had many offers, and Mr. "D. P." and others of us interested in Norfolk ecclesiastical work, will have the pleasure of seeing them reproduced when you have time and space.

Of Egyptology, as a science, I know little or nothing. I am deeply interested, however, in all things pertaining to ancient Egypt, its people, their manners and customs, and architecture. Nevertheless, it completely passes my comprehension to understand where they got twenty tons of mummified pussy-cats from! I can believe that if an army of ancient Egyptian embalmers were left to roam about the tiles of London they might in a short time prepare an astonishing number of feline mummies; but where and how the Liverpoolian salesman obtained his twenty tons I cannot divine. Anyhow, they sold well. It would scarcely have pleased the owners of the sacred cats to have known they were only having the animals embalmed to be, some thousands of years after, sold as manure in a country whose civilisation would rise on the ashes of that of classical nations. The moderns have little respect for antiquity, either as represented in mummy cats or other ways. I understand that classical Tivoli is to be the site of an electric-lighting station for new Rome. Imagine the echoes of Tivoli, of all places, becoming awake with the whirring of dynamos. Tivoli, where exist the ruins of the charming little circular temple, whose beautiful "order" should show us that the ancient architects were not such machine-like designers as we are prone to think. GOTH.







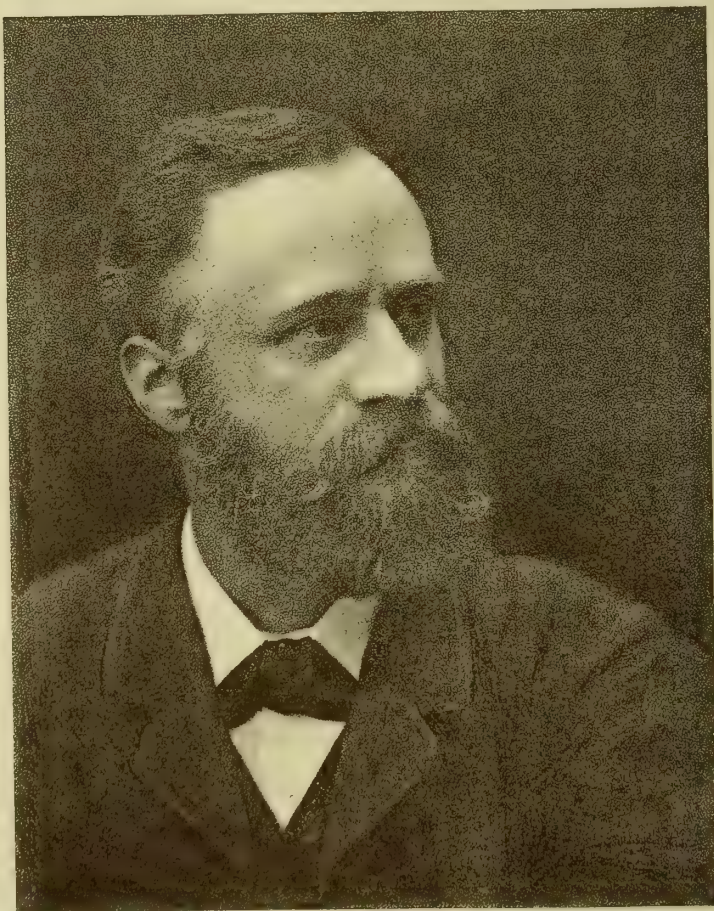


*W. M. Fawcett*

W. M. FAWCETT, M.A.  
ARCHITECT-TO KINGS' & QUEENS' COLLEGES, CAMBRIDGE

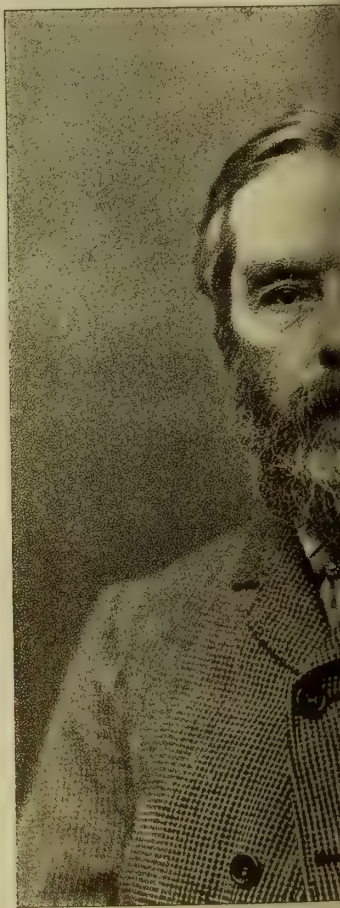


J. HENRY MILNE  
SLADE, PROFESSOR OF FINE ARTS



*Thomas Verity*

THOMAS VERITY, FRIBA.  
ARCHITECT OF THE CRITERION



J. J. STEAD  
ARCHITECT OF THE CRITERION



FEB. 14. 1890.



*J. Hen. Middleton*

ELTON MA F.S.A.  
OF CAMBRIDGE UNIVERSITY.



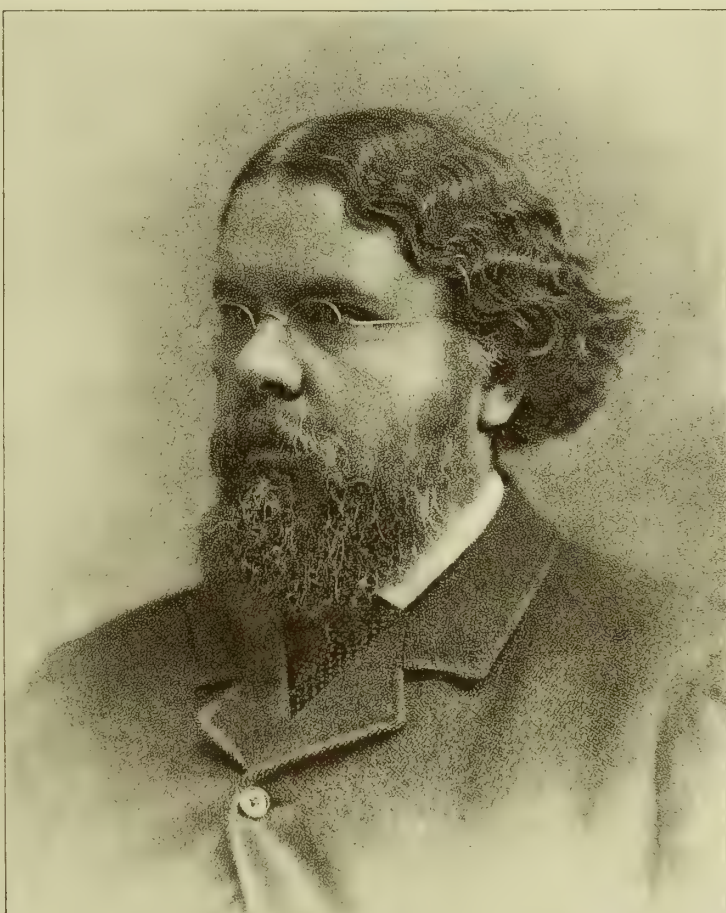
*Somers Clarke*

SOMERS CLARKE F.S.A.  
ARCHITECT OF ST MARTIN'S CHURCH BRIGHTON.



*John J. Stevenson*

SON F.S.A.  
ELTON COURT W.



*J.T. Micklethwaite*

J.T. MICKLETHWAITE F.S.A.  
AUTHOR OF MODERN PARISH CHURCHES &c

"PHOTO-TINT" by James Akerman 6, Queen Square London W.C.







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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—WHALLEY CHURCH, LANCASHIRE.—"THE ARCADIAN SHEPHERD."—UPSALA CATHEDRAL.—HOUSE ON THE CLAREMONT ESTATE, MANCHESTER.—OFFICE BUILDINGS, BRADSHAWGATE, BOLTON.—DETAILS OF INTERNAL WORK AT ARRETON HOUSE, ISLE OF WIGHT.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.

SEE description on page 256.

WHALLEY CHURCH, LANCASHIRE.

We give herewith two views of this church, contributed by Mr. John Langham, whose drawings and plan of Whalley Abbey and Gate-way appeared in our pages for July 5, 1889. Some account of these buildings was then given, to which reference may now be made. Whalley Church has a special interest other than that of strictly architectural merit, seeing that it is said to have furnished the scene of some of the leading incidents depicted in Harrison Ainsworth's "Lancashire Witches." The chancel dates from 1220, and there are some canopied stalls in the interior of the church brought from the abbey. Three Runic crosses stand in the churchyard.

"THE ARCADIAN SHEPHERD."

The most noticeable group in last year's Royal Academy Exhibition in the galleries devoted to sculpture was Mr. W. B. Richmond's noble figure of which we give an illustration to-day—viz., "The Arcadian Shepherd." Owing to the fact that the artist failed to obtain a photograph of the work before it was shown at Burlington House, and in consequence also of the refusal of the Academy authorities to allow a photograph to be taken while it was on view, no good illustration of this masterful statue has hitherto been published. Mr. Richmond had special views of the group taken for us by Mr. Fred. Hollyer, and thus we are enabled to present our readers with the illustration of it to-day. Milton's lines, quoted by the sculptor in allusion to his work, are printed on the lithographic sheet.

UPSALA CATHEDRAL, NORTH TRANSEPT PORTAL.

THE University city of Upsala is but a comparatively modern successor to an ancient town near by, the history of whose foundation is lost in the myths of antiquity. It is said that somewhere about the year 10 of our era, Fryer, the descendant of Odin, made it the capital of his Kingdom of Upland, instead of the more ancient Sigtuna, and built in it his palace and a temple to the gods. Gamla (old) Upsala is situated about three miles from Upsala in the middle of a flat country broken only by a large number of tumuli, the three largest of which are popularly supposed to contain the ashes of Thor, Odin, and Fryer. Some of them have been opened and proved to have been burial places, but nothing of value was discovered. Behind these larger tumuli stands a curious building which was once the Cathedral of Upsala, and may have been in part the temple of Odin. It consists at the present time of a fifty square tower forming a nave, with an long chancel beyond of the same width, ending with an apse. Before the tower, but not central

to it, is a large porch. The chancel and porch appear to be entirely of Early Pointed work, and are built of granite with brick arches. It is quite impossible to fix the date of the tower. It is square, built with rough granite rubble facings in large blocks, and has on each of its four faces two lofty round-arched doors, with large rough voussoirs. These doors must have been open to the air on all sides before the erection of the chancel and porch, and this fact, to a certain extent, supports the theory that the building was not at first intended to be a Christian church. In plans published by Peringskiöld in 1710, remains of transepts are shown, and these, together with the shell of the church, may have been constructed by the first bishop, an Englishman, about 1026. The tower at present is finished with gables on the east and west faces, but there are indications that there was a gable on each face, and that the tower has been heightened. Within the churchyard inclosure to the north of the church stands one of those singular wooden towers, more common in Norway than in Sweden. There is nothing about it to determine its date, but we know that it was standing here in the 17th century. It is raised on a platform of rough granite, and has its roofs and supporting struts covered with oak shingles. It appears to have been usual in Upland, when the churches had no towers, to build detached wooden belfries, and the neighbouring church of Waksfala has a similar one, open all round, and showing the bells. Towards the end of the 12th century Upsala was created an archbishopric, and the increased importance thus given to the city seems to have suggested its removal to a more convenient situation; and about 1273, Archbishop Falke made arrangements for the transfer of his seat. Much as in the case of Old Sarum, which had been similarly left for a more convenient site fifty years before, the Archbishop selected a position on the banks of a river, the Sala, where it commenced to be navigable, and on the rising land near by laid out the ground for his new cathedral. There was already a small town in existence on the site known as Ostra-Aros, and the Church of the Trinity now standing to the south of the cathedral may have been built before the date of the transfer. The first thing the Archbishop had to do was to discover an architect—no easy task, as, at least in Mediæval times, Scandinavia was never able to produce one; and it is a curious fact that the three cathedral churches of Scandinavia were not only designed by foreigners, but by men from different countries; and in all essential features Upsala Cathedral is French, Lund is German, and Thronhjelm is English. The fame of the magnitude and beauty of the buildings rising everywhere in France at this period had reached the Archbishop through the Swedish students then studying in Paris, and he applied to the Provost of that city to select for him an architect to design his new cathedral. The Swedish students themselves raised forty silver livres to defray the travelling expenses; and an architect engaged on the works at Notre Dame was accordingly selected. His letter of appointment is still extant, and it partly runs thus:—"Estienne de Bonnuell, tailleur de pierre Maître de faire leglise de Vpsal en Suece, proposant a aler en la dite terre, si comme il disoit, et reconnut endroit qui pour mener et conduire au couz de la dite Eglise, aueques lui tex Compaignons et tex Bachelers." "En tesmoing de ce, nous avons mis en ce lettres le seel de la Preuost de Paris, lan de grace Mil. CC. quatre vinz et sept, le Semne di devant feste S. Gile et S. Leu et nous le tampscriit de ces lettres auon seelle du seel de la Prevoste de Paris. Ce fu fe lan et le jour defus dit." Thus the date of his engagement is accurately fixed at 1287. He is described in his letters of recommendation as the architect of Notre Dame, and the date of his appointment coincides with a lull in the progress of the works at that building, and it will be interesting to note the state of Notre Dame as he left it, and to see how far he followed it in planning his new cathedral. What his age was we do not know; but he may have remembered the great fire which about 1240 so much damaged the building, and he may have served his apprenticeship on the repairs begun about 1245, when the chapels between the buttresses of the nave were built. In any case, he would probably have been engaged on the alterations of the transepts begun in 1257, when also the first three chapels eastward therefrom were built between the buttresses of the choir, unless, indeed, he were with de Cormont

at Amiens at that time, of which there is some suggestion. When he left for Sweden, the old arrangement of the apse at Notre Dame remained unaltered; but before he left he would know of the intention to remodel the east end—at all events, it was on Amiens rather than Paris that he based the design for the Upsala apse. On plan, Upsala Cathedral consists of a nave of six bays, with aisles and chapels between the buttresses, aisleless transepts projecting but slightly beyond the chapels, a choir of five bays, with aisles and chapels terminating with a semi-octagonal apse, with its surrounding aisle and chapels. Up to the apse, except in the number of the bays and aisles, the plan is identical with Notre Dame, and the arrangement of the apse is equally like Amiens, except that the radiating chapels are reduced to five in number, but the central one is prolonged by a bay as there and at Rheims. At the west end are two towers and there was a flèche at the crossing; and to the west front and the two transepts are deeply recessed portals. The whole of the plan, with the possible exception of the south transept, where there are heavy diagonal buttresses carrying turrets, would seem to have been Estienne de Bonnuell's, and the north portal, which is of stone, must have been erected by him, as the mouldings and the tracery are of the character of French work of his date. The west front has only one portal, and over it and over that of the north transept, is a large traceried rose window. The illustrations we give of the north transept portal will best convey an idea of Bonnuell's work. The figure in the centre is St. Eric, one of the saints to whom the cathedral was dedicated. With the exception of the portals, some of the tracery of the windows and the main piers of the building, the whole structure is in brick, and all the upper parts of the nave transepts and towers were completed with flat-brick arcading and ornaments, in the manner common all round the Baltic, by an architect other than Bonnuell. The picturesque and fantastic spires and flèche, shown in a plate by Schröder, were erected in Gustav Adolf's time by De Besche, a Protestant refugee from Liege. These were destroyed, and the cathedral much damaged by a fire in 1702, when the hideous roofs and towers, till recently standing, were erected. The sacristy contains an interesting and valuable collection of Mediæval jewelled plate, sceptres, and crowns, which may account for the great doors being all sheathed with iron plates, riveted on like plate armour. In the principal chapel behind the high altar is a magnificent tomb bearing the effigies of Gustavus Wasa and his two queens, with lofty obelisks at the corners, and surrounded by paintings on the walls of the principal events of his life, executed in fresco by Professor Sandberg. The structure has suffered so much from fire, neglect, and rebuildings that it would seem, short of total destruction, no worse fate could befall it; but the hand of the restorer is once more laid heavily upon it. At the present time the whole of the building, inside and out, with the exception of the choir, is under restoration, and every part so thickly covered with scaffolding as to make it impossible to see exactly what is being carried on; but on the floor of the nave large blocks of moulded concrete are being cast and finished off for the upper parts of the building as buttress-heads and pinnacles, and the skeleton framework of two lofty spires in iron is nearly completed. The designs for the restorations were prepared by the Swedish architect, H. Zetterwalls.—J. TAVENOR PERRY.

HOUSE ON THE CLAREMONT ESTATE, NEAR MANCHESTER.

THIS house is now being built on the estate of Sir Percival Heywood, Bart., at Claremont, about three miles from Manchester, a portion of which estate it is now proposed to lay out for the erection of villa residences. The walls are of local red brick, and the roof and upper portion of the walls are covered with red Brosely tiles. The builder is Mr. James Birch, of Manchester. Mr. Bertram Heywood, B.A., of Uttoxeter, is the architect.

NEW OFFICES, BOLTON.

THIS block of buildings, now near completion, are situate at the corner of Bradshawgate and Nelson-square. They are substantially built of Ruabon terracotta and red bricks, and roofed with tiles of the same clay. The whole of the basement is lined with white and brown glazed bricks. The internal fittings of the ground floor



are of American walnut; the floors, which are fireproof, are laid with cube mosaics, the walls being faced with marble mosaic adamant above the wainscot dado, which is also of walnut. The vestibule screen is in terracotta, the entrance gates being wrought iron. The ceilings are panelled in plaster and walnut mouldings. The whole of the ground floor will be occupied by the Prudential Assurance Company (Limited), and will contain large banking room, private office of the district superintendent (Mr. Councillor J. C. Stredder), and a room for the assistant superintendents, w.c., lavatory, &c. The upper floors are already let to professional men, while caretaker's rooms are provided in the roof. The general contractors are Messrs. Burrows and Son, Bolton; the terracotta and facing bricks are by Messrs. Monk and Newell, Ruabon; and the pavement lights by Messrs. Hayward Brothers and Eckstein, London; the whole of the works being from designs and details of Mr. Ralph B. Maccoll, architect, Bolton, who has superintended the works throughout.

#### ARRETON MANOR HOUSE, I.W.

**T**HE village of Arreton, or Atherton, lies under the down of the same name, about five miles east of Newport, in the Isle of Wight. Much ancient work remains about this part of the island, but so modernised as to be scarcely recognisable. An honourable exception to this is the old Manor House of Arreton, from which the present sketches were made, which remains much as it was in the 17th century. The manor at one time belonged to the Abbot of Anarr, and so came to the Crown with the rest of the plunder at the Dissolution of the Monasteries. It was bought of Charles I. by Sir Levinus Bennett, and thence came by marriage into the Fairfax family, and so to the present holders—the Wickham Martins, of Leeds Castle, in Kent. With regard to the illustrations, they may be said to speak for themselves. The details are good specimens of the work of that period.

PERCY G. STONE.

#### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

**T**HIS sheet is the sixth double-page group of architects' photographs which we have given, and we are glad to learn from all quarters how thoroughly these portraits are appreciated by our readers. The following notes give a brief outline of some of the work executed by those who are herewith represented:—

Mr. W. M. Fawcett was a pupil of the late Mr. C. W. Burrell, of Leeds. After completing his term of articles, he entered the University of Cambridge, and took his degree in 1859, being classed as a senior optime in the mathematical tripos. Soon after that he commenced practice on his own account. He was elected as county surveyor in 1861, and in connection with that position he remodelled and nearly rebuilt the Cambridge County Gaol, and he built the Police Station. Additions were also made to the Militia depot and the Lunatic Asylum. In ordinary practice he has carried out a large number of houses and vicarages. East Norton Manor House, near Leicester, Longstowe Hall, near Cambridge, and the mansion at Breaghwy, near Castlebar, for the High Sheriff of co. Mayo, are a few of the more important private houses built by him. He has erected a considerable number of schools in Cambridge and the neighbouring counties, and is at present building the new school for the Governors of the Perse Trust in Cambridge. He also erected the Cavendish Museum, presented by the Duke of Devonshire to the University. He has since built the Comparative Anatomy Schools, and is now carrying out the Schools for Human Anatomy and for Physiology. Among college buildings may be mentioned his additions to King's, Queens', and Emmanuel. The principal front also of Queens' College was restored by him. The Master's Lodge at St. Katherine's and the Tutor's Lodge at Trinity Hall are also his work. The Local Examination Offices were built by him for the Syndicate which manages these examinations. The University Cricket Pavilion, the University (Goldie) Boathouse, and the boathouses for Jesus and Caius Colleges were erected by him. He has had considerable practice in church restoration: among many others may be mentioned Barton,

Boum, Cottenham, Knapwell, Longstowe, &c., in Cambridgeshire; Acton, Aldham, Little Bradley, Cockfield, Great Wrating, and Great Thurlow, in Suffolk; Seaton, in Rutland; Morley, Isham, Pedley, and Pentlow in other counties. In literary work Mr. Fawcett some years ago edited Paley's "Gothic Mouldings," and has since written an account of Mr. James Essex's journey in Flanders, which was published by the Cambridge Antiquarian Society, of which he has been treasurer for some years. He was elected F.S.A. in 1874, and F.R.I.B.A. in 1866, of the latter of which bodies he has been several times, and is at present, a member of the Council. The photograph is by Mr. Lord, of Cambridge.

Professor J. Henry Middleton, F.S.A., M.A. of both Oxford and Cambridge, D.C.L. of Univ. of Bologna, Fellow of King's Coll., Cam., is the Slade Professor of Fine Art and Director of the Fitzwilliam Museum at Cambridge. His literary works are well known for their learning and ability. They comprise "Ancient Rome in 1885," and a new edition, "Ancient Rome in 1888"; articles in the *Encyclopædia Britannica* on Painting, Sculpture, Pottery, and more than eighty other subjects; various articles in the *Archæologia*, *Archæological Journal*, *Journal of Hellenic Studies*, and other antiquarian periodicals. Among the architectural works by Professor Middleton, acting in partnership with the late J. Middleton, are the Ladies' College, Cheltenham; SS. Philip and James Churches, Cheltenham; and about a dozen other churches; a picture gallery for Mrs. Heurtley at Hampton Court; Coleshill Court for Captain Digby, and Beckford Hall for Captain Case-Walker. In partnership with Messrs. Prothero and Phillott at Cheltenham, Professor Middleton has carried out the new part of Lampeter College; Trinity Church, Aberystwith; the Red House at Oxford, and various other houses and churches chiefly in Gloucestershire and South Wales. Professor Middleton was born in 1846. The portrait given is by Messrs. Stearn, of Cambridge.

Mr. Somers Clarke and Mr. J. T. Micklethwaite were pupils of the late Sir Gilbert Scott, and have always worked together. They began to practise in 1869, and the first important work carried out by them was the rebuilding of the parish church of All Saints, West Bromwich. It was soon followed by the great church of St. Martin, Brighton, and the church of St. Hilda, Leeds, and ever since the architects have been much employed on church work, both in the erection of new buildings and the repair and adaptation of old ones. Amongst the more notable are St. John's Church, Gainsborough, with schools and other buildings, making a large group, the churches of Sharlston and Horbury Bridge, with several others in Yorkshire, one being St. John's, Wakefield, an 18th-century building, which is being enlarged and adapted to modern wants in the Italian style of the original work. Another important work now going on is the enlargement of St. Peter's, the present parish church of Brighton, which will make it a fabric of the first class. Amongst the ancient churches which the architects have put in order are those of Ardington, Berks; St. Nicholas, Brighton; Cherry Hinton, Cambridgeshire; Colwall, Hereford; Harrieston, Kent; Helpringham, Lincolnshire; Headon, Notts; Inglesham, Wilts; Ifield, Sussex; Meriden, Warwickshire; Potton, Beds; Raveningham, Norfolk; Sidbury, Devon; Thornhaugh, Northampton; and the curious church of Thorney Abbey, which, though a parish church, is the private property of the Duke of Bedford. Of works other than churches are the remodelling of the Sussex Eye Hospital and the building of the Northern Dispensary and the Western Dispensary and Hospital, all at Brighton; the decoration of the hall at Merton College, Oxford; the enlargement of the House of Mercy at Horbury, and the Convent, Woodside, Croydon; extensive alterations at Barcombe Place and Kingston House, Sussex; Thorrock, Lincolnshire; Raveningham Hall, Norfolk; and many new houses of less importance. We lately published a view of Reid's new hotel, now being built at Madeira, where also several private houses are in hand. There are also a number of houses going on at Malaga, and drawings are being prepared for an hotel there. Mr. Micklethwaite was elected a Fellow of the Society of Antiquaries in 1870, and Mr. Clarke in 1881, and each have served several times on the Council. They were amongst the twelve architects first selected by Mr. Christian for the Liverpool

Cathedral competition, and amongst the six who prepared plans for the new Church House. Mr. Micklethwaite is the author of a book on "Modern Parish Churches," and both he and Mr. Clarke have written many papers on architectural and antiquarian subjects which are printed in the *Archæologist*, the *Transactions* of various societies, and elsewhere. The portrait of Mr. Clarke was taken by Messrs. Fry, of Brighton, and of Mr. Micklethwaite by Messrs. Hall, of Wakefield.

Mr. Thomas Verity, F.R.I.B.A., now in partnership with his son, Mr. Frank T. Verity, was the architect of the Criterion restaurant and theatre erected some years ago for Messrs. Spiers and Pond. The design was chosen in competition. Previous to this Mr. Verity had been associated with the detail work of the Albert Hall, if we remember correctly, as well as other work at South Kensington. The Gaiety restaurant was converted and enlarged by Mr. Verity, incorporating part of Mr. Bassett Keeling's once famous, and much-abused Strand Music Hall front, which was said—at the time it was built—to inaugurate the "Victorian" style of architecture. The Empire, Comedy, Novelty, St. James's, Royalty, and Folly theatres were designed by Mr. Verity, and he built the Civil Service Stores in the Haymarket. Among his largest works in London are the Kensington Public Baths and Wash-houses, Albert-gate Mansions, houses in South Audley-street at the corner of Mount-street are recent works by this architect, who also designed the rich terracotta front in James-street, Westminster, for Messrs. Hill's bakery. The new saloons, grand stand, and pavilion at Lord's Cricket Ground are being executed under his supervision. The *Nouvel Hôpital Français*, carried out in Shaftesbury-avenue, is one of his works, in conjunction with Mr. G. H. Hunt. The Scarborough Spa Saloons, a vast work in which iron on a large scale is employed, is from Mr. Verity's plans, and he also designed the Nottingham Municipal Buildings, won in competition; and another work of his comprised the enlargements and additions made a few years ago to the Agricultural Hall at Islington. Mr. Verity's design, in partnership with Mr. Hunt, was placed second in the late competition for the new Admiralty and War Offices. The decorations erected in Waterloo-place on the occasion of H.M. Jubilee were designed by him, and it will be fresh in the memory of many how substantial and effective the scheme for such a purpose proved to be. Mr. Verity's portrait was photographed by Mr. H. S. Mendelssohn, of South Kensington.

Mr. J. J. Stevenson, F.R.I.B.A., F.S.A., was a pupil of the late Mr. David Bryce, R.S.A., of Edinburgh, and of Sir Gilbert Scott. After spending some time in Italy, France, and Germany, he designed, in partnership with Mr. Campbell Douglas, at Glasgow, from 1860 to 1868, many churches and mansions in Scotland. In 1870 he settled in London, building for himself the Red House on Bayswater Hill, the first in the so-called Queen Anne style erected in London; and, while partner with Mr. Robson from 1870 till 1875, assisted him by designing in a similar style the exteriors of some of the earliest schools built by the London School Board. At the meeting of the Conference of British Architects in 1874, he read a paper on this style, advocating its greater suitability over Gothic for modern domestic use, an opinion which subsequent experience has justified. Since 1875 he has carried out numerous buildings in London and the country, including houses in Lowther-gardens for Col. Makins, M.P., the south side of Cadogan-square, the greater part of Kensington-court, No. 1, Fitzjohn's-avenue; Munstead, Surrey; business premises at Glasgow, and at Fenchurch-avenue, in the City of London; houses at Oxford, the restoration of St. John's College there, churches at Crieff and Perth, the University Laboratory, and new buildings at Christ's College, Cambridge, and houses there; and he has been appointed by the Senate of that University architect of the Sedgwick Memorial of Geology. In 1879 he furnished designs for the fittings and decoration of the saloons of the Orient Company's new steamer, the *Orient*, the first occasion probably in which an architect was employed for such work: and since then he has designed the fittings of the *Austral*, *Ormuz*, and other steamers. In 1879 he published a book on "House Architecture," advocating the use of



the various forms of "impure" Classic for modern houses in preference to other possible styles, and treating of their planning and sanitary and other requirements. He has contributed several papers to the *Transactions* of the Royal Institute of British Architects; one in 1875 against the late Mr. Fergusson's view that the hope of architecture lay in the abolition of architects; in 1877 on "Architectural Restoration," criticising the prevalent method of restoring old buildings; and again in 1881 on our duty of treating them as historical documents, combating especially Sir Edmund Beckett's views and his work at St. Alban's. The photograph which we reproduce is by Mr. Thomas Fall, of 10, Baker-street, W.

## CARPENTRY AND JOINERY.—XXVII.

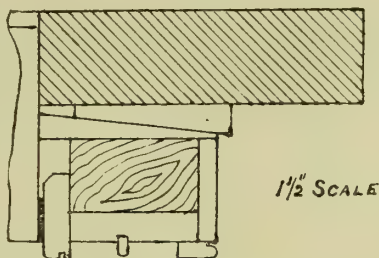
## WINDOW-FRAMES.

IT remains yet to be explained, the manner in which window-frames are fixed when the joiner undertakes this part of the work.

It has been already stated that sometimes the bricklayer or mason builds them in, as also the door-frames, during the progress of the building. Whilst in nearly every case all door-frames, except those occurring in partitioned walls, are built in; yet only in the very commonest class of building is this the case with window-frames. Now supposing that the stone sill upon which the sash-frame is to rest is *set*, the next thing to have done is the *screeding*, as it is termed in some localities, at least, that is, a thin layer of plaster is put on the part of the *reveal* which the frame is to rest against. The way in which the

avoid difficulties which would otherwise arise by the frames not being in the same straight line. When a stone reveal occurs no screeding is needed, but some inequalities may require dressing off. The joiner now either takes a light lath and cuts it to the length of the space there is between the jambs where the frame in hand is to be put, and tries if the opening is parallel by testing it in several places with this lath. He then applies this lath to the head and sill, cuts off any extra length there may be on these as *horns* over and above what will go in readily, the frame is then tried in to see that the margin of the brick or stonework is equal on each side of the frame; if not, the necessary change must be made. The next step is to see whether there are

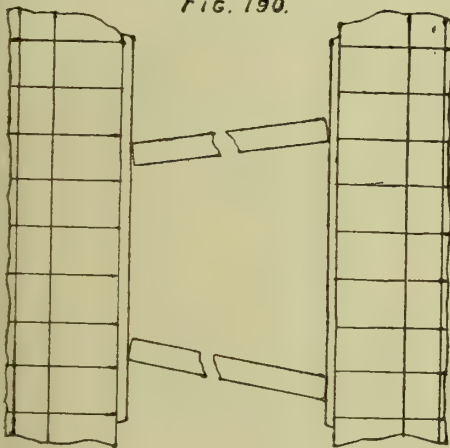
FIG. 191.



1 1/2" SCALE

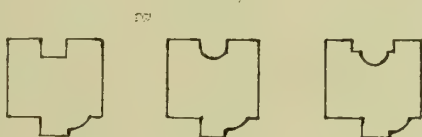
pieces in *above the stiles*, say, 1 1/2 in. thick, and the breadth equal to the width of the top inner casing. (It is not unusual to put these pieces in when the frame is being made so as to nail the side and top casing to where the heading between these occurs.) Having attended to this and the case in hand, being one of the frame resting upon the stone sill *pure and simple*, a layer of white-lead is put along beneath where the sill of the frame is to rest. It would be well just to trace a line along to serve as a guide in spreading the white-lead. Having then the white-lead spread, the frame is put in position, and a stay placed against it; the distance between the top of the frame over the stile and the lintel is measured, and two wedges got out and driven in. Fig. 191 shows this. This, of course, is done at both sides. The one wedge is placed in with the butt end of it towards the brickwork, and the other one is driven in until it is thoroughly tight. This latter wedge must have a bluff point, so as not to catch at the point before it is *tight home*; both sides should be wedged as evenly as possible. The frame should be tested as to its being level and plumb both ways. It should be tried diagonally, to know that it is square for the sashes (that is, both diagonals should be equal). When all this has been seen to, the wedges driven in above the stiles are side-nailed through to the lintel, and

FIG. 190.



1" SCALE

FIG. 192



3" SCALE

screeding is done is by putting two laths with straightened edges, *plumb up* the reveal at right angles to the face to be plastered, allowing them to project sufficiently for the layer of plaster and this layer should be as thin as possible, covering of course all inequalities of the brickwork.

Fig. 190 shows by part plan and elevation what is being described, the heavily inked portions being the wood. The laths are kept in position by stays or braces shown in elevation; they are shown sloping so as to indicate that they are jammed tight between the laths so as to keep them hard against the brickwork; a plasterer then puts on the plaster and draws a straight edge down along both plumb laths to scrape off the surplus plaster which projects beyond the line of lath. When the plaster has *set*, the braces and laths are removed, and the putting in of the frame proceeded with. Where there are several frames on the same side of the room all required to be finished alike, a *chalk line* should be put along the wall so as to guide in putting the *screeding laths* parallel from it, and which will

unless timber not dry has been used, there is no risk of such a frame being blown in during a violent hurricane or storm. Of course, additional help in the direction stated is obtained by fixing the finishing of the window; but, as will be shown presently, some windows have finishing of a very meagre description, so that it is better to take secure steps at the very outset. This is the principle of fixing sash frames when the joiner has to do it; and other than square frames will be fixed in similar manner. Segment, semicircular, and other curve-headed frames will be tested to the springing of the curve, in order to find out if they are square for the sashes.

Sometimes glazier's putty is used instead of white lead for bedding the sill of the frame, and *lime putty* has even been used in very inferior buildings. It is to be understood that what is required is to keep out dampness, so that the joiner can judge for himself from what has been stated which will serve the purpose best; but usually the specification fixes the matter, so that

the joiner who carries out the letter of the law has no choice.

The *grounding* for finishing of windows has already been treated of, and will not again be touched upon except as it may be hinted at when the fixing of finishing is dealt with. And now the fitting of sashes may have a passing mention; in many cases these are fitted into the frames in the workshop, but sometimes for the reason that the frames are urgently required, they are not so fitted, the frames being sent off and the sashes not made for a considerable time afterwards. The *batten slips* or staff beads are taken out of the frame, at least the stile ones, also the two parting beads are taken out of the stiles, and the top sash tried as regards its width, and how it *squares* with the head of the frame; the *horns* may be cut off, but before doing so it would be just as well to make sure that the two sashes, when placed in position, are sufficiently long for the frame. This being known, and the horns cut off, the sill portion of the sash may be fitted, and in doing so put into the groove for the parting beads in each stile two pieces, say 3 in. or 4 in. long, so as to stop the sash from falling out of position until it is fitted. Usually the sill of the sash is worked to fit the sill of the frame nearly before the sash is wedged up, leaving only for the joiner who fits the sash the cutting off of the horns and working the bottom ends of the stiles of the sash straight through with the sill, then trying if it fits the frame-sill, making the necessary alteration if any is required. In cutting off the horns and working the ends of the stiles, assistance is obtained by fitting a template to the sill of the frame and laying it on the stiles of the bottom sash, and marking them for cutting and working. When the bottom sash has been thus fitted, and the place marked to which the meeting-rail reaches, the top sash can be finally fitted, as there is less labour in taking a little off the top of the sash than off the sill, which is usually bevelled and double-rebated. A prop can be put under the top sash to keep it up, so as to try in the bottom sash, in order to see that the two sashes fill the frame satisfactorily. One other point: if the sashes are to be painted, there should be allowed for *freedom* in the width as much as would allow the blade of a 6 in. square to move up and down between the stile of the sash and the stile of the frame at each side, also a little less at the top and bottom; this, of course, is allowance for, say, four coats of paint, and to allow the sashes to move freely up and down when suspended. If the sashes and frames are of hard wood, and polished or varnished, less *freedom* will serve. When the sashes are glazed they are weighed, in order to know the amount of weight required for their suspension. Supposing a sash to weigh 20 lb. or 40 lb., then two 10 lb. or two 20 lb. weights would be required to suspend that sash (single). Sash-weights are familiar to most, if not all, joiners, and are usually either lead or cast iron. The weights usually in demand are kept in stock, others have to be ordered, and are cast specially to the order for shape, &c. The joiner can readily in an emergency cast lead weights for himself by making a pine box, into which he can put his pattern of the weight required, and pour in liquid *plaster of Paris*, which will fill the space around his pattern, and if all this has been satisfactorily done, he can cast as many weights as he requires after he has removed his pattern; he can even saw off what there is over the weight required, if his casting is too heavy. But to go on with the hanging or suspending of the sash. The matter of grooving the sash for the cord has been dealt with previously; but as there are several ways of grooving practised, it may be well just to give an illustration of the different sections.

Fig. 192 shows three methods, each of which are used in different workshops, the one on the right-hand side is compound, the square portion of the groove being for the wheel of the axle-pulley, and the concave portion for the *sash-cord*. Take out the *pocket-piece* from the frame, as it is by that opening the weight is inserted; then have what is known in some districts, at least, by the name of a *mouse*, which consists of a piece of sheet lead—say, 2 in. by 3 in.—with a hole in it for a piece of cord, which put through the hole. Let the cord be from 7/2 in. to 8 in. long; double the lead over, forming a roll of it sufficiently small to drop over the wheel of the pulley, which it will more readily do if curved to nearly the curvature of the wheel. Drop the



mouse over the wheel, letting it down behind the stile in the space for the sash weights, keeping hold at the same time of the extreme end of the cord. When the lead (mouse) has arrived opposite the pocket hole, the joiner puts in his hand and pulls it out. Before doing so, however, he attaches the cord to the end of the *sash cord* which he is going to suspend the weight with, and having done so he pulls until he has got the sash-cord pulled through the pocket-hole, when he attaches the weight, putting on a secure knot, and then he pulls the sash-cord the reverse way until he has got the sash-weight into the place provided for it. He is now ready to cut off the cord, having the weight attached as soon as he knows its proper length. To find the length to cut the sash-cord to, proceed as follows: First of all, for the top sash, and supposing it to be the case that the cord is just to be nailed to the sash, not knotted, mark on that face of each sash stile which is next yourself when the sash is in position the place where the ploughing or grooving for the sash-cord ends; now put the sash into the frame, and let this top sash be as low down as it can be put, then transfer the marks on the sash stiles to the frame stiles, and this will be the length of the cord. But for this to be utilised, having the cord with the weight attached in the position previously described, pull the cord until the weight is hard up against the axle pulley on the inside, then let it lower back, say 1 in. or 1½ in., and either put a round plug of wood in the hole of the pulley to jam the cord and keep it in position until the cord is cut and fastened to the sash being kept to the mark which was made upon it (the sash) at the extremity of the groove; or if the pulley stiles are pine, a fine nail can be driven through the cord and a little way into the stile to hold the cord; the nail can be drawn out when the cord is fastened to the sash. This process is repeated for the other side. The operation of getting the cord through the pulley and attaching the weight is the same for the bottom sash. A mark is put upon the bottom sash at the end of the groove on each stile, and when the weight has been drawn up, as described for the top sash, the cord is cut off to this mark at each side and nailed to the sash, the same precautions being taken to prevent the weights from falling until the cords are fastened to the sash. The top sash is first suspended and tried, then the parting beads are put in and the bottom sash weighted and tried, and if found all right, bring it out and ease out the parting beads one at a time and put in the pocket pieces. Let the bottom sash back into its place again, and put the batten slips (staff beads) into their places and permanently nail them. In ordinary cases flat-headed nails are used for fastening the cord to the sashes. When the sashes are weighty, better cord is used, and a special fastening having three points used to fasten the cord to the sashes.

The case of knotting the cord has been treated of slightly, under which circumstances the cord will be so much longer as is required for the knot. Let it be understood distinctly, when it is intended to knot the cord, a groove, say, 9 in. long is made in each stile of the sash distant from that from 4 in. to 6 in., according to the weight of the sash, a 1½ in. or 1¼ in. hole is bored in each stile sufficiently deep to admit of putting the knot of the cord into. The connection between the groove and the hole is made by boring with a long *screw bit* large enough to freely admit the cord used, boring slightly on the incline, so as to get into the centre of the depth of the hole for the knot; the cord is pushed down through this hole and knotted, and the knot on the cord hammered into the hole, with the end inside, no nails or other fastening for the cord being required.

There are steel tapes and copper chain of peculiar construction also used for suspending sash weights. Instructions are usually furnished with these, and the particulars given above will enable the joiner to carry out any special instructions issued with a particular patent.

#### CAST IRON AND ITS APPLICATION FOR ARTISTIC PURPOSES.

A LECTURE on this subject was given before the Society of Arts on Tuesday evening by Mr. W. R. Lethaby, and was illustrated by numerous examples. The author claimed for cast iron a position in serious art, and said he proposed by an examination of specimens to

arrive at an appreciation of the metal, and of certain methods of manipulation. By a careful selection of the forms and treatment suited to the structure and texture of the material, and its application to commonplace needs, artists had in all ages given the charms of fitness and honest simplicity, and accepting the comparative valuelessness of the metal, had used it for the vehicle for slight thoughts and slighter execution. By far the greatest of our designer sculptors, the late Alfred Stevens, worked long and thoroughly as a modeller from cast iron—from no choice of his own it may be, nor choice probably of subject; and yet by far the most popular work of modern sculpture, the little lions on the outer rail of the British Museum, of which so many other artists were glad to keep casts by them as examples of breadth and style, were only cast iron. The torch-holders on the top of the same screen with reliefs of heads surrounding the bowls were also his. Table supports, stoves, and grates also occupied his care. Although the invention of casting in iron was made very early, and was referred to by Pausanias, Pliny, and other classic writers, there was no evidence to show that casting iron was practised in England before the Middle Ages, nor at what time it was then introduced. M. Viollet-le-Duc supposed that it was known in France in the 13th century, to which date he attributed a fragment at St. Denis. In the 14th century cast-iron artillery was probably founded all over Western Europe, and it is likely enough that this may have introduced the furnaces into Sussex. Magnificent bronze sculptures were cast here in the 13th century by Torelli, the artist of the lovely Queen Eleanor and Henry III., at Westminster Abbey. There were in Sussex and Kent many iron grave slabs, the earliest of which, that at Burwash, was almost certainly in work of the 14th century, and many dated examples of subsequent ages existed, one of the latest known being one of 1752 at Wadhurst. In the great open fireplaces where logs burnt on the hearth of hall and kitchen, cast-iron slabs called firebacks were put against the wall behind the fire. They were found alike in France, in the Low Countries, and in England, and invariably charged with some device, arms, inscription, badge, or a scene Scriptural or classic, an allegory or a fable, something to suggest a thought, as the pattern adorned the opening in summer, or burnt red-hot behind the winter fire; all these things were books. In the best of these the relief was kept flat, and modelled but slightly, never being rigidly carved with sharp definition. The ornament in Gothic example always gave some suggestion of life and growth, roses or vines, and letters were often reversed, and so used as parts of designs. The later firebacks were very numerous, although for the most part now in "collections" instead of adorning the cottage hearth or the hall for which they were specially made, for hardly any exact duplicates occurred, and in very many instances the arms or an inscription identified the former owner's family. The coat-of-arms were large or small, with or without supporters, or a number of small shields filled up the whole space; many had the Royal arms, others horsed warriors galloping in attitudes expressive of a consciousness of the converging gaze of nations. Many of the subjects were drawn from the Biblical or mythological story, and some devices referred to the Stuart Kings. The actual achievement in the poorest of these firebacks was low enough. Some were, in fact, almost grotesque, but yet they all had that fresh touch of a real motive—a direct reference to some expressive gesture or pleasant object; all treated with great simplicity, and that instinct for balance and spontaneous fitness and freedom in the ornament, without any forcing the material or obtrusive display, which was the mark of the traditional crafts. The system was, almost without exception, to keep a flat field, which showed in pretty wide spaces all over, and the modelling on this was in low relief—the less the better—evenly balanced and of equal length throughout, so that the light was distributed in narrow edge lines right over the surface. To sum up in a word, a decorated piece of iron, instead of a cast sculpture of bossy high lights, and the ground lost in the weight of the relief. The firedogs or andirons which accompanied the backs on the hearth made a parallel series. De Caumont and Viollet-le-Duc cited examples of late 14th century and early 15th century in France. Many of later date in England still carried on the Gothic forms. From an arched

base, sometimes cusped, sprang a stem, which carried a small shield, a capital, or a head. These were interesting historically, but were not the models we should follow. We had seen enough of the "Gothic revival" in cast iron; what we wanted was new thought based on practical needs, and the Gothic spirit of a search for beauty untrammelled by formulas. Still later examples of the 17th century were figures or "terms," the best designed of which were signed "Carron." To be successful the figure should be just a solid post without weak projections or detail. Perfectly plain turned vase and baluster forms on a base, or obelisk-like posts on pedestals, were also used, and were as appropriate as any. Simplicity alone never failed; it was the charity of design that would cover a multitude of sins. To aspire was well, but to aspire vulgarly and fail vulgarly was to make art an offence and distaste. Mr. Lethaby described the grates that fill the older houses in London as, for the most part, of excellent design, and remarkable examples of careful casting; some were, he found, quite plain, with just a moulding or two, and others were fluted and beaded all over with tiny ornament on flat surfaces; the simplicity of the general forms saved the ornament from being worrying. Having alluded appreciatively to the cast iron of China and Japan, with especial reference to the sword hilts, teakettles, and vases from the latter country, the lecturer turned to the wider aspect of the subject, remarking that he was not one of those who wished to see in iron a material for a new architecture; nor did he wish its extended use, rather inversely a smaller field, but that field as full of flowers as might be. But while we used iron in some degree, while we even needed iron, while it might grow into wider necessary use, we should lend what grace we might to it, so that if obtained with cost, the greatest of all cost—an unkindly labour—it might not be misspent and more than spoilt, used to insult a trained understanding in the brutality of its vulgar insolence. Bad art went with bad commerce, bad goods, bad society. It was true in every department of work, of all materials, and of every form of pay, what the ironmaster said to Emerson:—"There's always good iron to be had: if there's cinder in the iron, 'tis because there was cinder in the pay."

#### BOOKS RECEIVED.

*Engineering Estimates, Costs, and Accounts*, by A GENERAL MANAGER (London: Crosby Lockwood and Son), is a guide to commercial engineering, or the preparation of estimates for engineering work. The author very justly remarks that there is need of the sort of information he endeavours to supply. In these days of keen competition those firms who tender require to know the cost of materials, how to convert them with the least labour, and leave a profit. Sometimes, again, an engineering contractor has a complete detailed specification and drawings from which he can frame his tender, and he will then have to get out his quantities and price them; at other times he will have to prepare his own plans and specification and will have more scope for exercising his tact. The author's work is intended to supply the data for calculations of this kind and the preparation of estimates by giving hints as to the calculation of weights of the iron or other materials, for which purpose many useful formulae and data are given. Thus is shown how the weight of a crank shaft is taken out by dividing it into component parts, such as the cylinder and crank-pin ends, web of crank, &c. The estimation of workmanship requires more experience and knowledge, and the information given under this head is of value. The making of various estimates to obtain the gross cost is considered in detail. The method usually followed is to price the materials and labour at certain rates, which include the cost of material and workmanship, and the working expenses and profit. The most correct mode is to take out the quantities of weight and the items of workmanship, and against them put the amounts of wages that are paid. The author gives examples of both kinds of estimating. All kinds of engineering, including millwrights' work, belt pulleys, hydraulic presses, pumps, brickmaking machinery, valves and taps, engines, boilers, &c., are dealt with, and tables of prices and wages are given. The work will be of much value to engineers and managers generally in preparing estimates.



*Heating by Hot Water*, by WALTER JONES (London: Crosby Lockwood and Son), is a reprint from our contemporary, the *Ironmonger*. Mr. Walter Jones's little book will be of service to architects, builders, and others who require practical advice on the preparation of their specifications. To the practical hot-water engineer the suggestions and information supplied cannot fail to be of use. The advantages and disadvantages of the high-pressure and low-pressure systems are pointed out succinctly, and the author shows that the low-pressure system has considerable advantages over all other methods of heating, as it can be applied to any kind of building, and its cost is less than that of any other system. The risks of accident are reduced to a minimum, and the temperature is easily distributed and regulated. Any kind of fuel can be used. The author, who evidently understands his subject, practically deals with matters of detail; he points out how to insure a rapid circulation by either increasing the height of the two columns or the length of the pipes, or by using pipes of smaller diameter. The rule for determining the motive-power is very simple, and is explained by an example. The causes of failure, which are numerous, are one by one explained. Many types of boilers are illustrated and their merits discussed, pipe-joints are dealt with, and patented methods are described. The heating of churches and public buildings is briefly referred to, and many forms of hot-water coils, radiators, and coil cases are illustrated. The author believes that the objectionable draughts found in churches and other buildings can be remedied by heating with high-pressure tubes the upper strata of air, putting low-pressure pipes near the floor, both being heated from one fire. The remarks on bath apparatus, swimming and Turkish baths, are worth reading, and the book will repay a careful study by those interested in hot-water heating. — *The A. B. C. of the Law of Landlord, Tenant, and Lodger*, by FRED. WETHERFIELD (London: 2, Gresham-buildings, E.C.), is a new shilling manual by the well-known legal editor of the *Weekly Times and Echo*, which cannot fail to be of service to everybody. It includes leases, repairs, and agricultural holdings; and there are some useful forms of agreement and notices to quit appended. Mr. Wetherfield, unlike some legal writers who profess to write popular legal manuals, does not start by taking too much knowledge for granted on the part of his readers. He supposes them really to know nothing, and he keeps well in mind the practical points that his long experience has led him to anticipate as likely to arise in connection with house hiring. Every man who lets or takes a house should get this cheap and useful shilling's-worth, and auctioneers, house agents, and others will find it handy—especially as regards the forms of agreements and notices.

#### CHIPS.

The Countess Cadogan laid on Saturday the foundation-stone of the Central Public Library for Chelsea. The building will be Queen Anne in style, and is being erected in Manresa-road, from plans by Mr. J. M. Brydon, selected in competition, and illustrated in our issue of June 7, 1889. The outlay will be £10,000.

At the meeting on Friday night of the Lancashire and Cheshire Antiquarian Society, held in Chetham College, Manchester, a paper on "The Mouldings of the Gothic School of Architecture," was read by Mr. John Brooke, architect, of that city.

The late Mr. William Billings, of Leicester, has bequeathed £5,000 for the benefit of the Leicester Permanent Art Gallery.

A Local Government Board inquiry was opened at Burnley on Friday, with reference to an application by the corporation to borrow £4,820 for extending the gasworks, completing the waterworks at Caul Clough, which will cost £130,000, as against an estimate of £60,000. A small sum is also included for town-hall purposes.

At the Central Criminal Court on Friday, Frederick Clark, aged 49, a surveyor, was convicted with another man of having uttered a forged Chilian bond of the value of £1,000, and was sentenced to 18 months' imprisonment with hard labour.

At a meeting held in the schoolroom of All Saints parish, Hereford, last week, it was decided to take steps for the restoration of All Saints Church, in accordance with a report submitted by Mr. John Oldrid Scott, F.S.A., whose estimate of the outlay was between £5,000 and £6,000.

## Building Intelligence.

**COMBERMERE MEMORIALS.**—Messrs. Douglas and Fordham, architects, of Chester, have prepared designs for two obelisks which are to be erected on two of the largest estates in Cheshire—Combermere and Eaton. The Combermere statue is to be erected in accordance with the will of the late Mary, Viscountess Combermere, who died on the 30th August, and bequeathed £2,000 for the purpose of raising a monument "as a memorial of the military successes and private virtues" of her deceased husband. The site chosen for the obelisk is an elevated piece of ground called Mount Pleasant, situated about a couple of miles from Wrenbury railway station. It will have an altitude of 100ft., and from its commanding position will form a conspicuous feature in the landscape for many miles. It will bear heraldic emblems on the base, and suitable inscriptions, recording the achievements of the distinguished soldier. The obelisk to be erected in Eaton Park will be of somewhat similar character, 85ft. in height, and occupying a position at the junction of the two main avenues about a quarter of a mile from the front of the hall.

**LEEDS.**—The foundation stone of St. Aidan's Mission Church, Roundhay-road, Leeds, was laid on Saturday. The buildings will form only the beginning of a larger scheme, which embraces the provision of a future church and vicarage. The premises now in course of erection comprise a large schoolroom on the ground floor, with three classrooms, a tea-making room, and lavatories. On the first floor, which will be reached by a wide open stairs, as well as by a smaller inclosed relief stairs, will be a large room to be used for the present as a temporary church, and ultimately as a parish room. The buildings are exceedingly plain, as they will in the future be largely concealed by the church. They are being built in brick, with stone dressings and tiled roofs. The architects are Messrs. Chorley and Connon, of Park-row, Leeds, and the builder is Mr. Arthur Schofield.

**LONDON COUNTY COUNCIL.**—At Tuesday's meeting of this body, the Bridges Committee reported that they had submitted the question of the proposed communication across the Thames at Blackwall to Mr. J. Wolfe Barry, and he considered a tunnel practicable, but suggested a high-level bridge. The committee were of opinion that as the road of the bridge would have to be at least 21ft. above high-water mark to admit of vessels passing under it, a bridge was, considering the low level of the land on either side, out of the question. They therefore proposed: "That the Council do proceed with the formation of the tunnel authorised by the Thames Tunnel (Blackwall) Act, 1887—namely, by three lines of borings, one being for foot passengers and the other two for vehicular traffic." It was agreed to adjourn consideration of the report for a fortnight. Mr. A. R. Binnie was appointed chief engineer, in the stead of Mr. Clement Dunscombe, resigned through ill health, at a salary of £1,500 a year. Mr. Binnie had been, it was stated, for many years engaged in engineering work in India, and since his return had been for 15 years engineer to the Bradford corporation.

**NEWCASTLE-ON-TYNE.**—After extensions and improvements, the Northern Conservative Club, Pilgrim-street, was formally reopened by Earl Percy on Friday. The works have been effected from the designs of Mr. James C. Parsons, of Grainger-street, Newcastle. The principal alteration has been the addition to the building of a suite of offices to the north of the original premises, having a frontage of 19ft., by a depth backwards of 125ft. The entrance hall has been widened from 6ft. 6in. to 9ft. Additional space has been afforded on the north side upon the ground floor for a smoking-room, 30ft. by 18ft., with a lavatory behind. On the first floor the extensions consist of an enlargement of the dining-room, which is now 58ft. in length by 19ft.; a private dining-room, 18ft. by 20ft., the enlargement of the serving-room, formation of a new staircase to the billiard-room, and additions to the lift. The billiard-room on the second floor is now 58ft. in length, and the roof has been raised from 9ft. to 27ft. by the removal of the attics above. There are also on this floor a card-room, measuring 18ft. by 20ft., and an extra billiard-room, 22ft. by 22ft. In the attics there are four bedrooms and a bathroom. Externally the

club premises appear almost as a new building. The contractor for the structural alterations was Mr. Edward Weatherley.

#### COMPETITIONS.

**DORSET COUNTY LUNATIC ASYLUM.**—Sixteen designs have been submitted in competition for the enlargement of this asylum. The committee of visitors have appointed Mr. C. H. Howell, their professional assessor, to advise in the selection. Mr. Howell is the consulting architect to the Commissioners in Lunacy.

**MANCHESTER.**—The trustees for the new Wesleyan chapel at Plymouth-grove have decided to accept the plans of Mr. Curwen, of London. The style adopted is Early Geometrical Gothic, on the lines of the St. John's Chapel, Sunderland, by the same architect. The new chapel will provide accommodation for 750, and cost about £8,500.

#### CHIPS.

Mr. Bertram William Cook, the late engineer to the Rochdale Canal Company, was presented last week by the employés and friends connected with the company, with a case of drawing instruments (manufactured by Mr. W. F. Stanley, of London), on his retirement after 11 years' service. Mr. Thomas Holden, the oldest mechanic in the company's employ, made the presentation, and Mr. Cook suitably replied. Mr. Cook is about to leave the country for Mexico, where he has received an appointment to construct some extensive reservoirs.

The committee for filling the Cook memorial window in St. Stephen's Church, Bristol, have selected, from four designs submitted in competition, that sent in by Messrs. A. O. Hemming and Co., of St. Margaret-street, London, W.

Earl Manvers cut on Friday the first sod of a new railway, which is being constructed for the Manchester, Sheffield, and Lincolnshire Railway Company, from Beighton Junction, in North Derbyshire, to Chesterfield. The railway is the first section of a new line which was authorised by an Act of last session, by means of which the Manchester, Sheffield, and Lincolnshire Company will effect a junction with the Great Northern Railway at Annesley, and by the exercise of running powers obtain a direct route between Sheffield and Nottingham. The new line, including ten colliery branches, will have a total length of 35½ miles, and it traverses a district which is thickly dotted over with collieries. Mr. W. E. Stubbs is the engineer.

The Jubilee obelisk on the summit of Dennis-hill, Padstow, has just been completed. It is 50ft. in height, and built of solid granite. The architects are Messrs. Henry and John Paynter Hamilton, of London, and the builder is Mr. Nicholas Robins, of Wadebridge.

Wadham College, Oxford, has recently become possessed of the old Communion table at Iminster Church, at which, in all probability, Sir Nicholas and Dorothy Wadham must have been in the habit of communicating. It is of oak, handsomely carved, and undoubtedly good Elizabethan work. A stone altar has been substituted at Iminster, and the Communion-table will now be placed in the college chapel.

The Pontypridd section of the Barry Railway has been formally taken over by the company by Mr. J. Robinson, their resident engineer. Mr. J. W. Szlumper was the contractor.

The works in connection with the Pocklington Water Company were commenced last week by Mr. Thos. Bell, contractor, and will be pushed on as rapidly as possible, so that the inhabitants may have a supply by the beginning of the ensuing summer. The engineers are Messrs. Fairbank and Son, M.Inst.C.E., of Westminster, S.W., and Driffield.

The Russian Minister of Domains, with a view to preserving the valuable and extensive walnut and palm forests of the Caucasus, has just placed an export duty of 50 copecks per poood on all wood exported of those trees.

A new block of buildings for females has been added to the county pauper lunatic asylum at Clifton, York, at a cost of £4,500, and from plans by Mr. Walker Stead, county surveyor for the North Riding.

John Hill, a surveyor, of Broadstairs, late of Brighton, was at the Westminster Police-court on Friday committed for trial on a charge of embezzling a sum of money, and with endorsing a cheque in the name of H. Scharien and Co., builders, for whom he had acted as agent.

The chantry at Wakefield, known as "the Chapel on the Bridge," and which is closely identified with the Wars of the Roses, was formally reopened last week after being partially restored.



TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

G. A. K. (The bond of mullion you send us will be considered in our next article on "Brickwork.")

RECEIVED.—F. W. G.—H. S. R. and Co.—H. B. and Co.—W. S. and Co.—T. D.—J. L. and D.—H. H.

Intercommunication.

QUESTIONS.

[10224].—**Sound.**—The rooms in a building to be erected abroad are to be divided by 3in. timber-framed partitions covered on both sides with 5th match-boarding, and it is proposed, in order to prevent sounds passing from one room to another, to fill in the cavity between match-boarding with sawdust; but I am of opinion that the air space would be a better non-conductor than the sawdust. Perhaps some of your readers would state their experience?—H. M. C.

[10225].—**Echo.**—We have a large room used for lectures, &c., 78ft. by 35ft., and 30ft. to springing of roof, windows about 10ft. from ground. When full there is a bad echo, some speakers being quite inaudible. We have tried a series of wires across the room, but these are not successful. Can some of our readers kindly suggest a remedy, or what would be the best books to consult on the subject? I should say there is a platform 4ft. high running right across the room. The roof is Gothic and steep in pitch.—C. C.

[10226].—**Wholesale Contracts.**—Being very interested in the articles already written on the subject of "Wholesale Contracts," and not having knowledge of the system of master-builders as described by your able writer "Goth," I should like to ask him for a little more light on this system. Does he mean that the master-builder only acts for the employer? On whose credit then are all materials ordered, and who keeps the "builder's yard" with its almost inexhaustible supply of all sorts of odd materials and scaffolding? Then how does the builder get his remuneration—by commission? In that case, then, I presume he might have several jobs in hand at once. As "Goth" thinks that in this direction there is some chance of improving the present unsatisfactory state of things, he would greatly oblige by giving a little more information to—A YOUNG BUILDER.

[10227].—**Natural Bed.**—What is the correct way of placing the bed of a stone in a joggle-jointed arch? The usual method in an arch not joggle-jointed is to put the bed perpendicular to the face. If this is done when the arch is joggle-jointed, it seems to me the projecting portion would be of little use; for if any weight came upon it, it would very likely slide off. Now if the bed was placed the other way, would it not be much stronger?—MINERVA.

[10228].—**Roofs.**—In calculating weight of roofs, what weight per foot is usually taken for slate roofs?

How are the sizes of roof timbers calculated for towers? How are the sizes of riveted girders and stanchions calculated—some shaped stanchions carry weights better than others? In calculating the crushing weight, are angle pieces added to the sectional area?—A MEMBER OF THE B.N.D.C.

[10229].—**Velocity and Volume of Sewers.**—The accepted method in practice of ascertaining the flow (i.e., the velocity and volume) in sewers, both egg-shaped and circular. Will some correspondent kindly give an example, worked out in detail, say, of a 3ft. 9in. by 2ft. 6in. egg-shaped sewer, and of a 12in. pipe sewer?—NOVICE.

REPLIES.

[10220].—**French Chateaux.**—The following are a few of the most noteworthy and typical of the châteaux of France:—Carcassonne, Early 13th century; Pierrefonds, 1390, restored by E. V. le Duc; Meillant, near Saint-Amand Martrond, 1443; Amboise, end of 15th century; Chénouceaux, beginning 16th century, Renaissance; Chaumont, 16th century; Blois, 15th, 16th, and 17th centuries, west block by T. H. Mansard; Azy-le-Rideau, early in 16th century, Renaissance; la Youardaye, Morbihan, 1530; St. Germain en Laye, 16th and 17th century, Ducerceau, C. Metzeau, Mansard, and Millet; Fontaine le Henri, near Caen, latter part 15th century; St. Ouen, Compiègne, 18th century, Y. A. Gabriel. The département of Loir-et-Cher is particularly rich in châteaux, dating from the time of François I.—F. ELIE GAY, Bath.

[10222].—**Billiard-Room Floor.**—I should recommend, if possible, the floor to be a double floor, and that binders should be placed 6ft. or 7ft. apart, the joists being notched to them. Rolled-iron joists would be one means of economising depth. If single joists are used, the strutting should be solid, and three courses ought to be used. The bolts suggested would hardly be of much service.—G. H. G.

CHIPS.

A new parochial hall for St. Thomas's parish, Winchester, will be opened to day (Friday) by Lord Northbrook. It has been built from designs by Messrs. J. Colson and Son, of that city, by Messrs. J. Fielder and Son, builders, also of Winchester. It is constructed of local brickwork, is 8ft. 6in. long by 25ft. broad, and will seat 400 persons.

At a monthly meeting of the Pontefract Town Council on Friday it was decided to ask the Local Government Board to send down an engineer to examine the Roall water scheme before incurring further expense on the present site at Roall.

By a majority of one the Lancashire County Council have decided to appoint a Medical Officer of Health, at an annual salary of £800.

The Townhead School, erected by the Kirkintilloch Burgh School Board, was formally opened on the 6th inst. The school has accommodation for 650 pupils, including special accommodation for cookery and a laboratory. The total cost, including site and furniture, will be about £6,500. The architect was Mr. Malcolm Stark, jun., I.A., Glasgow.

The Normanton Local Board have accepted tenders for the paving of the township from end to end.

Two courses on sculpture, of three lectures each, will be given shortly at the Royal Academy by Mr. A. S. Murray, keeper of the Greek and Roman antiquities at the British Museum, and Prof. J. H. Middleton, of Cambridge. Mr. Murray's subject is "Sculpture in Greek Temples," and his course will begin on Monday next; Prof. Middleton's subject is "Florentine Sculpture in the Fourteenth and Fifteenth Centuries," commencing on Friday, the 28th inst.

Messrs. Atkinson Bros., stained-glass artists, Newcastle, have been commissioned to fill with stained glass the west window of the Presbyterian Church, Jarrow.

Messrs. Leslie and Reid, civil engineers, of Edinburgh, have prepared plans and specifications for the landward portion of the Water of Leith pumping station and sewage works, and tenders have been invited for the construction of the portion between Slateford and Coltbridge. The works are to be completed for the two local authorities by the end of next year.

At a meeting of the Brockwell Park Purchase Committee, held on Saturday, it was announced by the Executive Committee that a contract had been entered into for the purchase of 78 acres, at a cost of £117,000. Other expenses increased the outlay by £5,000, the whole amount of which had been raised, the contributions including a donation of £36,000 from the committee for the abortive scheme to purchase Raleigh House, Brixton-hill. Arrangements will be made for opening the park as soon as the enabling Bill has received the sanction of Parliament.

Mr. Harry Bucknell, Stud.Inst.C.E., of Stratford-on-Avon, has been appointed assistant engineer in the Public Works Department of Ceylon. Mr. Bucknell was a pupil of Mr. A. T. Davis, Assoc.M.Inst.C.E., county surveyor of Salop, and formerly borough surveyor of Stratford-on-Avon.

LEGAL INTELLIGENCE.

**A BUILDER AND HIS APPRENTICE.**—At the Westminster County-court, on Tuesday, Judge Bayley and a jury were occupied for a considerable time in hearing the action of "Gibson v. Barton." The plaintiff, a builder and contractor, of Vauxhall Bridge-road, sought to recover £51 18s. 2d. as damages "for loss of services by reason of the absence of defendant's son from his employment on various days from 1885 to 1889." Mr. Tickell, in opening the case for the plaintiff, said the action was brought against Edmund Barton, the father of Edmund William Barton, who was an apprentice in Mr. Gibson's service, for damages for refusing to work and for absenting himself from work, which he sometimes did for a week at a time. During six years he had refused to work 281 hours, and had absented himself 588 hours. His Honour observed that there was no claim in the particulars for refusing to work, and declined to amend. The learned counsel, continuing, said the boy received 5s. a week for the first year, which rose by increments of 2s. until it reached 14s. per week. His client had paid the lad for work he had never done, and he now claimed its return. The plaintiff gave evidence in support of this statement. Cross-examined by Mr. Gore, who appeared for the defence: The lad entered his employment as an apprentice for six years in 1884, and left in November last. He did not know the defendant was a lodging-house manager only earning 30s. a week. Last October he wrote to Mr. Barton telling him he was indebted to him for over £120 for damages and the boy's absence, and work and material spoilt by him. The lad's first year's wages were at the rate of 1 1/4d. per hour, exclusive of meal time, and he was now charging 6d. an hour for that time. When the boy's wages were 12s. a week, or 2 1/2d. per hour, he charged for the purposes of this action 8d. an hour. Plaintiff further admitted that he never gave the boy a holiday during the whole time he was with him. His diary would show that the lad was away four days when ill, because witness told him not to come to work till he was better. The boy was away ill sometimes, but had never stayed at work after eight o'clock at night. By His Honour: He had brought a similar action to this some time ago, and was successful. Benjamin Woodward said he had been a builder for forty years, and he considered the plaintiff's claim very reasonable. Mr. Gore, in addressing the jury for the defence, characterised the case as a scandalous one. At the end of the time of the boy's apprenticeship, a claim was sent in amounting to £15 less than the total sum of the lad's wages during the whole of the time he was in the plaintiff's service, and then when this action was brought it was reduced to £51. Most of the time the boy was away was on Bank Holidays, and on other days he was ill. If a proper calculation was made, it would be found that the whole sum the plaintiff was entitled to, at the rate the boy was paid, was two guineas. The jury said they did not want to hear any evidence for the defence, as they were perfectly satisfied, and should give a verdict for the defendant. His Honour gave judgment for the defendant, with costs.

The Council of the Surveyors' Institute have just published a statement of reasons against the provisions of the 28th (Betterment) Clause of the Strand Improvement Bill, and express their opinion "that the proposals of the clause are inequitable, and would be troublesome, costly, and irritating if attempted to be put into practice."

At a meeting of the Liverpool city council on Wednesday the resolution of the Art Congress held at Edinburgh in October last, expressing a hope that the council would reconsider their decision to discontinue the decoration with sculpture of the panels on St. George's Hall by Mr. Stirling Lee in accordance with his designs, was brought under consideration. A letter was read from Mr. Rathbone, a member of the council, agreeing to be permitted to undertake the cost of completing the four remaining panels according to Mr. Lee's contract with the corporation. A letter was also read from Alderman Samuelson suggesting that the work might be completed in bronze. After a discussion the matter was referred to the Finance Committee to report upon.

The Committee of the Iddesleigh Memorial Fund report that the total subscriptions to the fund amounted to £2,181 17s. After defraying the expenses of the statue by Sir J. E. Boehm, which has been erected in the Central Hall of the Palace of Westminster, a sufficient balance remained in the hands of the committee to enable them to commission Mr. Edwin Long, R.A., to paint a replica of his portrait of Lord Iddesleigh. This has been presented, on behalf of the subscribers, to the trustees of the National Portrait Gallery, who have added it to the collection.

The National Bank of Wales, Cardiff branch, is warmed and ventilated by means of Shorland's patent Manchester stoves, supplied by Mr. E. H. Shorland, of Manchester.



## Our Office Table.

A YOUNG woman named Elizabeth Vincent was, at the Richmond Police-court on Wednesday, charged with shooting Major Isaacs, M.P., F.R.I.B.A. He stated that he had been intimately acquainted with her for some years; that he had settled money on her child, and had given her funds to enter into business; that she invited him to her house, produced a paper, and said she would shoot him if he did not sign it. He added that she demanded that he should sign certain cheques. He declined to do so, and tried to take the pistol from her; but she pointed it at him and fired. He received the bullet in his arm, where it still remains. The defendant, who said it was an accident, was remanded in custody, and the chairman of the Bench advised her to obtain legal assistance.

The official report of the commissioners who were appointed to inquire into the cause of the fall of Messrs. Templeton's mills at Greenhead, Glasgow, on November 1st, has just been issued. After reviewing the evidence given and the theories propounded to account for the fall, the commissioners (Col. Malcolm, R.E., and Mr. W. Wybrow Robertson, of H.M. Office of Works) state that the materials and workmanship employed in the building were of excellent quality, and that no shortcoming in this respect contributed to the accident. The disaster was caused, they found, owing to the weakness, from want of lateral support, of the brick wall, which was wrecked by the oblique pressure of the wind, and led, by the dragging forces of the joists, to the simultaneous collapse of the front and rear walls. Had the building been completed, they believe no wind pressure likely to occur in Scotland could have destroyed it. Having alluded to the contradictory character of the evidence as to who was the responsible designer of the building, they add:—"We are not seeking to apportion the responsibility, but a practical lesson of some importance is indicated—viz., that when an architect and engineer are employed in designing a building, which may in many cases be desirable, they should not follow one another and act without concert, as in this case, but they should act together either as collaborators or as principal and assistant, the responsibility in either case being perfectly clear."

The seventh annual dinner of the Clerks of Works' Association was held on Monday evening at the Holborn Restaurant, under the chairmanship of Mr. MacVicar Anderson, V.P.R.I.B.A., and brought together a much larger number of members and visitors than any previous gathering of the kind. The health of "The Architects and Surveyors" was proposed by Mr. J. H. Smith, and acknowledged by Mr. Ralph Nevill, F.S.A., and Mr. J. Gandy. The toast of the evening—"Success to the Association"—was proposed from the chair, and acknowledged by the President, Mr. Linn Dillon. The other toasts included "The Honorary Treasurer," Mr. J. Oldrid Scott, proposed by Mr. J. Brady, and acknowledged, in Mr. Scott's absence, by Mr. J. P. King; "The Worshipful Company of Carpenters," proposed by Mr. F. Dashwood, Secretary, and acknowledged by Mr. Banister Fletcher, Master of the Company; and "The Committee of the Association," proposed by Mr. A. Ritchie (Messrs. Stephens Brothers and Co.), and responded to by Mr. R. Wheeler, Vice-President. It was stated that the Association was prospering, and increasing in numbers and strength.

MR. ROWLAND PLUMBE, F.R.I.B.A., has drawn up a report on the requirements for a polytechnic for Battersea for the executive committee of the South London Polytechnic Institution. The site is between Battersea Park-road and Battersea Park, being isolated on every side by roads, and contains an area of 2 acres 29 p. On this it is proposed to erect a structure accommodating 5,500 students, of whom 4,500 would belong to the technical department. The scheme provides a hall capable of holding 1,500 persons, and swimming-bath and a gymnasium. The main building is to include a technical library, three music and elocution rooms, with provision for lectures and classes. An upper floor is to contain the chemical laboratories, the photographic rooms, the art schools, and the drawing classes. The workshops are arranged in a wing, which

practically detaches them from the main building. Social, reading, and club rooms are located in the main block. Space is allotted for engines, boilers, and dynamos, the adoption of the electric light being strongly recommended. Separate reading and club rooms are to be provided for women. The estimated cost of the building is £40,000, a sum which applies to a structure of the plainest and most utilitarian character. The appliances and fitting up are reckoned at £8,000, the cost of the land £9,000, and sundry items £3,500, making up a total of £60,500. The Charity Commissioners have promised £2,500 a year for the endowment, if the committee can raise £60,000, and of this latter sum all but £12,500 has been obtained. As soon as the scheme of requirements is finally settled, a selected number of leading architects will be invited to send in plans for the actual building; but Mr. Plumbe will not take part in such competition.

THE *Baltimore Sun* announces the recent death, from old age, of Mr. George Clark, architect, a native of Bristol, England, at the Church Home, North Broadway, Baltimore. Mr. Clark, who was 89 years of age, was for 43 years with the late Sir Gilbert Scott, and superintended the decorations and arrangements of St. James's Palace on the occasion of the first ball ever attended by Queen Victoria. As superintendent of construction for Sir Gilbert Scott, he had charge of work on the royal palaces at Windsor, Frogmore, Buckingham, and St. James. He restored the cathedrals at Chester, Lichfield, and Ripon, and large churches in Yorkshire, at Croydon, Newcastle-under-Lyme, St. John's, Leicester, and over forty churches elsewhere. Among the many private residences he built were those of the Duke of Buccleugh, the Earl of Cadogan, and of Mr. Asheton Smith in Hyde Park-gardens. The old gentleman took much pride in speaking of his architectural work, and of his contact with and rubbing against Royalty and the Peerage. He leaves one daughter, the wife of Mr. Crook, late organist at St. Paul's Episcopal Church in Baltimore.

A SYSTEM by which the use of the sextant and slide-rule is much extended was described to the members of the Royal Scottish Society of Arts, on Monday evening, by Mr. W. B. Blaikie, of Edinburgh. The system, Mr. Blaikie stated, had been of enormous service to him when engaged in Government survey work in India, and though the results obtained by it were not meant to rival the Ordnance Survey in accuracy, for many practical military and exploring purposes the method was accurate enough. By means of a plumb "bob," which might be used either hung from the finger or the end of a walking stick, the pocket sextant could be converted, for field purposes, into a level, a chronometer, or an instrument for measuring slopes. Mr. Blaikie went on to explain a method of using the sextant as a range-finder, illustrating how this instrument and slide-rule could be worked together. Some discussion followed the reading of the paper, and at the close the chairman, Lord Kingsburgh, in moving a vote of thanks to Mr. Blaikie, incidentally mentioned that the present Earl Wemyss had introduced a range-finder, which consisted of a telescope with a number of lines drawn across the outermost glass. By ascertaining the number of lines which covered the object looked at, one was able to arrive at an approximate distance.

At a meeting held at the University College, Nottingham, on the 6th inst., Prof. Garnett delivered a lecture on "Sanitary Plumbing," and Sir Philip Magnus presented certificates of Registration granted by the Plumbers' Company, London, to a number of master and operative plumbers in the district. Sir Philip Magnus, in presenting the certificates, said nothing could be more successful than the organisation of plumbing classes had been throughout the country during the past few years. In the session 1885-6 there were 342 plumbers' students in these classes, in the following year the number increased to 403, in the year after to 695, in the year 1888-9 to 1,043, while during the present session no less than 1,217 student plumbers were receiving efficient instruction in the technical and theoretical branches of their craft. He ascribed this success mainly to the fact that the workmen had taken the greatest possible interest in the movement, and both the masters and the operatives were fully alive to the great importance of technical education.

## MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. "Building Legislation," by J. Slater, B.A. 8 p.m.  
Royal Academy. "Sculpture in Greek Temples," by A. S. Murray, of the British Museum. 8 p.m.  
Liverpool Architectural Society. "Quantity Surveying," by H. L. Beckwith, F.S.I. (hon. sec.) 7 p.m.  
Leeds and Yorkshire Architectural Society. "Conditions of Modern Architecture in Towns," by Halsey Ricardo. 7.30 p.m.  
TUESDAY.—Institution of Civil Engineers. Papers on Waterworks at "Shanghai," by J. W. Hart; at "Tytam, Hong-Kong," by J. Orange; and "Yokohama," by J. K. T. Turner. 8 p.m.  
Manchester Architectural Association. "The Ventilation of Public Buildings," by F. R. Farrow, of London.  
Civil and Mechanical Engineers' Society. "Italian Water Supply," by A. Fairlie Bruce. 7.30 p.m.  
WEDNESDAY.—Society of Arts. "Organisation of Secondary and Technical Education in London," by Prof. Silvanus P. Thompson, D.Sc. 8 p.m.  
Carpenters' Hall Free Lectures. "Modern Sanitation," by Prof. W. H. Corfield. 8 p.m.  
THURSDAY.—A. Lyric Club. Concert at the Mona Hotel, Henrietta-street, W.C. 7.30 p.m.  
FRIDAY.—Royal Institution. "Magnetic Phenomena," by Sheldford Bidwell, F.R.S. 9 p.m.  
Institution of Civil Engineers. "American Locomotives," by C. N. Goodall, Stud.I.C.E. 7.30 p.m.

## CHIPS.

Mr. R. G. Baldwin, a builder, was summoned to the Westminster Police-court on Wednesday to show why he should not make certain alterations in some houses at Chelsea, as required by the Metropolitan Building Act. It was stated for the prosecution that the houses were so constructed as to be very dangerous in case of fire. Mr. D'Eyncourt ordered the defendant to remedy what was complained of within twenty days, and allowed costs.

The 47th annual congress of the British Archaeological Association will be held at Oxford in July next, under the presidency of Earl Carnarvon.

Mr. Aspinall, of Cardiff, has been elected surveyor of the Stroud local board of health. One hundred and ten candidates offered themselves for the post.

A new altar and reredos dedicated to Our Lady have been consecrated in the R.C. Church of SS. Mary and John, at Wolverhampton. They are Gothic in style, and are executed in Caen stone, the altar slab being supported in marble shafts.

The widening of the North Devon line between Barnstaple and Nunderleigh, and the Ilfracombe line from Barnstaple to Braunton are approaching completion, and the remaining section between Morthoe and Ilfracombe has been commenced. Messrs. Lucas and Aird are the contractors.

The Ruskin Museum at Sheffield, which is being removed to new quarters, is to be opened about the middle of April by the Earl of Carlisle.

Longtown Bridge, Cumberland, has just reopened after widening, from plans by the county surveyor. The work has included the widening of the bridge and approaches by 9ft. on the north side for a distance of 450ft., and the repair and heightening of the parapet on the south side, at an estimated cost of £2,300, and has been carried out by Messrs. Marshall and Sons, builders, of Hawick, for the sum of £2,221 10s.

The Children's Hospital in Great Ormond-street, W.C., is about to be enlarged, at a cost of £15,000, by the addition of a jubilee wing, from plans by Mr. Charles Barry.

The London School Board resumed last week the debate on the motion for an independent examination by an outside architect of all the buildings erected by the Board. As an amendment, it was proposed that the Government should be asked to appoint a Committee to inquire into the matter. In the discussion the relative expediency of the inquiry being conducted by a Select Committee or by a Royal Commission was considered, and the amendment asking for a Committee was carried.

A new music-hall has been erected at Llanfair, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

Mr. Richard Crittall, of 20, Baker-street, W., and 34, North-street, Manchester, has just issued a useful and comprehensive catalogue of fittings for the electric light, which will be serviceable to all architects and builders.

The Darlington School Board have accepted tenders amounting to £3,314 for the erection of a boys' school to accommodate 390 pupils, in accordance with plans, &c., prepared by Mr. Thos. W. Robson, architect, Darlington.



## Trade News.

### WAGES MOVEMENTS.

**HULL.**—The bricklayers' labourers have declined an offer of an advance of  $\frac{1}{2}$ d. per hour as from May 1, demanding that the rise be conceded at once. The strike, therefore, continues.

**NEWCASTLE-ON-TYNE.**—At a crowded meeting of the Newcastle district of the National Association of Operative Plasterers, on Saturday, it was decided to ask the employers to grant an advance of 1d. per hour, making the wages 8 $\frac{1}{2}$ d., to take effect on May 3. They have taken a vote of the association, and it has been decided to give them support if needed.

**Holloway's Pills** are especially recommended to all annoyed by tender bowels, a source of constant weakness, if not indicative of danger. Diarrhoea, flatulency, nausea, spasms, and indigestion yield to the extraordinary power of this purifying medicine exerts over digestion and those subservient functions which extract the food's nutriment for the body's maintenance.

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### TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**BIRMINGHAM.**—For the supply of 1,450 school desks in three classes for the school board:—  
Clarke, D., and Co. (accepted).  
(1,000 boys' and girls' dual desks, in American birch, 14s. 9d. each; 20 medium desks, 9s. each; 250 infant's desks, 8s. 9d. each.)

**CHIPPING BARNET.**—For new rectory house, Chipping Barnet, Herts. Mr. J. C. Traylen, Stamford, architect, and diocesan surveyor for Peterboro'. Quantities by the architect:—

Pearson, Barnet	...	...	£2,750 0 0
Miller, Barnet	...	...	2,555 0 0
Wilnot, Hitchin	...	...	2,398 0 0
Miskin, St. Alban's	...	...	2,390 0 0
Herbert Bros., Leicester	...	...	2,382 0 0
Parnell, Rugby	...	...	2,366 0 0
Storv, Bourne	...	...	2,347 11 7
Kimberley, Banbury	...	...	2,311 0 0
Baughen, J., Barnet	...	...	2,295 0 0
James, Barnet	...	...	2,275 0 0
Halliday, Stamford	...	...	2,199 17 0
Curnow, Barnet	...	...	2,190 0 0

**COLWYN BAY.**—For sewerage parts of Old Colwyn, for the local board:—

Hughes, Hughes, & Jones (accepted)	£382 0 0
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[Lowest tender received.]

**CROWBOROUGH, SUSSEX.**—For the erection of a pair of houses at Crowborough Cross, for Mr. J. Humphrey. Mr. M. B. Teulon, Crowborough, architect:—

Goldsmith, J.	...	...	£1,096 0 0
Moon and Son, Rotherfield	...	...	1,046 0 0
Beard, J.	...	...	972 0 0
Wickins Bros. (accepted)	...	...	946 0 0

Rest of Crowborough.

**EDINBURGH.**—For the erection of a grand stand and the preparation of the sports ground at the forthcoming Electrical and Inventions Exhibition:—

Drysdale and Gilmoor (accepted).

**INVERNESS.**—For carrying out the drainage scheme for that portion of the city on the east side of the river, for the police commissioners:—

(Accepted tenders.)

General work:—

Macdonald, J., Inverness	...	...	£4,499 0 0
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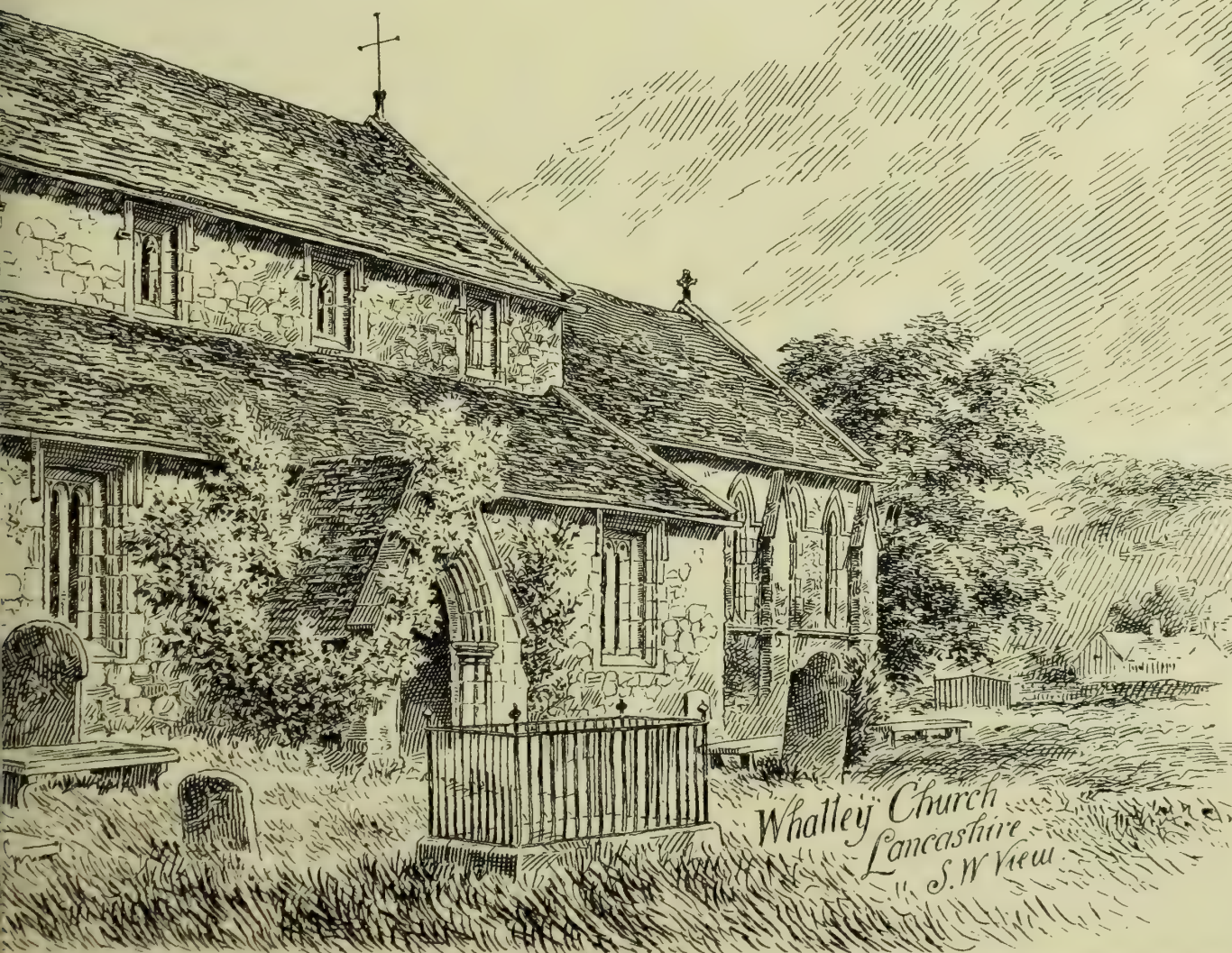








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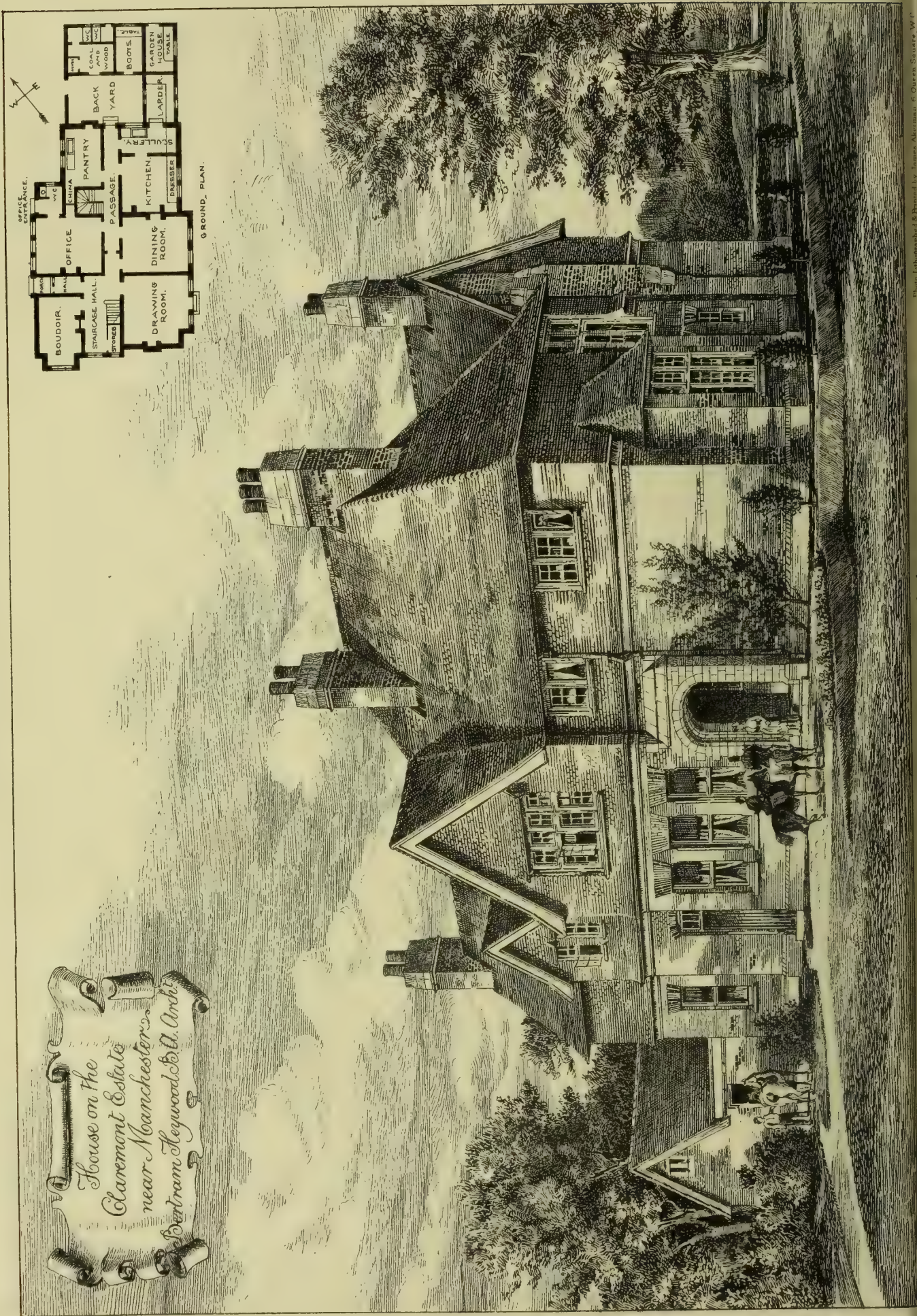






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When first on the delightful land he spreads  
His orient beams, on herb, tree, fruit, and flower,  
Glistening with dew."

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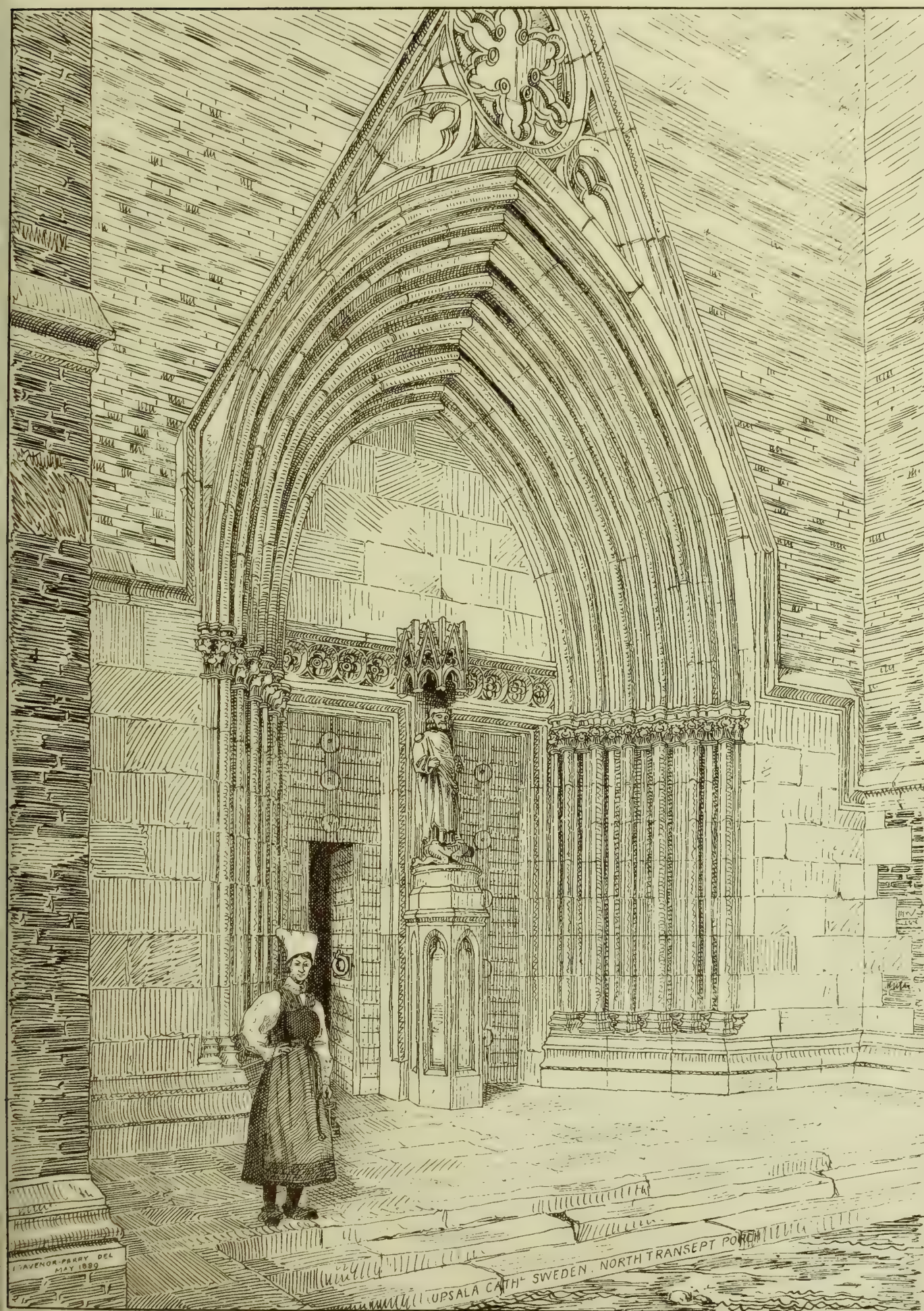


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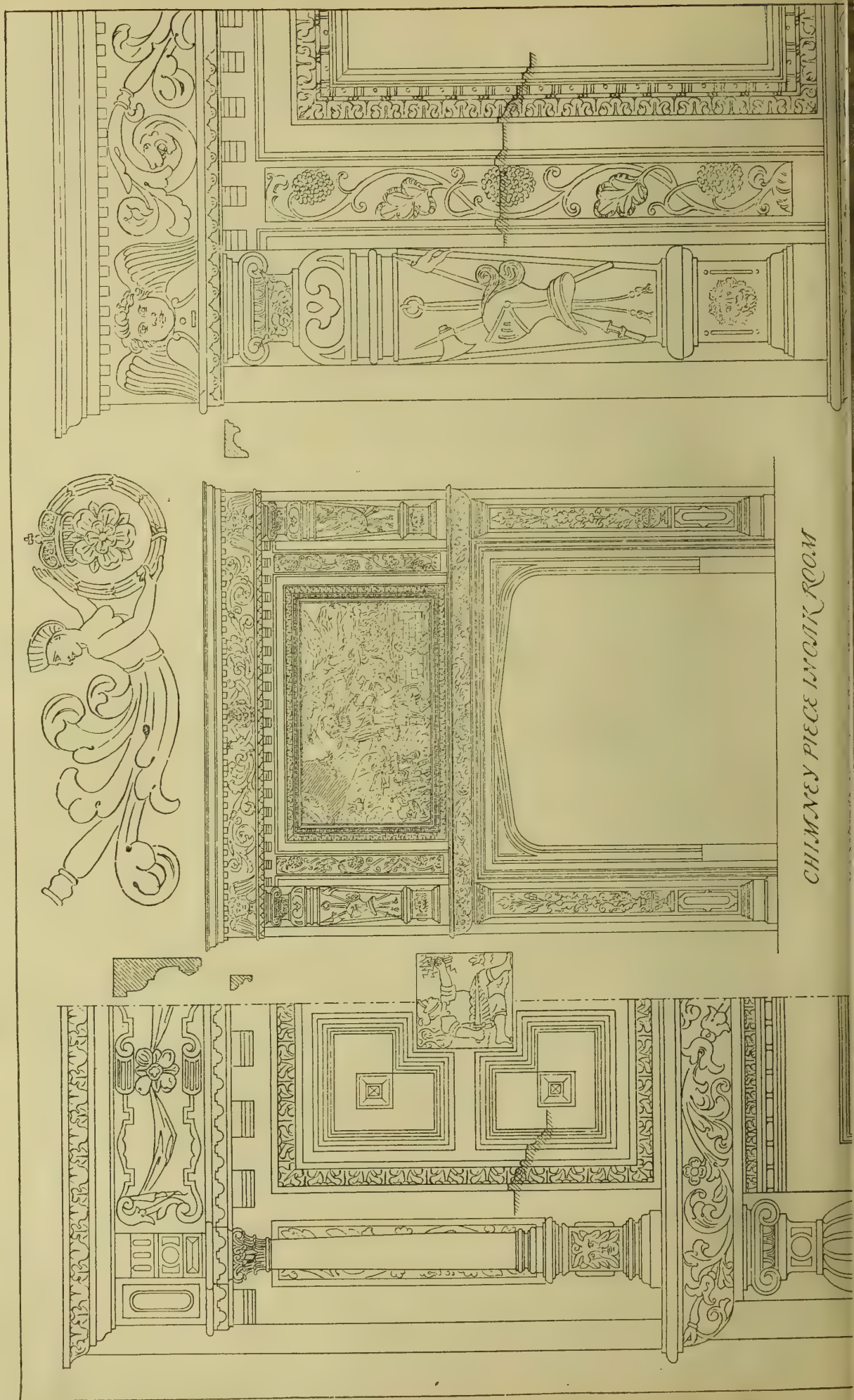








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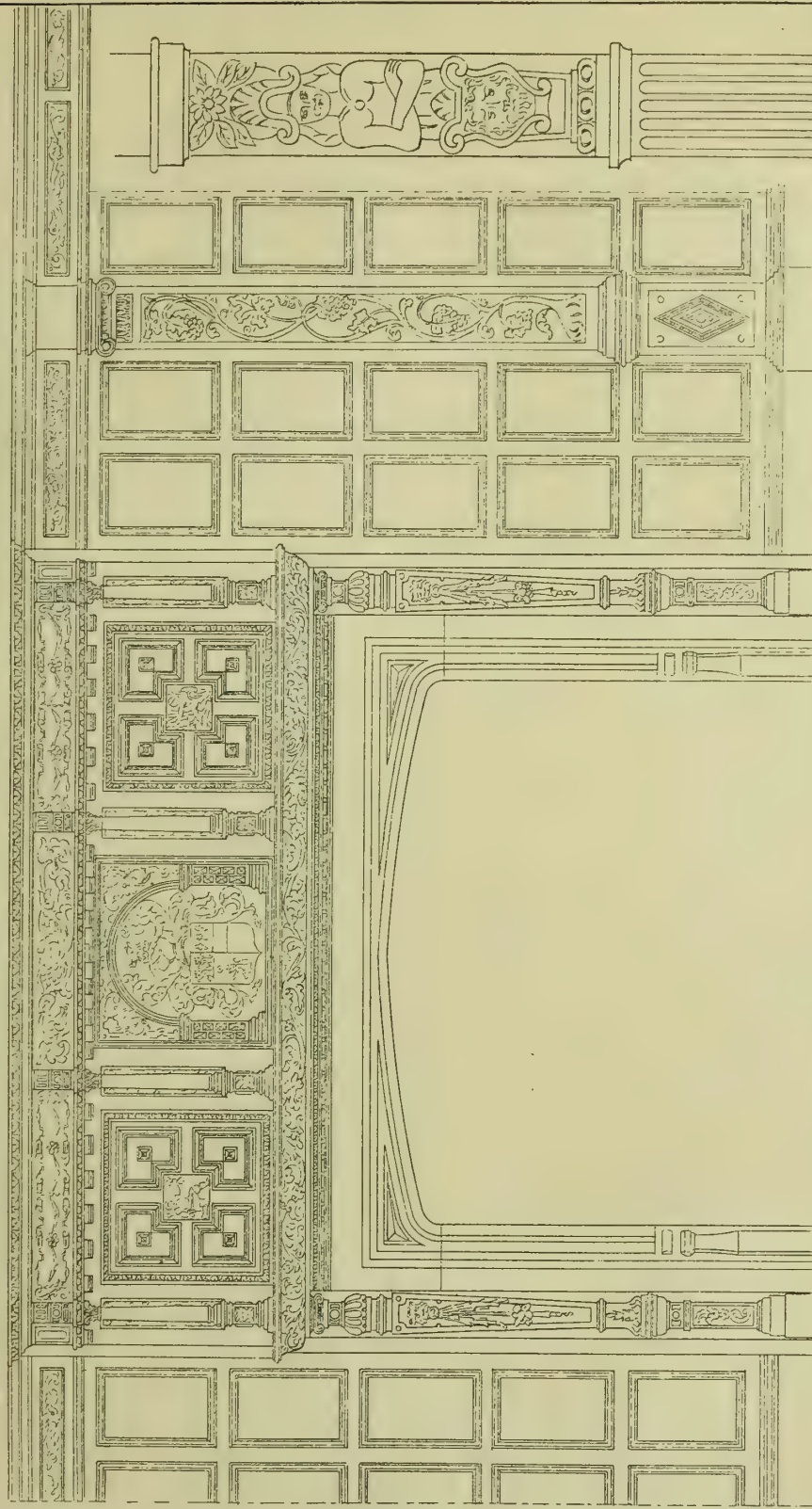
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# THE BUILDING NEWS AND ENGINEERING JOURNAL.

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## WINDOWS, THEIR DISTRIBUTION AND DESIGN.

THE distribution and design of windows, upon which so much of the comfort, appearance, and expression of a building depend, have hardly received the attention and study from architects that their importance requires. Appearance rather than utility has been considered in their design, or we should not see the hapless arrangements one often meets—buildings in which the rooms have been fitted to the windows of a façade, instead of contrariwise, the windows being arranged for the room. The old classical formula of dividing an elevation into equal-spaced bays, each with a window, and distributing the piers and openings by the pair of compasses could not lead to any other result than that of the first-mentioned, in which the cross-walls or partitions between the rooms were determined entirely by the openings. Resulting from this arrangement we observe one or two windows lighting a long room at the end: one of them may be close to the corner, and placed without any reference to the height of apartment. In some rooms the opening is too small, in others a great deal more light is admitted than necessary. By the second arrangement, the windows are planned to agree with the rooms, and the elevation is broken up in such a manner that the want of uniform division becomes less noticeable.

The subject may be treated—first, as regard the position of the windows in the room, and second, with respect to the elevation. Lighting is the first and primary condition, and ought to be studied in reference to the room. The slight attention paid to the question is proved by the indifference shown by architects to the aspect of windows. Though the aspect is not a matter of choice, being generally fixed by site, yet the importance of making it a consideration cannot be denied. How unreasonable it is, for instance, to find the largest windows placed on the side of a building which receives the greatest quantity of sunlight, the smaller ones being located on the darker side. In this climate, for example, the large windows are better placed on walls facing the north and westerly sides, and the smaller ones on walls facing the south and east. Southerly windows having the maximum amount of the sun's rays for the longest time need not be so large as those on the north side. Strange to say, theorists who have laid down rules for window openings have lost sight of aspect in giving an invariable size for windows, hence Palladio's rule is of little use in this gloomy climate, and so are most of the empirical rules that have been given. Besides climate and aspect there is prospect, which ought to be considered. In this murky climate of ours where wet and foggy seasons are the rule, it is wise to make our windows large, even if we have to regulate the admission of light by other means; but of size we shall say more presently.

The shape and dimensions of a room ought to determine the window opening. It is well known that if we place a window at the end of a narrow room it will be more satisfactory than if placed in the centre of the longest side: the light will fill the room better and there will be no dark corners; but if it occupies the long side of room there will be dark ends and the space will be much more lightly lit. When a room has its longest side to a front wall, as very often happens, wide windows are a necessity. To avoid the

semi-gloom and partial lighting of a centre window, the lighting area ought to be distributed evenly; thus a room 30 or 40 ft. in length should have a series of five window openings, an uneven number being preferable to prevent a shadow in the centre. On the whole, a general maxim to be remembered is that windows are more desirable at the end of an oblong-shaped room than at the side, and that, other things being equal, a less amount of window opening is required at the end than at the side. Many architects have an idea that in a building of several stories the same size of opening should be used in every story, and the hard-and-fast rule of observing the same height and character of the window throughout an elevation is a dangerous precedent with those who are more willing to follow a rule than to be guided by reason. It seems equally necessary to insist as a rule, that the height of a window should be regulated by the height and length of the room. The rays of light coming through the window at a certain angle ought to penetrate as far into the room as possible; but at an angle of, say, 45°, direct rays would only penetrate into the room a distance equal to the height of the window from the floor. Hence the importance of keeping windows high, and to make them reach very nearly to the ceiling. We have noticed unpardonable errors in the placing of windows. Not only have we seen the windows placed altogether in one corner of a room, or badly distributed, but the heads of them so low that the further end of the room is left in gloom, all from the desire to keep the windows equal in spacing and height throughout the elevation.

Secondly, considered with respect to elevation, the first principle that seems to be ignored is that the elevation ought to be regulated by the apartments and their lighting. The general rule is to make the elevation as pleasing as possible, to put in the windows so as to balance or to distribute them more for the sake of ornament than for use, and to make the plan fit as far as it can. If the principle with which we started was kept in view, of arranging the rooms with their proper windows, and then the elevation set out and designed to meet those data, the result would be more satisfactory. As long, however, as architects will draw out their elevations first before they have perfected their plan, the errors of badly-designed windows will remain a standing rebuke to the mode adopted. To discuss the matter more in detail would exceed our limits; but it is not difficult, after the plan of the window openings has fairly been considered, to draw an elevation that will agree with any trifling irregularity of spacing. A break, or a projection, or a quoin can be arranged to occupy the wider spaces of wall pier; and to strike a balance between the two sides of the façade, if a symmetrical elevation is required, is not so difficult a matter after all. A little readjustment of plan will be found to meet the elevation. When the windows of two adjoining apartments happen to come far apart, and it is not desirable to have a break, the expedient of pilasters may come to our aid. Should the intervening space be narrow, it is often possible to group the windows externally. In short, by breaks, pilasters, grouping, and other means, the inequalities that occur in the spacing of openings are readily overcome.

We have, in considering plan, forestalled much of what we might have said under size of windows. Theories have been proposed for the purpose of determining the area or windows for certain rooms; some of these theories, like those of Vitruvius, Palladio, and Sir W. Chambers, are arbitrary, or are based on the requirements of an Italian climate; others are empirical and far-fetched. Perhaps the most reasonable rule that has been proposed is that in which the area of the aperture is based on the cubic space of the

apartment; thus the square root of the cubical contents in feet of the room will give the area of light required, which can be distributed by one or more windows of any desired proportion. The rule does not tie the architect to any height or width of aperture, which may be regulated at his will. As we have hinted, the principal thing to remember is that of allowing the light to penetrate the room, and to preserve an agreeable proportion. Wide single windows are objectionable and ugly, the only mode of making them agreeable being to subdivide the space by mullions or piers. In streets facing lofty buildings, or in gloomy neighbourhoods, the size of opening should be increased; it should also be recollected that what is a suitable size for a domestic dwelling-house will be inadequate for a house of business or a show-room. Where a prospect is desirable, as in a private residence, the width of a window may be increased, or the area of openings distributed by having two or more windows in the wall. The prevailing use of quarry glass is a strong reason for making the openings a little larger than the rule affords, rather than smaller.

The subject is one very intimately related to expression. A many-windowed front has an open and urbane appearance, though excess of apertures may lead to the extreme of weakness. A front with few and small openings suggests austerity and gloom. These opposite ideas or sensations are created by the proportion existing between the plain surfaces and the voids simply; but there are other impressions, the result of the distribution and variety of the openings themselves. The different kinds of impressions are well illustrated in the Italian façades where austerity may be seen in such buildings as the Riccardi Palace, Florence, and the open fenestration in the Venetian buildings such as the famous Library of St. Mark, at Venice. Again, variety in the forms of windows is seen in the courtyard-elevation of the Doge's Palace, where pointed and circular openings in various positions are met with. But of the latter kinds of expression we would refer to three—(1) varying the openings and spaces horizontally, (2) varying the sizes of openings vertically, and (3) varying the shapes of openings.

These different ways of giving variety are often employed. Thus the windows of one level, or story, may be grouped or set out at unequal distances. In other buildings, like the south façade of Somerset House, an oblong opening on the ground-floor has over it a square mezzanine opening; above this the principal story has the pedimented oblong window, and over this a square aperture. Inigo Jones and Sir William Chambers were masters of fenestral composition, and their works are worthy of a patient study as elucidating the art of varying the openings, both in size and shape. Of modern buildings, Bridgewater House, the Reform Club House, both by Sir Charles Barry, illustrate the variety obtainable in Italian façades. One kind of fenestration is particularly objectionable: the repetition of the semi-circular or pointed opening in each story. The repetition of three-light windows is also to be avoided; but in groups, separated by plain single openings, they add value and variety. In this, as in all other things, there should be unity in variety, or a confused heterogeneous composition is the result. We may probably see more windows in Northumberland-avenue than in any other London street of the same length. The buildings are lofty, and their architects have had recourse to various means of giving variety and of avoiding monotony. The great corner hotel partly facing the Strand is perhaps the most marked instance of the heterogeneous fenestration. Cut up horizontally into numerous small stories, the windows have an isolated and higgledy-piggledy look, which they need not have had



if a little more grouping together and gradation had been attempted, or a line of large openings had occupied the principal floor. In the Avenue Hotel a proper connection has been observed. With numerous openings it is not difficult to avoid repetition, if only the stories as they rise preserve a kind of rhythm in the proportion and shape of the apertures.

#### STREET RECONSTRUCTION AND NEW SITES.

THE demolition of old streets and buildings in many parts of London has not in every instance resulted in an improvement to the neighbourhood, for, owing to the rights of ownership and vested interests, the authorities have been baffled in their attempts to let or sell vacant sites for building purposes. The consequence has been that in various parts of the metropolis are to be seen vacant sites inclosed that are little better than refuse receptacles, surrounded by a class of old and often tumble-down premises in a ruinous condition that ought to have been cleared with the houses to which they backed. In Charing Cross-road several sites of this kind may be met with, and many more may be seen in the lines of new thoroughfares and widenings on the north and south sides of the Thames. On some of the vacant sites, such as those in the Charing Cross-road at the back of the National Gallery, theatres have been erected; on others, large blocks of business premises. Several of these open sites are admirably adapted for public buildings, such as technical schools, polytechnic institutes, and free libraries. They, however, lie under the ban of private rights. The ominous "ancient light" claim has a blighting influence on speculators and builders. To turn for a moment to the extent of the Metropolitan Improvements—and how much more might have been accomplished, if under a more comprehensive jurisdiction street improvements had gone hand in hand with the endeavour to provide public institutions and sites for special buildings! As these things are now managed in England, one authority has powers granted to it to acquire property for the formation of new streets or for widening; but it has no voice in the question of selecting sites for public buildings. The consequence is an immense amount of unnecessary friction and clashing of interests when any definite scheme is brought forward; but what is more to be deplored is that in discussing any proposed line of street or widening, no provision is made for any possible public improvements, so that should a valuable site be within reach, it is allowed to escape attention—no attempt is made to include it in the scheme by a slight deviation in the line. The only task of the committee seems to be to draft the Bill, to settle claims, and to let surplus land, regardless of what might be done to make the thoroughfare an architectural ornament. For example, we cannot but believe a great deal more might have been made of the widening of Gray's Inn-road at the Clerkenwell-road end and northwards. The question of dwelling accommodation for the working classes displaced was one of the obstacles. The widening of Upper-street, Islington, which has cost a very large sum for compensation alone, the Hammersmith improvement, the demolition of houses near the Elephant and Castle in the Walworth-road offered favourable opportunities for acquiring corner sites for free libraries, technical schools, and other buildings of general public interest. Working-class dwellings have been erected on some of the sites, but to the detriment of the surrounding properties. In every case of street improvement opportunities are offered for acquiring properties at the junctions of other streets; but in how few of them do we

find that advantage has been taken?—the sites in many cases having been let at their market price for shops and ordinary dwellings, instead of being retained for the many more important class of public buildings.

Several open spaces at the corners of thoroughfares are to be noticed in different parts of the Metropolis, such as the corners of Waterloo and Westminster-roads, and it may be opportune to inquire whether the regulations of the County Council will at all touch them? The first important point in connection with corner sites is the line of frontage; the next is the elevation. Both these matters ought to receive the attention of the authorities. When a corner site is opened by the removal of old buildings, something may be done to improve the curve or the angle between the two roads. A circus suggests itself to most people as the right thing to make, and no doubt in crowded parts a good circus is a boon; but as they are generally managed the space thrown open may become rather a danger or a nuisance than otherwise. A circus with the whole area covered by tramway lines is objectionable and dangerous; people are afraid to cross, especially timid people and country visitors; in fact, there is more risk of accidents in a large area for vehicular traffic than in a more confined space. We have ocular demonstration of the fact in the recently-opened area in Piccadilly-circus, which is now being utilised as a sort of refuge. The authorities of our public improvements do not seem to think there are any other ways of utilising the space than to construct underground conveniences and paved refuges with ornamental lamps. Surely the space in some case can be left unpaved, and turfed or planted, with far more desirable results than paving the whole surface and putting a few posts round. Of course, statuary is one way of occupying a space; another would be to erect covered shelters on the areas, that could be made ornamental as well as useful. We know the architectural beauty and interest of some of our old city market crosses, such as those of Salisbury, Chichester, Shepton Mallet, and Malmesbury, with their central pillars surrounded by groined structures open all round. These would form a good type for the modern public shelter in our crowded streets; but very often it would be better to allow the corner plots to remain as they are where four or more streets meet, than to enlarge a space that would become a source of danger, if only the designs of the buildings were carefully considered. No one is responsible, however, for the elevations; and the ordinary square or level-topped buildings are erected, which make the site less attractive than it was when the old buildings, with their irregular skyline, gave an individuality to the place, which is lost when stereotype uniformity has been substituted.

Clause 70 of the London County Council (General Powers) Bill bears on the question of "sites not previously occupied in whole by buildings." It is to the effect that no person shall extend any building or erection upon a site of this sort "in such manner that any part of the external wall of such extension shall be in any direction at a less distance than 20ft. from the centre of any roadway used as a carriage-way, or than 10ft. from the centre of any footway used for foot traffic only, without the consent in writing of the Council, &c." We certainly cannot quite understand this clause, for it appears to give a building owner the right to extend his external wall in a very undesirable manner in streets of over 40ft. in width. Say, for example, the street is 50ft. or 60ft. wide; then, according to this clause, a builder may extend his outer wall to within 20ft. of the centre of roadway, and he will thereby be a gainer to the extent of 10ft. or 20ft.—surely never contemplated.

#### THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MEDIEVAL CHRISTIAN ART.—XI.

By GEORGE ASHDOWN AUDSLEY, F.R.I.B.A.  
(Author of "Handbook of Christian Symbolism," and several works on Architecture and Art.)

##### AUREOLE AND GLORY.

THE word *Aureole* is frequently met with in writings upon certain branches of art; but not always with its correct significance. It has very often been used instead of *Nimbus*, to designate the attribute placed around the head, in the manner already described in our preceding articles. In its correct significance the term is used by archaeologists and students of Christian Iconography to designate the attribute which surrounds the entire figure in representations of the Persons of the Holy Trinity, their symbols, the Virgin Mary, and certain other personages and symbols. The *Aureole*, as met with in works of Christian art, represents a halo of light emanating from and surrounding the entire body with a soft effulgence; or a fiery emanation of vivid rays or flames, which assume straight or wavy forms, arranged in radiating fashion. Other forms obtain which cannot well be included in



FIG. 29.

either of the above classifications, but these shall be described as we proceed. From the general definition given, it will be observed that the *Aureole* is similar to the *Nimbus* in its origin and nature; differing from it only in form and in being applied to the entire body instead of being confined to the head. The *Aureole* generally extends beyond the *Nimbus*, embracing it and the entire body in its field; but instances exist in which the *Nimbus* is entirely or partially outside the margin of the *Aureole*.

"The word *Aureole*," says Didron, "is derived from the Latin word *aureola*, the diminutive of *aura*, a breeze, a zephyr, a breath; *aura* also signifies day and light because the coming light of day is ushered in by the morning breeze, or perhaps bright rays and flame, which are as it were the efflorescence of light and day. *Aura* comes from the Greek word *αἶψα*, a gentle wind zephyr, exhalation, vapour, in short *aurora*. These significations may be reduced to one only, luminous breath—indicating precisely the nature of the *Aureole*, which is itself a flame as expressed in iconographic art by undulations surrounding the body, or by lines representing rays of light. The *Aureole* and the *Nimbus* are identical in their nature which is that of a transparent vapour or solid light. The luminous halo described by



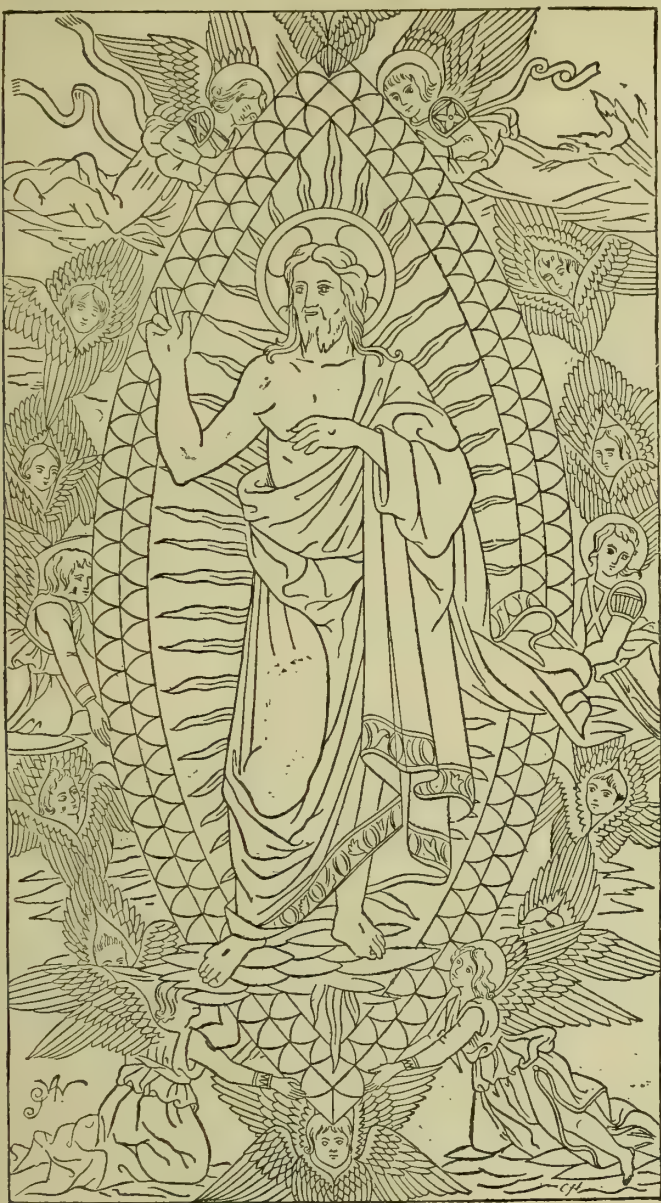


FIG. 30.

Virgil as encircling the goddess Minerva, and which he expresses by the words '*nimbo effulgens*,' was unquestionably an Aureole rather than a Nimbus.

"*Jam summas arces Tritonia, respice, Pallas  
Insedit, nimbo effulgens et Gorgone savâ.*"

As it is almost impossible to fully describe and illustrate the Aureole proper without treating of the Glory also, of which it is so important an element, we propose to describe them together in the course of the following notes. The term *Glory*, in the nomenclature of Christian Iconography, signifies the combination of the Nimbus and the Aureole in connection with a single personage, by which the most exalted state of deification, divinity, majesty, and power is expressed. As in the case of the Nimbus, the Aureole is used alone, when it becomes, so far as signification is concerned, a Nimbus for the body. Portraits of sacred personages accordingly appear with the Nimbus alone, with the Aureole alone, and, lastly, with both the Nimbus and Aureole.

Christian artists no doubt derived the Aureole, as they did the Nimbus, from Pagan sources; they certainly found, as has just been shown by the short quotation from the "*Æneid*," allusions in the Classic authors which suggested the appropriate idea of surrounding celestial beings with luminous clouds or emanations. They found, however, nothing but suggestive ideas, and these supplied no authorities for its shape and

artistic treatment. Such being the case, Christian artists may fairly claim the merit of having originated the several forms which the Aureole assumes in their iconographic systems. These, as will presently be shown, were arrived at in the process of adapting the attribute to the different postures and outlines of the figures invested with it; and in the hands of the artists of the Middle Ages it assumed numerous shapes which were commonly of some symmetrical or severe geometrical outline.

The Aureole appeared in Christian art at a much later date than the Nimbus; indeed, the latter attribute had become thoroughly established in Christian Iconography, and had assumed all its more important and typical forms and treatments before the Aureole was introduced. We may further remark that in Western or Latin art the use of the Aureole was comparatively short-lived, and that at no time does its adoption appear to have been a settled matter. In the art of the Greek Church, however, few changes have taken place, and both the Aureole and Nimbus have continued to be painted, on ancient and traditional lines, down to the present time.

The first idea of the Aureole was evidently that of luminous vapour, or clouds which received and localised, as it were, the light or radiance which issued from the body. St. Dionysius the Areopagite, in his *Celestial Hierarchy*, speaks of the angels as being

robed in clouds; and just as Christian artists readily adopted his teaching with reference to the *Orders* or *Choirs* of angels, so would they freely adopt the idea of enveloping them in luminous clouds. The peculiar spirit of Mediæval art, however, was averse to the representation of anything so immaterial and undefined as a vapour or ever-changing cloud; and only approached the task in the most guarded and conventional manner. Accordingly, in the earliest examples of the Aureole, we find it rendered as a distinct form, with boldly-defined boundary lines; assuming the office of an attribute, like the Nimbus, about the signification of which there could be no uncertainty. The original idea of clouds is not altogether lost sight of, however, in these conventionally rendered Aureoles; indeed, we find in some examples that the clouds are freely expressed. In these the clouds serve as a sort of fringe or border outside the field proper of the attribute. We give an illustration of one of these cloud-fringed Aureoles in Fig. 29, from a window of the 13th century in the Cathedral of Chartres. The crowned figure represents the soul of St. Martin ascending to heaven. It is surrounded by an Aureole of the most usual form, having a plain field. Outside this is a broad fringe of clouds, rendered in the conventional manner peculiar to the artists of the Middle Ages. Such purely conventional representations of rolling clouds are frequently met with in the 13th and 14th century stained glass and miniatures of illuminated manuscripts. It will be observed that the figure of the soul of St. Martin is not invested with the Nimbus, accordingly it is not yet "in glory."

From the time of St. Dionysius it remained a favourite impression throughout the Middle Ages that the angels moved to and fro, and that the souls of the blessed ascended to heaven in clouds of fiery light. St. Ouen, in his "*Life of St. Eloi*," thus speaks of the resplendent Aureole, the spherical light, the *pharus* which enveloped the soul of the Saint as he ascended to heaven:—"Inter verba orationis flagitatum a superis emisit (Eligius) spiritum. Statim vero cum esset hora prima noctis, visus est subito velut pharus magnus ingenti claritate resplendens ex eadem domo coruscando conscendere, atque inter mirantium obtutus sphaera ignea crucis in se similitudinem præferens, velocique cursu densitatem nubium præteriens, cœli altitudinem penetrare."

We shall, in the first place, briefly review the forms which the Aureole has assumed under the hands of Christian artists, afterwards touching on matters connected with its artistic treatment and its application in iconographic art. Several forms of the Aureole have been introduced, generally designed with the view of suiting the peculiar positions of the figures invested, the elongated and upright forms being, in the generality of instances, applied to standing figures, whilst those in the forms of circles, quatrefoils, &c., are used for seated or half-length figures. In many cases, however, the upright Aureole has also been given to seated figures. An example of the latter treatment is to be seen in Fig. 5 (Article V.), in which God the Father is depicted seated within a lenticular Aureole. The form which has most commonly been adopting for standing figures, and which may be accepted as the characteristic form of the attribute, is that which is outlined by two equal arcs of a circle, touching each other at their extremities, such as the portion surrounded by the clouds in Fig. 29, and that shown in Fig. 30, taken from one of the interesting copperplate engravings in *Il Monte Sancto di Dio*, by Antonio Bettini, of Siena, printed in the year 1447. This form of Aureole has been vulgarly designated the "*vesica piscis*" by numerous English archaeologists. Why it was found necessary or advisable to resort to so remote a source as the bladder of a fish





FIG. 31.



FIG. 32.

for an inexpressive name for the simple pointed Aureole is not easily explained; and, as M. Didron justly remarks, "a term so gross deserves to be expunged from every refined system of terminology." We shall most certainly ignore this inappropriate and vulgar term in our future remarks, using the term *lenticular* instead.

This form of Aureole is treated in various ways, from a perfectly plain field to the elaborately-wrought one shown in Fig. 30. Between these two extremes there are many degrees of richness. In the case of the Aureole in the illustration now under consideration, the field is covered with flamboyant rays, indicative of vivid light and intense radiance, and expressive of the exalted degree of the personage it invests. The figure is that of Our Lord, and He is here represented in a Glory of the most expressive character, for not only are the tri-radiated Nimbus and the rayed Aureole present, but the latter is upheld and surrounded by glorifying angels. On referring to Fig. 5, already alluded to, a different treatment of rays will be observed, although the idea of intense radiance is the same. There are two orders of rays—one directly emanating from the figure invested, and the other surrounding the outer edge of the Aureole as a fringe of light. Here the Aureole proper assumes the form of a framework, with an arched piece across it serving as a seat for the inclosed figure. The whole appears of a very material nature, far removed from the idea of luminous clouds and vapour.

In the accompanying illustration, Fig. 31, we find the same description of frame Aureole, containing a standing figure of our Lord; but devoid of any indication of radiance, and with its material nature heightened by the manner in which it is borne by the six angels. This example is from the *Speculum Humane Salvationis*, an Italian manuscript of the 14th century, in the Royal Library, at Paris. The Aureole in Fig. 30 assumes a certain material character from its well-defined border, and its being supported by six angels. In Italian mediæval art, the lenticular Aureole is almost invariably met with, and with its boundary lines firmly defined, as in the examples above alluded to.

Throughout the miniatures of that wonderful 10th-century manuscript, the *Bene-*

*dictional of St. Æthelwold*, we find the lenticular Aureole used exclusively. In all cases it appears substantial and boldly defined; indeed, in two instances, the artist seems to have endeavoured to convey the idea of thickness by representing the edge nearest to the eye. His imperfect knowledge of perspective, however, has caused him to do this so clumsily that his intention is open to conjecture. We think there is little doubt that he did intend to depict the edge, and, accordingly, the thickness of the Aureole; for, in both the miniatures the figures of Our Lord are represented moving towards the side, carrying their Aureoles, as it were, behind them. This will be clearly understood by referring to Fig. 32, which is taken from the miniature of the Ascension.



FIG. 33.

In the original the Aureole is shown rising amidst clouds, and followed by angels. M. Didron, who was a most enthusiastic student of Christian Iconography, and a very keen observer, does not appear to have met with what we may call the *Aureole in perspective*, for he neither mentions nor illustrates an example in his works. We have no recollection of having seen it or anything approaching it in any work of art save that from which our illustration is taken. There are so many points of resemblance between the Aureoles in this manuscript, excluding this one perspective treatment, and those commonly found in Italian art, that one would almost suppose that it had been illuminated under some direct Italian influence. Its early date (A.D. 963-984), and the peculiar richness of its colouring, rather disprove this supposition. It is generally believed that the illuminator was an Englishman, and if he was subjected

to any immediate influence in his work it is very probable that it was from a Byzantine source. There is much in the art in this wonderful book to incline one to the latter conclusion. Italian manuscripts did not display elaborate detail and rich colouring before the beginning of the thirteenth century. Before we leave the pages of this manuscript, we may remark that in only one Aureole do we find the arched piece which is so marked in Figs. 5 and 31; and then it is neither a prominent feature, nor does it cross the broad portion of the field and pass behind the figure, as in the Italian examples. Instead of this, it is placed close to the bottom of the Aureole, to serve as a rest for the feet. The lower portion of the Aureole alluded to is shown in Fig. 33. The miniature in which this treatment obtains is that representing the Incredulity of St. Thomas.

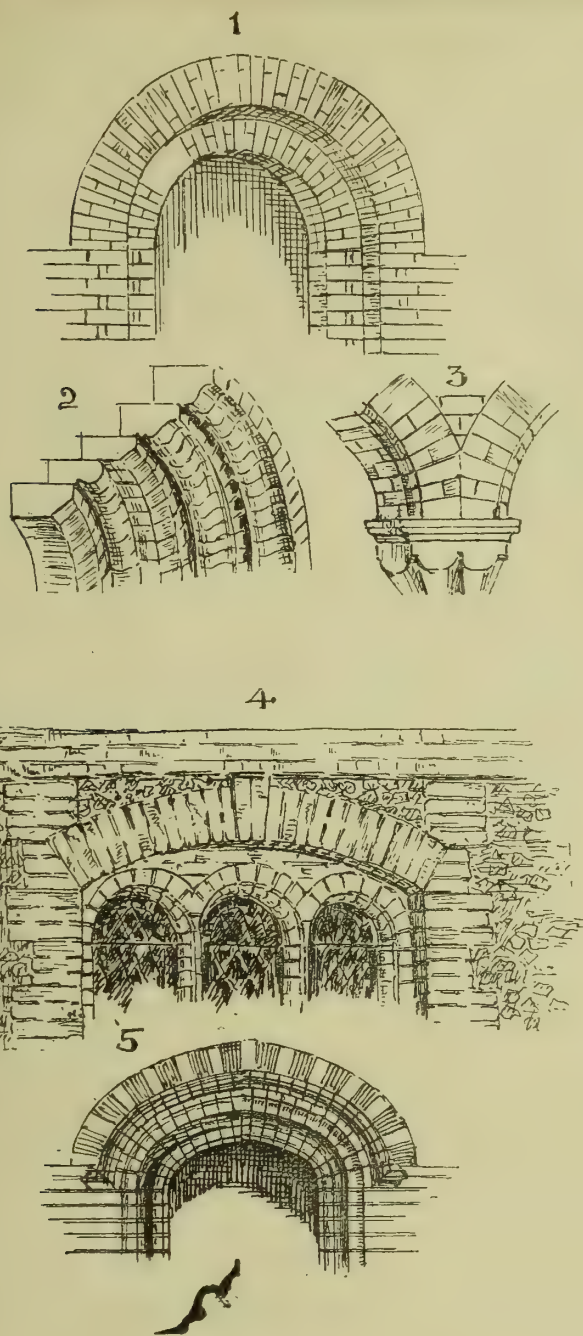
(To be continued.)

## ARCHITECTURAL BRICKWORK.— XXIX.

### RECESSED ARCHES.

AS an example of recessed arching we may take a semicircular door-head, in which a plain gauged brick-and-a-half arch forms the recess within which is the doorway, having over it an arch one brick thick (sketch 1). These two arches are separate though in contact, and, therefore, it does not follow that the joints coincide. Care is required in cutting and rubbing the arch bricks to the true shape, especially the bedding joints, so that the bricks will bear evenly and not throw an unequal pressure on the outside edge, a fault which, as we have already pointed out, leads to disturbance of the arch. When an arch is recessed by a succession of members, plain or moulded bricks are used, and these may be made to contribute to the depth and richness of the arch. In sketch 2 we show a moulded arch of different shaped bricks, the rings being set one within another, such as we find in ornamental brick archways. To produce a good arch bond in each ring, the bricks are laid as headers and stretchers, or one as a header the full length of brick bonded into the thickness of the wall, as shown in our sketch, and the next one to it as a half-brick, half the length being cut off. As an





sample of an archway of this sort, having recessed members of brick, we may refer the student to the archway over main entrance, courtyard in Layer Marney Towers, Essex, one of the earliest examples of rickwork and terracotta in England, circa 1506. This archway, if we examine it closely, has three distinct rings or moulded members (in addition to the label moulding), forming two hollows, separated by a roll and fllet. Each ring is worked independent of the others, as we shall show by sketch. Very few of these deeply-moulded brick arches are to be met with in this country, though one often sees plain chamfered bricks set in successive rings receding from the face of wall.

#### SPRINGINGS.

Sketch 3 illustrates the manner two cut and rubbed arches abut against each other at the springing of a capital, taken from a newly-erected suburban house. As will be noticed, three or four of the lower arch bricks are reduced in length, a vertical abutting joint dividing the two arches, which are each 9 in. in thickness. Another plan is to put a stone or terracotta springing block in place of the first three or four lower bricks, and to start each arch from a bevelled skew-

back. This plan avoids the straight joint, and makes a stronger abutment over the column; but has the disadvantage of not being a brick-cut arch throughout. It is preferable to cut the bricks to a vertical joint in the way shown than to run the lines of extrados together till they meet, as this would entail not only increased width of abacus, but a deal of fine cutting between the two arches.

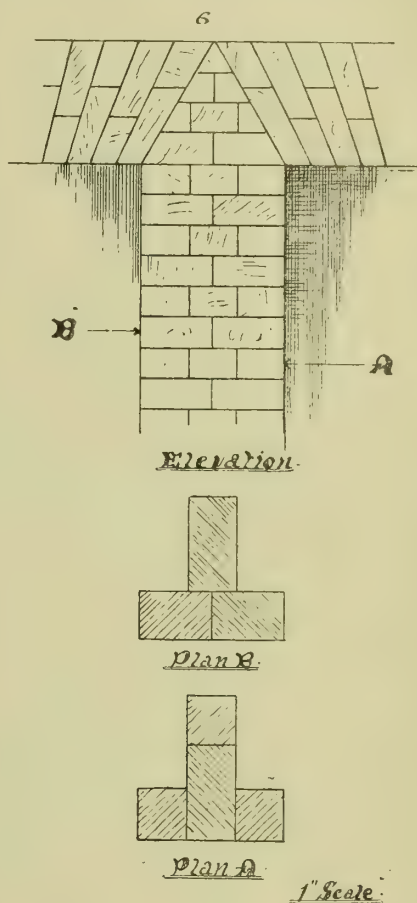
#### MOULDED ARCHES.

We show an example of a three-light cottage window from Broadstairs, Kent, in which the mullions and arches over are moulded (4). The bricks are moulded, and the effect is very satisfactory. Sketch 5 is one of the single-light window arches at Layer Marney Towers, and illustrates the mode of jointing the arch bricks in two courses. It will be seen at the apex of arch the key-brick is in one; in the lower ring there is a joint. These windows are admirable specimens of moulded brickwork; many of them have labels. Other details from this noted example of English Renaissance work we shall give.

#### MULLION BOND.

A correspondent (Mr. George A. Kenny, architect, of Ipswich) sends us a plan for the

successive courses of the mullion we described at page 195 in our last article, and we have reproduced his sketches. Referring to our diagram, showing a one-and-a-half brick mullion, he observes: "I consider it to be very bad bond"; and he shows in the sketch we now give what he considers to be the strongest. The sketch of bond we gave was only one mode of constructing a mullion.



We did not say it was the best, or strongest. Few mullions of this size, which have to preserve an external bond, are very good, owing to the absence of a good tie between the front and mid feather. We admit that Mr. Kenny's plan shows a stronger bond, as the tie is better, the whole brick going through to the front on every other course, instead of a mitred brick, as shown on p. 195. There is, however, one objection to the plan, which some bricklayers would consider fatal—the external appearance of bond is not preserved, as in one course there are three headers in a row, and on the other two three-quarter bricks as stretchers. In the plan we gave, which is carried out in numerous windows, the Flemish bond is preserved; it is, moreover, given in some textbooks. We are glad to receive suggestions of improved bond from any correspondent.

#### ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the president, Mr. Leonard Stokes, in the chair. It was announced that the second visit for the present session would be held to-morrow (Saturday) afternoon, when Mr. T. E. Colclutt's Imperial Institute would be inspected. An appeal by the hon. secretary to the committee for the restoration of the noble tower of Chewton Mendip parish church was read. The tower shows signs of failure, and Mr. J. D. Sedding, hon. diocesan architect for Bath and Wells, reports that it can be repaired and strengthened at a cost of £750.

#### SOME TYPICAL GREEK BUILDINGS.

Mr. R. ELSEY SMITH, who was elected in 1887 to a studentship at the British School of



Archæology at Athens, read a paper descriptive of his excavations of "Some Typical Greek Buildings," illustrated by plans, measured drawings and sketches, and by a large number of photographs, shown by the aid of the oxyhydrogen light. The lecturer confined his attention principally to those buildings which he thought might be taken as representative of the domestic, secular, and sacred architecture of the Greeks—viz., the Palace of Tiryns, the Propylæa, and the Erechtheion of the Athenian Acropolis. The last of these, Mr. Smith explained, is also a wonderfully beautiful example of the use of the Ionic order, while the second illustrates the very best period of the Doric order, and all three are specimens of the magnificence and freedom of Greek planning. Of these three buildings, by far the oldest is the Palace at Tiryns, though six years ago its existence was unknown, and by most people undreamt of. We will, therefore, consider it in the first place, more especially as we shall discover in it the beginnings of much of the later Greek art and architecture. The citadel of Tiryns occupies a magnificent position near the sea, overlooking the Bay of Nauplia. The rock rises abruptly out of the level plain, and nowhere is there any eminence that in the days before artillery was introduced could command it. The natural features of the rock form the key to its fortifications, which were adapted to it with great skill; they are the most massive of their kind in Greece, and possess several points of great interest. Any student who wishes a more detailed account of the walls or the palace will find it in Dr. Dorpfeld's account of them contained in chap. v. of Dr. Schliemann's "Tiryns." Owing to the form of the rock, three more or less separate forts existed within the outer ramparts; the lower, the middle, and the highest, and crowning the last, and occupying the greater part of it, stood the king's palace. The materials used in its construction were stone, limestone, breccia, and sandstone, clay, either beaten hard or used as mortar or cement, or as sun-dried bricks; lime, and wood; while in the decoration of its surface, plaster covered with coloured decoration, carved alabaster, and almost certainly bronze plates, were employed. The plan of this fortress-palace, though not perfectly preserved, approaches being so, and is far less incomplete than the palaces at Mycenæ or Troy, or the fragments of Erechtheus' palace in the Athenian Acropolis, and all three have many points of similarity both in plan and construction. At Tiryns, having passed through the fortress-wall, we approach the outer gate of the palace. This gives admittance to a large open space, devoid of building. After traversing this we reach the outer or great Propylæum, with an outer and an inner portico, the forerunner in every essential particular of the great Propylæa at Athens, and of many others. Each portico takes the form of a distyle in antis, while the wall of the gate is pierced by a single opening in the centre, not between the jambs, but inside them, and their bronze-covered pivots worked in circular holes cut in the stone of the threshold, which was much wider than the wall. From the inner portico a door admits the visitor to a long, winding passage leading to the women's apartments, and just beyond the portico a short passage gives a side entrance to the court of the men's apartments. This Propylæum gives direct admission to a large outer court of irregular form; the buildings inclosing it to the south and west have been either largely obliterated by later buildings, or slipped down the hill with the line of fortification which gave way here. On the north side they are more perfect, and it is possible to trace distinctly the line of the small Propylæum giving access to the court of the men's apartments. This gateway was similar to the great Propylæum, having an outer and inner portico, and the gate-wall was provided with folding doors. The courtyard to which this gave admission was large, about 65ft. by 50ft. clear of the porticoes which surrounded it on three sides, the east, south, and west; this court was paved, and so also was the outer one, with concrete. Nearly in the centre of the south side was placed the great altar of Zeus, which is on the axial line of the vestibule which occupied the greater part of the north side of the court. The front of this vestibule took the form of a temple in antis, and was raised on two steps, forming a stylobate. The bases of the two columns and of the antæ remain; those below the ground level are of irregular form, but above

it are carefully squared to the line of the wall. This also is the usual treatment of the thresholds here, but at Mycenæ they are squared throughout. The bases of the antæ have their tops rebated and drilled with a series of holes for wooden dowels. In general the base stones at Tiryns are from 18in. to 2ft. high. The upper part of the anta was formed of timber beams placed in juxtaposition side by side, and dowelled to the base, and probably to each other; and these would carry the ends of the lintels, probably formed in a similar way of more than one piece, as was the case later with the great stone architraves of the Parthenon and other temples. The side walls of this vestibule were decorated with slabs of alabaster, richly carved and inlaid with glass. Three pairs of doors hung folding between the jambs gave access to an ante-chamber, from which an opening led to the Megaron, or principal men's apartment, which was over 30ft. wide and nearly 40ft. deep. In the centre are the bases for four wooden pillars which helped to carry the roof, and between them are traces of the large circular clay hearth found in much greater perfection in Mycenæ; the floor of the hall was of concrete, ornamented with a rectangular pattern in incised lines. The walls in the upper parts were of perishable materials—wood and sun-dried bricks—and these fell an easy prey to the fire which destroyed the Temple. From the ante-chamber access is also obtained to the bath-room, which could also be reached from the men's court. The floor of this room was formed by one single stone slab, sunk, polished and drilled with dowel holes for a wood lining to the room, and was provided with a movable terracotta bath and with a drain; this bath adjoins a long and winding corridor, out of which several rooms opened. It also led to the staircase to the middle fortress, and eventually to the women's apartments, and may have been intended for the use of servants or slaves. The women's apartments in general arrangement closely copy the men's, but they are smaller, and the two sets have no direct communication. The long passage from the inner portico of the great Propylæum gives access through a stoa on its west side to an open court; this communicated directly with the inner court of the women, which had stoa on its east and on part of its north side. The rest of the north side was occupied with the vestibule to the women's hall, and with the entrance to the corridor which ran round them. This court was drained into the channel from the bath already referred to, which was formed of rectangular terracotta channel pipes which fitted into each other. The south side of the vestibule is quite open, the span is about 18ft., and, therefore, a lintel would not require intermediate support. This vestibule is nearly square; east and west doors lead into the surrounding corridor, and on the north side a single door, about 5ft. 3in. wide, leads to the women's hall. This door is of special interest, for in the pivot-hole the great bronze pivot was actually found. In the centre of the hall there seems to have been a square hearth. East of this hall are several well-defined rooms grouped together, and only accessible from the surrounding corridor; they probably comprised the king and queen's sleeping-chamber, with a vestibule, while a small passage gives access to inner rooms, which formed the treasury and armoury; south of this passage is probably the position of the staircase leading to the roof. A few other rooms are accessible directly from the women's outer court, but their exact purport cannot be definitely fixed. The walls of these rooms stand for a height mostly of from 1ft. 6in. to 3ft., the lower portions being constructed of stone; above this height the walls seem to have been constructed of timber and sun-dried bricks, and were usually from 2ft. 6in. to 4ft. 6in. thick. Both the upper and lower parts of the walls, external as well as internal, were coated with clay and then lime plaster; the latter was painted in various colours, subjects being introduced as well as geometrical patterns. The antæ had usually solid stone bases, the upper parts being formed of massive timbers forming an end to the wall. It is probable that these timbers, and also the wooden columns of the porticoes and Megaron, were incased with bronze plates. The thresholds were, with one or two exceptions, of irregular form, but all, excepting a broad central band, which was carefully worked to the width of the wall and stood slightly above the finished floor-level, was worked down so as to allow the floor to be carried up to the wall-line evenly through-

out. The roofs were probably flat, formed of massive timbers, which carried reeds, and above them clay. There may have been an upper story over a good portion of it. This is one of the earliest Greek buildings of which we have any extensive remains, and belongs, probably, to the 6th century B.C., or possibly an earlier date even. It was finally destroyed in the early part of the 5th century, but the Mycenæ palace, which is of later rather than earlier construction, certainly cannot be later than the 8th century. We have thus a not incomplete idea of a palace of an early Greek king, and are able, in conjunction with the discoveries in the Mycenæ tombs, to form some idea of the splendour of their homes. They were essentially warriors, and there was little in the way of what we should consider luxury in their manner of living; but their fortresses and palaces were magnificently constructed, and the latter richly adorned, and their armour and weapons and utensils were often of precious material and most delicate and graceful workmanship. This palace possesses a genuine architectural interest, for in it we find evidence of the origin of much that we shall see in our study of the later marble architecture, and here already the difficulties of a trabeated system of architecture have been encountered and overcome. In the Megaron of the men, for instance, we have an arrangement almost exactly repeated in the Opisthodomus of the Parthenon. Here, too, we perceive the constructional *raison d'être* of the anta, which was repeated in the early stone and marble architecture, but which ceased to exist to have any real purpose, other than an artistic one, in those buildings which were entirely constructed of marble, and where this feature becomes purely ornamental. We detect, also, the fondness of the Greeks for colonnades or porticoes, a necessity, indeed, of the climate. The system of decorating walls with bronze plates may suggest an origin for the great friezes of later days. We notice, too, great facility in adapting the plan to the limits of the site and to its special requirements, and the importance they attached to a magnificent and stately approach to an important building. If we endeavour to realise the effect produced on a visitor to the palace in all its glory, we cannot imagine it to have been otherwise than a striking and grand one, for which the plan seems eminently adapted. The Propylæa at Athens is but an elaboration of the principle contained in the Propylæum at Tiryns, carried out on a magnificent scale and with the very finest materials and workmanship. Other examples may be found at Eleusis, Ægina, Epidaurus, &c., but none equalled in magnificence that at Athens. The older gateway of Kimon, of which remains exist, was on a more modest scale, and was partly built of limestone faced with marble slabs or stucco, and with marble antæ, and probably columns. The present building was commenced the year following that in which the Parthenon was dedicated, when mechanical skill and mathematical science had reached the utmost perfection, and was planned on a truly magnificent scale. The entire scheme was never carried out; the Peloponnesian War brought the work to a final standstill in 431 B.C., and at this time no portion of the building was finished, and much of it not commenced, or was up to foundation level only. The Propylæa itself consists of a massive marble wall, raised on a stylobate of five steps and pierced with five gateways; the line of the wall is approximately north and south, and to the west and east were two great hexastyle porticoes; the western one is very deep, and is flanked on either hand by less important porticoes with buildings behind. Somewhat similar but more extensive buildings were designed to flank the eastern portico, but were never carried out, though traces showing the starting and position of them remain. The site presented great difficulties—it was irregular, uneven, and with a very rapid fall to the west; but very skillfully were the difficulties turned to account, and admirably does the building fit its site. The portions that were actually erected, and which still remain more or less complete, comprise, briefly, the wall of the gateways; the east and west porticoes, both imperfect, the north-west wing, complete, except for the roof, and a small part of the south-west wing. A magnificent flight of steps, flanking the approach for chariots, must have led up from the entrance below the temple of Niké to the level of the western or outer portico, which stands



on a stylobate of four steps, but this approach no longer exists, and the steps now *in situ* are quite modern. The Doric portico, with a wide intercolumniation in the centre, was surrounded by a pediment, while the two lines of slenderer Ionic columns behind each supported an immense architrave in a single block, extending the full depth of the portico; the beam is partially hollowed out, to reduce its weight. The wall containing the gates, and which stood on a lofty stylobate of five steps, is pierced by five openings, which were originally filled with bronze doors; the central one (the largest) would be used by the Panathenaic procession; the two smallest side doors being of comparatively small dimensions. The side walls of this portico undoubtedly had low seats running their whole length, and this would form a magnificent and convenient place of meeting and discussion. The eastern, or inner, portico had a similar elevation to the western, but the columns were raised on a continuous square plinth or stylobate. The north-west chamber is fairly complete; its west wall stands on an earlier foundation in a different line, and to this the new work has been very cleverly adapted. This chamber is entirely inclosed by walls, the southern one being pierced with openings for a door and two windows, and having a portico of three columns further to the south. The doorway does not come centrally with an intercolumniation. The columns of this portico were also of the Doric order, but on a very much smaller scale than those of the great porticoes. The roof to this wing was hipped, and, as usual, flat in the pitch. The opposite wing to this was never completed, but there is sufficient to show the original design of this wing, which, while balancing the other in its total mass, differed widely in its plan, and no doubt in its uses. Even as a ruin the Propylæa produces an almost inconceivable effect of grandeur and magnificence. Turning round from the Niké bastion one comes full upon it from below, and one can realise the object of the deep portico on the west side, for nearly the whole of its richly-decorated soffit, when it still existed, would have appeared at once to an old Greek visiting it; while the great pediment of the central portico would have towered above the hipped roofs of the wings. The break in the roof-level, which on a section seems unsightly, would from no point have been visible, except at such a distance as to be unobjectionable. Finally, we will make a short inspection of the Eretheion, and though it is not the most typical temple to have selected, it is an interesting example of the Ionic order. When you have obtained some idea of the plan and elevations of the building, any of you who care to do so may examine for yourselves almost every detail of it. In the British Museum, between the Parthenon marbles and the new Phigaleian room, a great many fragments are collected together—an entire column, including cap and base, from the east portico, the only column missing from the exterior of the building, large portions of the architrave cornice, and various smaller details. One or two fragments from the Propylæa, including the cap, badly placed, however, and the drum of a column and part of an architrave, may be seen in the same room. Mr. J. Fergusson read a paper on this building before the Royal Institute of British Architects on February 14, 1876, but he confined his attention principally to the elucidation of the difficulties in connection with the arrangement of the interior. The exterior was divided internally, Mr. Fergusson showed, into two distinct temples; the eastern one at the higher level was dedicated to Eretheus, and the western, much lower, to Athene Polias, and this was the most sacred shrine on the whole Acropolis. This arrangement affects the exterior very largely. The position chosen for its erection is just at the point where the Acropolis rock commences to fall away rapidly. At the east end we find a hexastyle portico standing on a stylobate of three steps, with its architrave in position, and it would be complete but for the removal of the north-east column to the British Museum. Portions of the frieze of black marble also exist. The south wall remains throughout its whole length, but not to its full height. The stylobate and the base moulding of the antæ continue; and, as usual, the first course of stone is very much deeper than any of the others. At the west end of this wall is situated the caryatid portico, with six female figures; to this point a uniform level has been maintained, but this portico is founded on the stylobate of a large early temple, and below it there is a sudden

drop to the ground-level. The west façade had a blank wall for nearly half its height, with a plain central doorway; above this, the wall had attached columns, and was pierced with windows. The north wall extends far enough beyond the west wall to obtain a doorway in it entirely outside the building, giving access to a court lying to the west of a building, and entered from the great north portico; beside it is the principal doorway. This tetrastyle portico has six columns in all, and still retains part of its coffered ceiling; its floor level corresponds to that of the western doorway. The north wall is complete as regards its length. Sadly ruined as this building is, we are enabled to obtain a very fair idea of its general effect; from whatever point of view it is seen there is a charming variety of grouping and outline, and it is hardly possible to find a view in which at least two of the porticoes are not visible. Added to the beauty of outline, the delicate mouldings and the exquisite carving, which, though employed with no niggard hand, is concentrated on certain points, must have given the complete building an air of wonderful delicacy and refinement, and this was no doubt heightened by an extensive use of colour. We have now, said Mr. Smith in conclusion, considered more or less briefly each of the three buildings I proposed to describe to you. In the first case we had to confine our attention mainly to the plan, and observe its clever grouping and variety of line, with the early promise of future development. The other two examples belong to the very best period of Greek art, and as regards style, no more perfect examples of the Doric and Ionic orders are to be found, and it is interesting to contrast the two. In each case the materials and workmanship are the same, that is to say, literally the most perfect that it is possible to obtain. The Propylæa owes its impressiveness and dignity, which even in its present ruined state is undeniable, to the most careful grouping of the various parts, and its comparative massiveness, combined with the most accurate and carefully considered proportions of the relative parts and very delicate optical refinements. It is absolutely devoid of carving or sculpture, and there is no trace of such ever having existed; carving, indeed, was sparingly used in the Doric order, but sculpture was often used in a lavish way, as at the Parthenon; it was almost invariably set in some frame, such as the pediment or metope, and skillfully designed so that the grouping should give a contrast to the inclosing lines. In the Ionic order as typified by the Eretheion we find sculpture comparatively unimportant, though a sculptured frieze is by no means unusual; the carving of long lines of surfaces is, however, adopted; this is no doubt more suited to the slenderer proportion and more delicate effect of the composition.

Mr. HUGH STANNUS proposed a vote of thanks to Mr. Elsey Smith for his paper, remarking that he had made good use of his time and opportunities when in Greece. One interesting feature in the plan of Tiryns was that a foe must approach the stronghold with his right arm towards it, whereas he wore his shield on the left arm, showing how thoughtfully the Greeks designed their buildings. Owing to the great subtilty displayed in Greek buildings, the new points brought to light by recent discoveries needed careful consideration before they were discussed. The complex plan of the Eretheion was an admirable example of the elasticity of the Greek style, one which was remarkable also for picturesqueness of grouping and refinement of detail. Our works could not be Greek works. Temple said of the Early Christians, we must not do what they did, but as they did, and this might be applied to the Greeks and their buildings. Our works should be those of 19th-century England, racy of the soil and of the time.

Mr. H. O. CRESSWELL having seconded the vote of thanks, Mr. OWEN FLEMING said he should have liked to have heard more about the domestic buildings of the Greeks. The plan adopted by the Assyrians and Romans of providing separate apartments and even distinct buildings for the women did not seem to have been carried out by the Early Greeks.

Professor T. ROGER SMITH said the subject of Greek architecture was of great and increasing interest, because we were learning more of the thoroughness and completeness with which it was carried out. We neither wanted to build Greek works, nor could we if we did; but we could study them with advantage on account of the attention paid to proportion, detail, and grouping. Tiryns,

which was discovered a few years ago, was the first example we had of domestic Greek buildings, and it was interesting to see how completely the Greeks separated the men from the women. The men's portion was the most architectural, but was entirely cut off from the women's portion. The latter was approached by a door which opened on to a blank wall, rendering it impossible to get a view of the apartment. Another singular feature was that the buildings were surrounded by long and tortuous passages of approach.

Mr. F. R. FARROW supported the vote of thanks, which was carried by acclamation. Mr. ELSEY SMITH, in responding, remarked that, save at Sunium, hardly any white marble-work was to be found in Greece, and there the whiteness was dazzling. On much of the marble there yet remained a fascinating golden glow. Little was known of the domestic work of the Greeks until the palace of Tiryns was discovered.

#### DOULTON'S SANITARY APPLIANCES.

WE have received a revised catalogue of Messrs. Doulton and Co.'s "Sanitary Appliances," which contains many additions and improvements of special interest and value to the architect, surveyor, and borough engineer. One of the most important of these appliances is the "Tested Stoneware Drain-pipe," which is a selected pipe of the best London-made stoneware, each having been subjected to considerable hydraulic pressure. These selected or tested pipes have each the letter T marked upon them. To the builder and architect who are anxious to make the basements of their houses secure against the leakage of sewer-gas from imperfect stoneware pipes, which often contain flaws, or are porous, the tested drain-pipes will be a boon. Owing, in fact, to the imperfection of clay pipes, iron pipes have been used for under-house drainage in some cases, but only because of the uncertainty attaching to stoneware. Messrs. Doulton and Co., by testing each pipe and stamping it, have removed the doubt, and as stoneware is generally admitted by all sanitary authorities to be the most cleanly and incorrodible form of drain, there is little doubt that it will in future be employed. The testing of the pipes under pressure is the only way of detecting any flaws in the body of the ware. With "Doulton's Patent Self-Adjusting Joint" under-house drains can be rendered perfectly water and air-tight. This patent joint is so arranged between spigot and socket ends of pipes that any disturbance of the ground causing a settlement will not in the least affect the joint, which allows of movement without destroying the tightness of the joint. Doulton's Improved "Simplicitas Pedestal Wash-down Closet and Trap" is another improvement on the older forms of this type, combining a perfect trap, with cleanliness and elegance of form. The "Simplicitas" closet and trap are in one piece of stoneware, but made in various qualities in plain stoneware, white inside and brown outside, with ornamentation in colours. We consider this shape much superior to, and more pleasing than, the usual forms met with. The prices quoted range from £1 5s. to £2 3s. for the basin and trap, and with pine seat and two-gallon cistern, &c., from £3 to £14s. 6d.

The Lambeth patent pedestal "Combination" closets are illustrated by chromos, and show various designs, some of them ornamented with blue magnolia, wild rose, and other floral designs; the acanthus pattern decoration is handsome. We also note the Lambeth "Flush-out" closet—a very serviceable and cleanly basin, in which the whole force of water is utilised in flushing. The Improved Cottage closet is economical and strong, with Doulton's vacuum waste-preventer fixed over. The improved seats, with hinged flaps for pedestal closets, Doulton's improved flushing cisterns, and trough closets for schools and factories, their lavatories, automatic flush tanks, public sanitary conveniences, baths, and fittings, and a number of miscellaneous goods of constant requirement by architects and surveyors, are included in the new revised list. The development of this branch of the business has been so great that Messrs. Doulton and Co. have found it necessary to erect large additional works at Paisley.

The Holborn board of guardians have adopted plans by Messrs. Saxon Snell and Sons for the erection of additional buildings at Mitcham schools, at an estimated cost of £2,000.



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## OUR LITHOGRAPHIC ILLUSTRATIONS.

## MOSQUE OF SULTAN AHMED, CONSTANTINOPLE.

MR. DAVID R. CLARK, M.A., of Glasgow, exhibited his beautiful photograph which we have reproduced to-day at the last exhibition in Pall Mall, held by the Photographic Society of Great Britain. The mosque is pure Turkish in its architecture, and not Moorish, of course. It is unique in one respect—that it has six minarets, which are very elegant and fine. The dome which surmounts the main structure is carried by four immense marble pillars, 3ft. in diameter (one of these shafts is seen at each edge of the photograph). The interior is decorated on the walls with fine *old* Persian ceramic and lustre tiles in greens and blues, brought by Sultan Ahmed from Persia for the decoration of his mosque which he built in 1610. The floor is covered with matting, as is the case in all Turkish mosques. There are splendid lamps in the interior, jewelled with emeralds and other precious stones. The small padella lights are hung at festival times from an iron grille suspended from the roof about 10ft. above the floor. The charming character of the gallery front, which is similar in its detail to that which goes round the exterior of the mosque, is specially worthy of notice. As may readily be understood, the taking of the photograph occasioned no small cost and trouble to Mr. Clark, who has copyrighted it. Fergusson, in his "Handbook of Architecture," gives a small view of this great building (woodcut 364). The Mosque in Citadel at Cairo is a reproduction on a somewhat smaller scale of the Mosque of Ahmed at Constantinople. Gautier gives a view of this latter original building. It is vaulted entirely in semi-domes, which support the central cupola. In front of it was a court, surrounded by a quadruple portico, comprised of columns with black-and-white capitals, and with bases of bronze. The main shafts which carry the dome, as already mentioned, have capitals carved in stalactites, and have at about middle height a plain broad band—about level with the springing of the secondary arches—covered with inscriptions in the Turkish character. The discussion as to the impiety and the sacrilegious pride of giving this mosque the same number of minarets as St. Kaaba or Holy Kaaba caused no little ill-feeling between the Sultan and the Imam of the latter mosque, who cried out against such innovations, and in consequence the works were interrupted, the Sultan not knowing what to do. He wished to place six minarets on his own mosque; but he could not erect them because that was the number of the minarets of St. Kaaba, which it was a sacrilege to rival. At length he fell on an ingenious plan to shut the Imam's mouth. He caused a seventh minaret to be built at Kaaba.

## CHURCH OF ST. IGNATIUS THE MARTYR, SUNDERLAND.

The church of St. Ignatius the Martyr was the gift of the late Bishop of Durham to the largest

parish in the diocese, that of Hendon, which forms part of the Borough of Sunderland, and was consecrated by the Bishop on the 2nd of last July. It is Early English in style, accommodating 750, is very severe outside, as the smoke of a large town and the nearness to the sea would soon affect elaborate work, so all the ornamentation has been reserved for the interior; but the exterior is a remarkably good piece of stonework, a fine hard sandstone from the Edmund Vyvers quarries, situated on the moors in the west of the county, being used. At present the church wants colour; but the eastern lancets are shortly to be filled with stained glass in memory of the Bishop, and it is expected that the decoration of the panelled roof will also be executed before long. The works were excellently carried out, at a cost of about £7,500, by Mr. J. Howe, contractor, of West Hartlepool, Mr. T. Carse being clerk of the works; and the whole building and its fittings being from the designs of Mr. C. Hodgson Fowler, F.S.A., of Durham.

## THE "FOX AND HOUNDS" PUBLIC-HOUSE, SYDENHAM.

THESE premises have been built at the corner of High-street and Wells-road, Sydenham, for Mr. E. W. White, and comprise extensive cellars in the basement, bars, billiard-room, with open roof and lantern, parlour, kitchen, offices, &c., on ground floor; club room and residence on first and second floors. The site of the present buildings was previously occupied by the stabling-yard, &c., attached to the old house, which stood back 25ft. from the frontage line in High-street and 60ft. from Wells-road. A "give-and-take" line of frontage was arranged with the County Council and the Lewisham Board of Works, whereby the public footway has been considerably improved at the corner and for some distance up the Wells-road. Externally the ground floor is in Portland stone and red bricks; the upper part in picked stocks, with red brick and stone dressings. The works were carried out by Messrs. Allen and Sons, of Kilburn; the partitions and fittings in the bar, which are in mahogany, were executed by Messrs. Buckley and Beach; the gas-fittings by Messrs. Vaughan and Brown; the pewtering by Mr. Banks—all from the designs and under the superintendence of Mr. T. H. Smith, architect, of 17 and 18, Basinghall-street.

## PETER JONES'S PREMISES, CHELSEA.

THE illustration shows recent additions to the Symons-street part of these premises. The tower contains the principal staircase to the domestic part of building, together with an Otis elevator to the kitchens on the top floors, which have been fitted up by Messrs. Slater, the engineers, with machinery for steam cooking. The works were executed by Messrs. J. W. Hobbs and Co., from the designs of Messrs. Perry and Reed.

## "BUILDING NEWS" DESIGNING CLUB: DESIGN FOR COUNTRY STABLES.

For description see p. 292.

A block of business premises are now in course of erection in Linthorpe-road, Middlesbrough, for Messrs. Carter and Co. The external facing is of Dunhouse stone. Each department of the work has been let off separately to the following contractors: Brick, stone, and plaster, Mr. J. Lord; carpenter and joiner, Mr. W. Thomson; slater, Mr. R. Mascal; plumber, &c., Mr. W. Lambert. The work is being carried out from the designs of R. Lofthouse, architect, Middlesbrough.

A meeting of the executive committee for the proposed restoration of St. Helen's Church, Bishops-gate, was held on Tuesday in Merchant Taylors' Hall for the purpose of considering the draft scheme of the Charity Commissioners as affecting the work. The rector submitted memoranda of structural repairs to the church from Mr. Ewan Christian's report and estimates prepared for the Charity Commissioners, showing that the total expenditure would amount to £4,092. A long discussion followed, in the course of which it was stated that a further sum, variously estimated at from £1,000 to £2,000, would be required. It was decided to take no further action until it was known what would be the amount voted by the Charity Commissioners.

The Bishop of Newcastle, six years ago, asked for a fund of £60,000 for promoting church extension in the populous districts of Tyneside, and for aiding in the restoration of churches throughout the diocese. A return just issued shows that the total sum raised for the object is £75,500.

## DANBURY CHURCH, ESSEX.

THIS sheet of measured drawings and picturesque sketches is contributed by Mr. Fredk. Oliphant, A.R.I.B.A., of Dover. The church, which is an extensive one, consists of a nave with aisles, a fine stone tower with five bells, and a lofty spire. The chancel has an aisle on the south side, and the sacristy is situated on the north. Parts are described as Norman, and Roman bricks appear; but the greater portion of the building is of 14th-century work, with later insertions; an ancient piscina, and the remains of sedilia exist in the chancel. The north aisle was partly rebuilt in 1776. In its south-east corner is a very long hagioscope, with a small niche beside it, and a square piscina below. The fabric has twice undergone the process of restoration during this century. In 1402 it was largely destroyed by lightning, by the devil's aid, or as was said, by a Minorite Friar or "insolentissime debacchans." In 1750, 20ft. of the spire was burned down. The modern store screen and font are admired by some and ignored by those who can see no beauty in anything new. The stall backs, poppy heads, and moulded bench rails furnish some good details for an architect's sketch-book, and the building is so charmingly situated on the top of Danbury Hill (the highest point in Essex, 700ft. above the sea level, midst lovely trees and quaint surroundings), as to form the subject of many an artist's picture. The tombs of the Crusaders inside the sanctuary, with effigies carved in oak, and dating from the 12th century, are associated with the St. Clere family, which anciently owned the parish. They repose within arched recesses, probably of 13th-century date in the aisles. On a clear day it is said St. Paul's Cathedral can be seen from Danbury Hill, which is about 30 miles from London, and five miles from Chelmsford.

## BOOKS RECEIVED.

*Lockwood's Builders' and Contractors' Price Book*, 1890 (Crosby Lockwood and Son), has been entirely remodelled and considerably enlarged under the editor, Mr. Francis T. W. Miller, A.R.I.B.A. In addition to the very complete price lists for each trade, which have been revised, and the useful memoranda and tables relating to each, and modes of measurement, the volume contains the principal provisions of the Acts relating to building and sanitary matters, the rules and regulations of the London County Council, the Corporation of London, headings for contracts, rules as to electric lighting, and numerous other data and tables. The volume has been reset in a new type, and the arrangement is clearer than in other books of the class.

## CHIPS.

The Corporation of Southampton have decided to erect covered swimming baths, Turkish baths, and private baths for both sexes, and at their last meeting unanimously adopted the design and scheme as prepared by Mr. W. B. G. Bennett, C.E., the borough surveyor, the estimated cost being £7,000. Contracts are to be asked for at once.

A new building is now being erected in Sun-bridge-road, Bradford, Yorkshire, in the Renaissance style. The architects are Messrs. Milnes and France; the builders Messrs. A. Broxup and Son, Bradford; and the stone-carving has been intrusted to Messrs. Howarth Bros., Stretford-road, Manchester.

The village of Otford has just been sewered and provided with a water supply. The works have been carried out from plans by Mr. Hennell, engineer to the Sevenoaks rural sanitary authority, Mr. W. S. Freeman, of Otford, having been the contractor.

The memorial to the late Bishop Lightfoot will take the form of a restoration of the Chapter-house of Durham Cathedral, and the erection of an effigy of the late Bishop in the Cathedral. The Chapter-house is one of the greatest of the Norman period in England. It was commenced by the first bishop and finished by the third; but was greatly injured by the works carried out in 1796. According to the report of Mr. C. Hodgson Fowler, F.S.A., the proposed restoration is estimated to cost about £5,000.

St. Andrew's Church, Dent, in the West Riding, was reopened on Saturday by the Bishop of Richmond, after complete restoration. St. Andrew's Church was erected in the 12th or 13th century. The total cost of the restoration has been £2,700. The architects were Messrs. Paley and Austin, Lancaster.



## WAYSIDE NOTES.

IT is to be hoped that the report which the Institute is to make on the subject of Building Legislation, will have some influence on the powers that be, and that are to be, concerned with any future revisions of existing laws, and the making of new ones. We have seen how the Manchester Society of Architects, greatly to their credit, have prevailed upon the corporation to include certain provisions in a draft Bill that will go far to improve the architectural aspect of that city; and surely if a provincial society can influence the authorities in a place like Manchester, the Royal Institute of British Architects could do much more to assist us in London. Times are ripe for making improvements in the present law with regard to building. There is a sort of undercurrent of feeling to be observed in the County Council that some attention should be paid to the matter over and above the mere patching up that is to be undertaken. Now, therefore, is the time for action. I am glad that the Institute is considering the question, and, through the medium of Mr. Slater, showing what has been done in the past, and what is to be expected of the future. And I hope that the committee who have the consideration of building legislation will not rest at mere opinion-giving, but take, or advise the Institute to take, really practical and energetic measures to assist in bringing to pass that model Building Act of which Mr. Slater spoke, and which is so much to be desired for both constructional and artistic reasons.

I hear that Mr. Slater's paper, which I have had the pleasure of perusing, was admirably read, and if somewhat long and detailed, the fault was on the right side. The bold hit at the abuses that have crept in the system of administration by district surveyors was a word well spoken and in time; consequently, as the old proverb says, "like apples of gold in a basket of silver." Good as we all admit the system to be, there is little doubt that the berth of a district surveyor is very often little more than a sinecure. "Get the surveyorship, and stick a clerk in an office at a hundred a year; do a little surveying, and don't forget to draw many fat fees," would appear to be the principle of working of some district surveyors. This is the grossest abuse of a good system—both good for the public and for the architectural profession. Doubtless the evil wrought in some quarters is counterbalanced by the devoted energy we find in others; but I would maintain that, where district surveyors are found to be merely *farming* the stewardship—for it does amount to *farming*, when all the duties are relegated to a clerk at a hundred a year—they should be relieved of the appointment, and the latter should be put up to fresh competition. The remedy for any defects of this nature should, as Mr. Slater hinted, when he said that the district surveyors should jealously guard against abuses, be in the hands of conscientious members of the fraternity. It should be their duty to keep recalcitrant officials up to their work, whenever they suspect that the latter are negligent, and seeking their own ends where they should be faithfully serving the public. I would urge this upon the body of district surveyors, because we know the antagonistic feeling there has been on the County Council with respect to the system of district surveying. Should such feeling at any time come to a head, it is difficult to say what might not be the upshot; and it would be an evil day when the district surveyorship were taken from the hands of private practitioners, and their duties relegated to an army of official overseers from the County Council's headquarters. Let those, then, who may be more particularly concerned in this matter be warned in time, and believe that Mr. Slater would not have spoken as he did on an unpleasant subject unless deeply impressed by hard facts that have come under his notice.

Architects will notice with regret the death of Lord Lamington, whose persevering endeavours to improve our public buildings deserved so much commendation in an assembly where, one may safely say, architecture is a dead letter. How often did Lord Lamington "call attention" to the state of buildings and institutions which, being the property of the nation, one might reasonably expect to see kept in a decent and slightly condition! But in spite of his late lordship's persistent efforts, things remain the same. There is the unsightly

"front" to the South Kensington Museum, and the "disgraceful" Exhibition sheds, even if the old complaint of the want of a permanent home for the National Portrait Gallery is now in a fair way to being removed. The thousand-and-one eyesores and negligences continue in the Metropolis, and the Burlington House Arcade stones continue to rot; add to this the blunders of past First Commissioners of Works in "improvement" schemes, and we may well-nigh despair of ever attaining our model Building Act that is to transform London from a city of deformities to a city of architectural gems. And now that poor Lord Lamington has gone, and his voice can no more be heard in the House loudly bewailing the things that be, the outlook will be, if anything, less cheerful. The hope for a "council of architecture" recedes still further into the mists of the future. Let not the reader imagine that I grieve over-much at Lord Lamington's decease. Following closely the course of Parliamentary discourse for the past few years, I have noticed how his lordship stood forth alone, time after time, in advocacy of architectural reform, now here, now there, in connection with public works of architecture in London. The very solitariness of this speaker's complaints brought them prominently forward as the only attempts in a vast assembly of men—of whom, it would be thought, some would plead for the rights of architecture—to amend certain matters that can only be regarded as public scandals. It is for this reason that I so much regret the death of Lord Lamington. His arguments may not always have evidenced profound knowledge of the subject; but they were always sincere, earnest, and well-intentioned, and as such have held my regard and respect.

According to a statement in Parliament on the 18th, part of the Newgate site is to be retained for prison purposes, and a part will be devoted to the Sessions House for the City of London, which has now been talked of for some time. This latter building, I suppose, will be erected by the Corporation, and by their architect the designs will be supplied, unless, indeed, they see fit to put the work out to competition, which would be more pleasing to us all.

I always hold that working drawings are unworthy the name if they oblige a workman to scratch his head in the comprehension thereof. I was thinking of your leader on "Working Drawings and their Interpretation" one day this week whilst observing a terracotta-setter at work on a job. The problem he had before him was a stringcourse or some sort of projecting moulding round an oriel window, which, on plan, had rounded edges. The thing looked simple and straightforward enough; but I opine that the working detail which he had on a board before him had been prepared by Mr. Blank when that worthy was a little over "on," by an architect of an unpractical turn of mind, or "fudged" by a lazy pupil. Anyhow, the drawing caused the terracotta-setter to scratch his head, not once, but several times, and, indeed, he had to call another setter, who also scratched his head a spell. Finally, I believe, the doubtful block of terracotta was shifted about the one-hundredth part of an inch; but this does not concern us here. The point is to impress upon draughtsmen the necessity for preparing real working drawings, such as the British workman can understand at a glance, and without the head-scratching, which I take to be the crucial test of the drawing's worth.

Scene in real life:—F.R.I.B.A., engaging new head-man, *log.*: "You know I want a real, smart draughtsman"—produces elevation designed by late (lamented) assistant—"a design like this requires a lot of fitting-in." (!)

I am glad that "A Young Builder" is interested in the system of building which I recently advocated, and I will do anything in my power to enlighten him further, though he will remember that I gave an *idea* that should be easier for men of his class to develop, each in his own way. The system is only desirable on large works—that is to say, unless clients can be found to pay the increased cost and obtain first-class work on small ones. My master-builder will take such a salary as his abilities command, give his whole time to the work, keep the builder's yard, the materials for which will be procured or hired at the expense of the client or building promoters,

and given up or sold at the conclusion of the works. In smaller works, where one man's time could not be filled unless he had several jobs on, arrangement might be entered into with the employers whereby the master-builder would receive a fair commission or salary, and supply materials, as in ordinary non-contract jobs. The main idea I would like to see developed is building under a system where architect, builder, and workman would be interested in the work, where the builder would be free of harassing care, and not absorbed in endeavours to make a low-priced contract pay, and where the workman may be valued for his worth, and not as an automaton capable of getting through so much meretricious work in a given time. Out of such a system true architecture would spring, and the Bankruptcy Court would have fewer builders' affairs to wind up. GOTH.

## THE BEGINNINGS OF GREEK ART.

THE third of a series of lectures on Pre-historic Civilisation and Greek Art, by Professor Boyd Dawkins and Canon Hicks, was delivered on Monday night at Owens College, Manchester, by Canon Hicks. The two previous lectures were given by Professor Dawkins—one on the civilisation of North-Western Europe in the prehistoric age, and the other on the prehistoric civilisation of the Mediterranean region and its relation to history. The third lecture was on the beginnings of Greek art. Canon Hicks spoke first of early pottery and other objects from the islands and shores of the Ægean, and of antiquities of the Hissarlik type. These were not Greek work; their date was not later than 1500 or 2000 B.C. Pottery of the Mycenaean type, the date of which was about 1200 B.C., was covered with free, flowing, and beautiful decoration. Passing, then, from the Bronze Age in Greek lands, he described the art of a people who knew the use of iron and who burned their dead. The pottery of this period was of a geometrical type—stiff, crabbed, and uninteresting. It was the beginning of Greek art. Who the makers were of the Mycenaean art he did not know, nor who brought in the geometrical art a little later. The abruptness of the transition suggested that they were conquerors. We were all anxious for more information which would show the connection between this art and the Homeric age, and enable us to wind up the controversy as to who were the primitive Greeks. The lecturer showed how Oriental influence came in like a flood upon the geometrical type of art, which he regarded as the beginning of Greek art, dealing in this connection with the early historic relations of Greece with Phœnicia and Egypt. Illustrations were given of the beginnings of Greek architecture, of early reliefs in stone or marble, the first attempts at sculpture in the round, and of other phases of art. The question was often asked, How far was Greek art original? The answer was that Greek art was original in its own inherent capacity, but not original in its patterns or designs. The Greek was original in that he had within him an abundant store of native genius. He was ready to accept suggestions from any and every hand—from Assyria, Phœnicia, Asia Minor, and Egypt. But when he received these suggestions he assimilated them. At first he imitated but very soon made distinctions. He improved on what he had. He combined, he readjusted, and out of the suggestions he received he constructed what was virtually a new art of his own. In the Oriental art there was a wild extravagance; there was a love in the Egyptian art of what was vast and overwhelming. But the Greek had a sense of beauty, a love of balanced perfection, a power of self-control and of self-restraint in art which enabled him to create an art which represented not only strength but grace, and which knew how to deny itself all those extravagant means of effect which were so fatal to much of the art of the Orientals.

A Masonic hall is about to be built at Dawlish at a cost of £650. The structure will comprise on the ground floor an entrance lobby, banqueting-room, tylers' room, and lavatories, with a staircase leading to the hall proper, on the first floor, which measures 33ft. by 22ft., and has an open timbered roof. The elevation is of Classic design, to be carried out in white Devon brick, with dressings of red Berkshire brick. Mr. G. Soudon Bridgman, of Torquay and Paignton, is the architect, and the contractor is Mr. W. J. Hatcher.



## "BUILDING NEWS" DESIGNING CLUB.

## A DETACHED STABLE.

THE drawings of the members of our Club for January are, generally speaking, very good indeed, and most of the contributors show, not only more care and industry, but an increased interest in their work, while we note in several cases that our previous criticisms and remarks have been attended to. The following is the text of our instructions for subject D:—A detached stable and coach-house, with residence for groom, suitable for erection in the grounds of a small country house. The stable to comprise two stalls and two loose-boxes, with a separate stall for pony or donkey. Coach-house for four vehicles. A harness-room adapted for use as a man's small day-room. A loft over stable and man's bedroom. Groom's dwelling to have living-room, small scullery and pantry, two bedrooms, and cupboard for store. Separate w.c. for house. Dung-pit and accommodation for men. Scale 8ft. to the inch. Sufficient drawings to show the design, including sketch; all on one sheet of paper to the size stated in conditions. Two elevations sufficient. Style of building left to the competitors.

"Fiddler" is, on the whole, the best, and "Skull and Cross Bones" ranks second. The third place is won by "North Star." We have had some little difficulty in making this selection, and although the merit of the designs, speaking broadly, is high and worthy of praise, it must be confessed that no one plan is eminently satisfactory. We have said much the same thing before; but it has to be occasionally repeated, otherwise some readers who possibly are very clever people, and at least able critics if nothing else, jump to the conclusion, in no way justified, that we suppose the selected plans are models of good planning, or even correct design. Such readers seldom take the trouble to read our detailed review of the designs, and always overlook the fact that we can only select the best design actually contributed. Had it been possible for gentlemen of this class to contribute, no doubt the result would have been far different. Only those who try to work out a problem know its difficulties, even in so simple a matter as that before us now. "Fiddler's" elevation seems to be very nicely designed, and would look suitable and unassuming, depending as it does on quiet effect and simplicity of detail. The stable plan is not an unusual one; but the doors placed thus make it very draughty, and the two central stalls are rather dark and in shadow. The pony-stall space is utilised as a passage-way, and the absence of a more correct rendering of this provision is almost enough to throw "Fiddler" out of the running. It would have done so but for other merits in the design found wanting in all the plans wherein the pony-stall was made much of. The loose boxes are very roomy, and the harness-room is well fitted for a man's day-room, as stipulated, and, placed where it is, becomes convenient for the stable-keeper to answer the call-bell. In this respect, too, the coachman's cottage is well contrived, making it easy for the wife to attend the bell during the absence of the men. The dwelling, too, is well divided off from the yard, without being isolated from it. The dung-pit and men's closet are situated in suitable positions, though a urinal ought to have been provided. The illustration given herewith shows the design fully. "Skull and Crossbones" adopts quite another type of arrangement, making his coach-house needlessly large. The stable is fairly good, but there are too many doors to it. The pony stall is dark, and the w.c. at the back of the manger is a very bad arrangement indeed. It certainly ought to have been outside, and there is no reason why the pony should be built in as here shown. The dung-pit is too small, and the coal-cellar is not well placed adjoining it. The elevations are designed with taste and drawn with ability, though the coarse way of showing the roof tiles is quite out of scale, and looks fidgety. The little perspective is prettily done. We reproduce the drawing among our plates to-day. "North Star" always works with neatness, and realises the importance of breadth and skyline in his compositions. In this respect we commend his design, and his plan is by no means a bad one. The coach-house is too large, and so is the yard. The washing-room is dark and unnecessary, with the other covered washing spaces outside. The stable is very good; but the harness-room is open to improvement, and the stairs—all winders—to the man's room

are little better than a ladder. The groom's or coachman's cottage is too much separated from the other buildings. "Dr. Jekyll" is an able contributor, whose work will improve as he grows out of being too ambitious, and avoids a straining after mere quaintness of effect. Americanisms are all very well, and if novelty be desired, they may be introduced in some cases with advantage; but English architects, at any rate in Domestic architecture, will find very little worth copying in similar work done by their Transatlantic brethren, in spite of all their dodges and cleverness. The absence of quietness shown by "Dr. Jekyll" is not so marked as these remarks would imply without qualification, and he draws nicely. The conical roof over the living-room bay is an expensive and overdone feature; while the simple lifting up of the roof ridge over the cottage part is meaningless and without any material advantage, while it would look most ineffective. If the upper rooms of the cottage required more height, the eaves and ridge all round might have been lifted up a foot or two. The w.c. out of the cottage porch is bad; the living-room would be most uncomfortable to sit in; the upstairs floor is badly planned, but the stable is a good one. "The Red Rover" is not up to his usual standard this time, and has drawn his design very carelessly. The coach-house is too big; the stable gains nothing by being placed up in the corner; the pony-stall is made into a separate stable; beyond which is the harness-room, with a further door leading out of the covered washing space for horses. At the end of this space the men's w.c. is placed, and next to it is the living-room window. The men's bedroom is reached from the loft, and is a wilderness of a place, with a door at one end and a fireplace at the other. "Ko Ko" has the merit of having secured a simplicity and suitability in his design which deserve praise; but it savours of the commonplace, and the entrance to the stable in corner is a mistake. The house is comfortable enough, and the stable in itself is well arranged, after the style of a plan we published not long since among our illustrations. "Pat" also locates his stable too much in the corner, and makes besides a further mistake in the size of his coach-house. In many points the design is a good one, and the group is effective in perspective. The w.c. out of the front porch only needs naming to show the sort of faults "Pat" can be guilty of. Over the arch outside a moulded brick string cuts right through the 9in. ring of cut brickwork forming the opening! The coach-house doors, too, are very ugly. "Cassowary" makes his stable L-shape on plan, so that the pony stall is round the corner. Too much is made of a washing-place, and the dung-pit is not well placed in front of the stable windows. The coach-house is too big. Externally the buildings leave little to find fault with, save the turret and the chimney tops—these are anything but good. "Cosmopolitan" enters his stable very awkwardly out of a square washing-shed, in which a restive horse might be very troublesome. The harness-room would be dark lighted out of this shed, and the house with one bedroom on the ground floor is not an attractive arrangement. The architectural treatment, though poor, is neither vulgar nor in bad taste. "Lord G." goes in for half-timber work, and somewhat overdoes it. The coach-house is too large, but the stable is rather conveniently planned. The cottage has a cramped look, and the dungpit is very badly situated. The drawings are nicely executed. "Wallaby" does not send a very original plan—we have somewhere seen one which must have been copied from it! The arrangements, however, are rather good, even if one does not want a loft as big as the coach-house devoted to pigeons. The external façades are pretty; we do not like the arched tile-hung canted sides to the first-floor bay carried over the square projecting window below; the window sashes to the bedroom must be far too high for anyone of ordinary stature to look out of them. "Coaly Tyne" overdoes his design, too much to please us quite, and the coach-house is much too big. The plan otherwise is a good one, and the drawings are crisp, careful, and clear. "Y" in a circle believes in the ornate, and he surpasses the last-named in this respect, culminating his effort in a "perfect terror" of a turret with side arched wings, a clock above, and a bell below in the centre. His plan has good points, and so for that matter have his elevations, but they are too florid and ambitious. This is a fault for which we also

must blame "A. G." in a circle, who works in a circular stair turret next the main gable, which inside only serves as a storeroom. There is so much to praise in the detail of this design that we are sorry to add our opinion about the plan, which is a very poor one. The delicate mouldings and plinth to the pilasters on either side of the archway to the yard would soon be knocked all to pieces by carriages going in and out. "Labor Omnia Vincit," with a little more care and less "dash," would have done a clever thing. His plan is spoiled by bringing in his vehicles round from the back of his coach-house, so that every time they are used an awkward turn has to be made. The stable is very good, and the elevations are pretty. The drawings are careless, and ought to have been better. "K. W. T." adopts the square-yard plan, and we praise him in general terms for his work, though we do not like his design. He draws very well, and we shall expect him to plan better. Fancy the men's urinal being placed directly in front of the living-room window, with the ash-heap by the side of it, and dung-pit beyond! The coal-place right before one on entering the house, under the staircase, is another example of "K. W. T.'s" want of care. "Jehu" is American or nothing. His perspective is clever; but the contrivance of the house, all for the sake of the central chimney-shaft, is abominable. Let "Jehu" look at the shape of his rooms. Imagine what a wretched place the living-room would be, the w.c. opening, too, out of the entry porch, and the scullery right on to the parlour fireplace. This contributor really is too good a man to be guilty of such folly. "Signum" sends a fairly promising plan grouped round a quadrangle, and forming a pretty composition from the outside; but he draws very indifferently, which is a pity. The sketch is also unsatisfactory. "Waverley" adopts a square plan for his stable, like "Fiddler," but lights it with windows down to about 3ft. above the floor, and these, be it noted, are out of the stalls and loose boxes! He has put a window in the end of his coach-house big enough for a studio or parochial school. His drawings are fairly good, and he ought not to make such mistakes. "So and So" draws better than he plans. Thus, his men's convenience and ash-place overlook the living-room, and the w.c. is off the staircase facing the front door. Half-timber is his style, and so is that of "McGinty," who should study rather better models. His perspective in bird's-eye is nicely executed. "Streona" is improving, and we are glad to place him higher than usual. He must still try to be more simple in the features he adopts. His clock turret is too clever by half, and the dog kennel at the base of it is childish. "St. Magnus" attempts a suitable style, and does so with some degree of success; but he sends no view. "Westward-ho" has an ugly-looking plan with one loose-box big enough for an elephant, and doors to the stable about wide enough for a goat to enter by. The loft has a pitch of 6ft. 3in. "Nox" is a capital draughtsman who pays considerable attention to detail, and although his elevations do not attain a high degree of merit, they show reserve and taste which ought to produce better things if he will go on and try again. We note his air inlets and all the rest of it. "Bunya" draws heavily and he does not plan nicely. His elevation would look passing well if built, but he hardly does himself justice. "Vyrnwy" clearly does try, and can sketch out a perspective. It was a pity to put it diagonally on the sheet, however. The design is too like a small model farm; but in many particulars we commend this member for his work, and wish we could place him higher. Space prevents our going too much into details here. "Salt Water" is another careful man, and he seems familiar with simple country buildings. The side of his house is very pretty, but the stable is commonplace. "Tyne" adopts a type of "Georgian" work, and if his plan was more satisfactory we would have placed him higher, for his drawing is capital. The house is much too ambitious, notwithstanding. "P. R. G." is a rather effective design, but drawn in a hard style, which does not improve it. "Cyclist" has two circular towers or turrets flanking the entrance gateway containing ugly staircases, and much too grand in idea. The other designs are thus grouped in order: "Glaucus," "Sarchedon," "Night Light," "Herbert," "Lycidas," "Cyclist" (second design, why not do one and do it better?), "Initium," "Country Bumpkin,"



"Horseshoe," "A" in a circle, "Mac," "Re-naissance," "Niger," "Pat" (Southport), "Fleur-de-lis," "Airedale," "Niblick," "Dot," "Dot Secundus," "Dono," "Mene-laüs," "West Anglian," "Coverac," "Icky," E. S. Wilson, Sunderland (nomotto), "Coombe," and "Reference."

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE eighth ordinary meeting for the present session of the Institute took place on Monday evening: Mr. Arthur Cates, vice-president, occupying the chair, in the absence of Mr. Waterhouse, R.A., the President, who was, it was stated, suffering from influenza, and had gone to Spain.

#### BUILDING LEGISLATION.

A paper on this subject was read by Mr. JOHN SLATER, B.A., member of Council. The author said his topic was one of the greatest practical interest, and that as our great cities were getting greater and more populous year by year, so its importance also increased, although it seemed to be regarded with apathy by the general public. Having given statistics showing the enormous and rapid increase of the population of Greater London during the present century—which increase was almost paralleled in the manufacturing districts of Lancashire and Yorkshire—Mr. Slater asked whether the building regulations now in force, not only in the Metropolis, but also in the majority of our great cities, were suitable and sufficient for the necessities of the present day. He thought not; and considered that the Metropolis ought to have a Building Act which would be a model for other towns. For many years the Roman law, of which nearly all our laws were developments or modifications, referred only to landed property, and not to houses; but about 202 B.C. the population of Rome increased rapidly, and from that period dated laws relating to buildings, and (1) the institution of the party-wall, with its rights and obligations on the owners on each side thereof; (2) regulations as to carrying off rain-water; and (3) rights of light and prospect. Both in Roman and Byzantine regulations powers were found to control the height of buildings. The earliest regulations in the Metropolis were FitzAylwin's Assize of Buildings, passed in the first year of Richard I., exactly seven centuries ago, the general intention of which was very similar to that of the present Building Acts. These regulations were to be found in the Liber Albus of the City of London, compiled in 1419 by John Carpenter, the town clerk, during one of the mayoralties of Richard Whittington. Mr. Slater passed in review several London Building Acts, down to that of 1844, which, though manifestly imperfect, was in many of its provisions superior to the 1855 Act. (1) It provided a special court of appeal; (2) it placed the buildings, which were now entirely exempted from all superintendence, under special supervision; (3) the regulations as to carrying out work to any party structure were less likely to lead to dispute than in the existing Act; (4) it contained regulations as to drainage and as to width of streets, which certainly ought to be comprised in any Building Act; and (5) it contained better and more complete regulations as to footings of walls than the present Act or By-laws. There were at present no less than fourteen separate Acts in force in the Metropolis, while the County Council were promoting a Barking Creek Bill, containing other amendments affecting the general regulations of buildings. It was essential that all regulations as to streets and buildings should be codified and embodied in a single document, and that piecemeal legislation should cease. The Act should regulate the width, construction, sewerage, and gradient of all new streets, the line of frontage of the houses, and should provide for a sufficient number of adequate open spaces. It should define clearly the difference between public and private buildings; should exercise control over the situation and construction of the former, and the means of ingress and egress. To secure the prevention of fire, due stability and healthiness in all buildings, it should control the site; the construction of foundations, walls, floors, roofs, and chimneys; the drainage; the amount of space about a building; and the height of the building in connection with its position. It should provide an executive for carrying out its provisions, and a special court of appeal for all disputed matters. Regulations as to noxious

trades, infectious diseases, common lodging-houses, &c., should be relegated to a special sanitary code, as in New York. The author then referred to the foregoing points in detail. The present regulation as to the width of new streets—that they shall be at least 40ft. wide, including footpaths—was not sufficient; for a much-used thoroughfare there should be a carriage-way not less than 42ft. The definition of a public building should be as wide as possible, and none should be allowed to be erected with a frontage to one street only. Regulations should be made as to the construction of new streets, and there should be provisions made to secure a subway beneath it. The Manchester New Draft Bill contained many improvements, and he congratulated the Manchester Society of Architects upon the result of their representations to the corporation of that city. The restriction as to cubical contents was unnecessary as a hard and fast rule, and there ought to be a discretionary power of allowing larger buildings to be erected, if the authorities were satisfied with their construction. With the increased knowledge of the behaviour of stone and iron under heat, it was absolutely criminal to allow stone staircases carried on unprotected iron supports in buildings used as flats; and, in fact, all the provisions as to fire-resisting construction needed remodelling. The securing of due stability was an important point, but the most crying defect in the Building Acts was that the controlling officers had no power whatever over the materials used other than bricks and mortar. It would not be difficult to frame a schedule which would stipulate, for instance, that lead for gutters should not be of less than, say, five pounds per foot super.; that zinc should not be less than sixteen ounces, and the minimum dimensions of scantlings, &c. It was also time that some regulations as to the use of iron in buildings should be laid down—such as, for instance, the minimum depth of a girder spanning a certain opening. If such details were not to be provided for, then the superintending officials should be empowered to satisfy themselves as to the stability in each individual case, and be made responsible. As to drainage, the sanitary officers of the various vestries did their duty well; but a divided control was unwise, and the same officer should be responsible for both the erection of the building and its sanitation. Provisions should be made for underground rooms being to a certain extent protected from the damp, either by the walls being built in cement, or by forming a dry area. The close juxtaposition of the houses was a great evil in large cities, and a regulation prescribing a minimum distance between the backs of all houses, large or small, was most urgently needed. The existing provision was positively ridiculous, because it simply prescribed the area of the open space in the rear of a building. The minimum depth of that open space should depend on the height of the house, and should be at least equal to it. In the case of buildings facing public streets, the width of the street should govern the height of the house as a general rule, as in Paris, in nearly every city of the German Empire, and in Sweden. In the last-mentioned country streets 32ft. wide and less might have houses 43ft. high; up to 44ft., houses 54-56ft. high; and streets above 44ft. wide might have houses 66ft. high. Such stipulation was eminently reasonable; but power should be given to relax the rule in certain cases, provided the construction satisfied the controlling officer of the Building Department as to fire resistance, stability, &c. In order to avoid a monotonous skyline, a clause might be framed to the effect that if the front of a building be carried up as a gable, then the limit should apply not to the apex, but to half-way up the gable. The regulation of the relations between adjoining owners as to works to party structures needed reform, and the author suggested that under the definition of a "party-wall" in the Metropolitan Building Acts and its amendments, a mere fence wall between properties might be included, a suggestion which evoked a chorus of "No, No's" from the audience. The Building Act of 1844 had a wise provision, under which if the adjoining owner did not give his consent the matter was referred to the district surveyor, who was required to report on the matter to the court of appeal. With reference to light and air, a clause to the effect that a building owner should give notice of rebuilding to all parties who could be affected, and their surveyors empowered to

investigate the matter and to decide by a majority whether the building would injure anyone, and, if so, the compensation to be paid, or to absolutely veto the proposed rebuilding, would be an immense gain to a Building Act in a large city. Even with a liberally-conceived, comprehensive Building Act, well drawn and lucid in its provisions, disputes would certainly arise. To whom were these to be referred? The great desideratum was that machinery for enforcing the law should be simple, direct, efficient, and inexpensive, and that there should be uniformity of procedure. At present it was precisely the reverse; and a special tribunal should be created fit to deal with building disputes. Mr. Slater referred to a report of the late Mr. Justice Mellor and the late Mr. Joseph Gwilt, who recommended that a tribunal should be constituted, consisting of two persons, one belonging to the legal and one to the architectural profession; and he believed, if due care were exercised in the selection of the individuals, this would form a very strong court. Referring to the administration of a Building Act, he considered a body like the district surveyors should jealously guard against abuses; but there could be little doubt that abuses had crept in. If it were true that one district surveyor had held office for years after he was totally unable to climb a ladder, his duties being done, not by a totally authorised deputy, but by a clerk—if it were a fact that another found two hours a week sufficient for the personal administration of a large district, nineteen-twentieths of the work again being done by a clerk—it was a state of things certainly not contemplated by the framers of the Building Act, and it was no wonder that the office had fallen somewhat into disrepute in the eyes of the County Council. But the greatest defect was incidental to the Act itself; it did not allow the district surveyors to exercise the slightest discretion, or to take the least responsibility beyond seeing that the bare letter of the law was insisted upon. Many surveyors felt the absurdity of their position, and gave themselves a great deal of trouble, when they saw this insistence would inflict undoubted hardship, in order to minimise that hardship; but others would never budge an inch from the *littera scripta*. If the surveyors were armed with discretionary powers to be exercised on their own responsibility, they would always take care to have good reasons both for permissions and refusals; and such an alteration in the law would surely be welcome to all. In conclusion, Mr. Slater said the London County Council had not yet given due attention to the reform of the Building Acts; but he looked forward confidently to the day—in the not far-distant future—when this great Metropolis would be administered in accordance with the regulations of a model Building Act, and when London, in addition to being the largest, would be in a fair way to become the best arranged, best built, most sanitary, and generally most magnificent city in the world.

Mr. E. C. ROBINS, F.S.A., remarked that he sympathised with a good deal of what Mr. Slater had said in his admirable paper as to the desirability of constituting a tribunal before which building disputes could be brought. He was old enough to remember well the court of appeal which existed between 1844 and 1855 to which Mr. Slater had referred, and was engaged on three or four public buildings which came before the official referees, and distinctly recollected stout old Mr. Hoskins looking over the buildings. Difficulties arose even in the cases in which he was concerned as to the powers possessed by the registrar. He would, however, endorse the suggestion that some such authority ought to be reconstituted, but in a different form. We were getting out of scale in the height of our buildings, not because architects wished to make their structures more and more lofty, but because clients insisted on getting the most out of their land. The air-space to be provided behind buildings was, like the last matter, an important subject which required legislating on; the houses in Broadhurst-gardens and Fitzjohn's-walk, Finchley-road, were instances of lofty modern buildings which almost touched at the rear. There ought to be legislative powers to enforce the leaving of a clear space between a house and its own backwall; but he confessed he did not see how such a rule could be carried out in the Metropolis. In any amendment of the Building Act they must, he thought, go on broad principles, and not enter minutely into details; while



as to the various public health and sanitary measures, these ought to be consolidated into one Act, and all clauses now of a permissive character should be made imperative.

Mr. HENRY DAWSON thought there was an urgent necessity for immediate action being taken with reference to a proposed change of procedure by the London County Council. It had been announced at a meeting of that body that they did not propose in future to exercise any discretionary powers to waive the strict enforcement of Section 13 of the Building Act of 1855, by which it was provided that all recesses or openings in any external wall should not, when taken together, exceed one-half of the total area of that wall. It needed no argument to prove that to strictly enforce this rule would be very unjust and quite inconsistent with modern commercial requirements. In business premises in large towns it was absolutely essential that the openings in outside walls should exceed one-half the superficial area, and hitherto this had been permitted in the Metropolis. He, therefore, suggested that it behoved the Institute to petition the London County Council, or, failing their consent, Parliament itself should be applied to to compel the Council not to hamper business men in such a manner, and that openings be permitted to be made of any dimensions, so long as the superstructure was properly supported. So ridiculous a clause as No. 13 ought not to be rigorously enforced.

Mr. CHARLES FOWLER, F.S.A., proposed a vote of thanks to Mr. Slater for his very opportune and instructive paper. It was timely, for the London County Council were now seeking Parliamentary powers to amend their Building Acts, thus giving the Institute an opportunity to make representations as to those proposals. He thought they, as architects, were agreed that some limitations as to the height to which buildings should be allowed to be carried were desirable, although they would probably differ as to the extent of such restrictions. The London County Council already possessed certain powers as to heights of elevations in new streets; but these ought to be exercised with greater discretion than was shown by the late Metropolitan Board of Works, who allowed Northumberland-avenue to be so built up as to become a mere tunnel between high buildings. Mr. Slater seemed to think that the regulations under the Act of 1844 were better than those which now existed, in that they led to less litigation. He was not sufficiently old to remember much of the working of the Act of 1844, but judging from the regulations themselves, he should imagine the reverse was the case. A building disputes tribunal would seem to be exceedingly desirable if we could get it, and certainly it was notorious that the old system of referees was anything but satisfactory in its working. He did not think the plan suggested by Justice Mellor and Gwilt would work so well as Mr. Slater had supposed. It would be better if a legal man were appointed to weigh evidence and formulate decisions, he being assisted by two architects sitting as assessors. It was evident that if only a lawyer and architect sat together, it would be difficult for them to come to an agreement should they differ on any point. The subject of giving discretion to a board or to its officials was one of very great difficulty. He thought with Mr. Slater that if the discretionary power possessed by the London County Council were qualified by a necessity to give reasons for decisions, it would prove better in practice. The giving to a committee of a public body large discretionary powers would require to be very closely watched in operation. The Liverpool Building Act, which was revised by the late Sir William Tite, had several valuable features, particularly a rule as to the thickness of walls, which worked well, and ought to be introduced into any amendment of the Metropolitan Building Acts. Mr. Slater had passed a high compliment on the London district surveyors by proposing to intrust them with large discretionary powers; but, although it might not be approved by the public generally, it would be of enormous advantage to professional men practising in the Metropolis if the suggestion were adopted.

Professor KERR, in seconding the vote of thanks, referred to the District Surveyors' Association as a most useful organisation, forming a court of appeal in building disputes. Anyone who met with difficulties from one whom he regarded as an obnoxious district surveyor could bring his case before the Association, which

would give the matter every consideration. The Association tended to promote uniformity in the interpretation of Building Acts. He had personally always been in favour of the London County Council and its predecessor, the Metropolitan Board, usurping, if they did not actually possess, discretionary powers in dealing with the questions that arose as to operations under the Building Acts.

Mr. E. T. HALL moved the adjournment of the discussion, mentioning that the Standing Practices Committee of the Institute was now considering suggestions for the amendment of the Building Acts, and their report would be ready to be issued to members before the next meeting.

Professor ROGER SMITH seconded the adjournment of the meeting, and Mr. CARES stated that the next meeting, to be held on Monday, the 3rd prox., would be devoted to the adjourned discussion, and that in the mean time the Standing Practices Committee's report and Mr. Slater's paper should be printed in full and circulated among the members.

#### COMPETITIONS.

GOVAN.—The Govan District Lunacy Board met on Tuesday to consider the question of appointing an architect for the proposed new asylum at Hawkhead, when, after hearing a report on all the eight competitive plans by Mr. Sydney Mitchell, architect, Edinburgh, who had been appointed assessor to examine and report on the plans, the Board appointed the author of the plan having the motto "Concentration" as the architect of the new asylum, and awarded the first premium of £60 to the author of the plan having the motto "Modern," and the second premium of £40 to the author of the plan with the motto "Hawk." The other architects were awarded a premium of £20, in terms of conditions of competition. On opening the sealed envelopes containing the names of the competing architects it was found that the architect appointed to erect the asylum was Mr. Malcolm Stark, jun., 167, St. Vincent-street; the winner of the first premium, Mr. D. MacNaughton, 137, West Regent-street; and the winners of the second premium, Messrs. James Salmon and Son, 197, St. Vincent-street, all of Glasgow.

LEEDS.—TOWN HALL ALTERATIONS.—A meeting of the Buildings Sub-Committee of the Leeds Corporate Property Committee was held on Friday to consider the eight sets of plans sent in for the alterations proposed to be made in the internal arrangements of the Victoria Hall. The competing architects are Mr. Johnson and Mr. J. M. Brydon, of London; Messrs. E. Dixon and Co., of Oldham; and the following Leeds architects: Messrs. Chorley and Connon, Mr. W. H. Thorp, Mr. T. Howdill, Messrs. W. Hill and Son, and Mr. W. A. Hobson.

LEICESTER.—In a limited competition confined to local architects, the Newfoundpool School Board have adopted the design of Mr. W. M. Cowdell, of Leicester, for a new school to accommodate 500 children.

POLLOKSHIELDS.—The congregation of Trinity U.P. Church resolved some time ago to proceed with the erection of a new church, and after a limited competition the committee, being advised by an Edinburgh architect, selected the designs submitted by Mr. W. G. Rowan, architect, 234, West George-street, of the late firm of M'Kissack and Rowan, and have appointed him to carry out the work.

The third of the present series of six free lectures, given at Carpenters' Hall, London Wall, E.C., to members of the building trades, was delivered on Wednesday evening, when Professor W. H. Corfield, M.A., M.D., gave an extempore address on "Modern Sanitation," before a large and interested audience. Mr. H. J. Kennard occupied the chair.

The second cable tramway laid in Edinburgh was opened for use on Monday. The new line runs from Princes-street through Frederick-street, Howe-street, Royal-circus, Kerr-street, over Stockbridge, past the Academy grounds, and terminates at Comely Bank, adjoining the North public park. The line, which will be a great convenience to the people of Stockbridge—a district which will now be brought practically within the city—has been constructed from the designs and under the superintendence of Mr. W. Newby Colam, A.M.I.C.E., by Messrs. Dick, Kerr, and Co., of London and Kilmarnock, who have been represented by Mr. James More, C.E.

## Building Intelligence.

BARTON TURF, NORFOLK.—On Tuesday week this parish church, famous for the beautiful paintings on its ancient screens and other objects of archaeological interest, was reopened after restoration. The church was in a very ruinous and dilapidated state; there was scarcely a piece of the timber remaining under the old floor that could not be rubbed into powder between the fingers, and the buttresses and the walls on the north side were settling down badly, and have had to be underpinned. The work, which has been done by the contractors, Messrs. Cornish and Gaymer, of North Walsham, from the designs and under the superintendence of Mr. Arthur J. Lacey, will cost about £700. There still remain to be done urgent repairs to the tower, the restoration of the fine porch and large east window, which will probably cost a further sum of £350.

LOUGH RYNN CASTLE.—The important additions that for some years past have been in course of construction at the south and east end of this manor house, a residence standing picturesquely upon the shores of the lough in the midst of the Clements estate, are now drawing to a conclusion. The new portions are all of grey stone, quarried near Dromod, and the roofs are slated, the style being a freely-rendered Tudor Gothic. The new rooms are fitted up entirely with English oak that originally came from Her Majesty's dockyard at Devonport, in Plymouth. Colonel Clements' architect, under whom the whole of the extensive works have been carried out, is Mr. Thomas Drew, R.H.A., of 22, Clare-street, Dublin. The oak fittings in the downstairs rooms are all the work of Mr. Harry Hems, of Exeter. The new suite of rooms includes, on the ground floor, new vestibule and entrance, boudoir, and main saloon. The latter room measures 50ft. by 31ft., and is lofty in proportion. Its floor is of oak, and the walls around are wainscoted and panelled to a height of over 12ft.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—A paper on "Quantity Surveying," addressed to students, was read by Mr. H. L. Beckwith, F.S.I., before this society on Monday. Briefly sketching the origin of the quantity surveyor, Mr. Beckwith went on to define his duties, and showed how, in these days of competition and speed, it was most important that the quantities should be so described that the contractor, in running through the items, should have no difficulty in at once assigning a proper value to them. He also said he saw no objection to architects taking out their own quantities if they liked to do so. With regard to the liability of quantity surveyors, he remarked that he need not dwell on that point on this occasion, as the best way to prevent mistakes arising was to familiarise themselves with very little detail of their work. In conclusion, he remarked that he thought a great many more people would be induced to build houses for themselves if they could only satisfy themselves as to the original outlay not being exceeded, and a thorough knowledge of quantity surveying would help the architect very much in designing his building from a pecuniary point.

MANCHESTER ARCHITECTURAL ASSOCIATION.—The last ordinary meeting was held at the Diocesan Buildings on Tuesday, Mr. J. H. Woodhouse, president, in the chair. Mr. F. R. Farrow, A.R.I.B.A., read a paper on "The Ventilation of Public Buildings," which he treated in a most exhaustive manner. A vote of thanks proposed by Mr. Mould, seconded by Mr. Booth, and supported by Messrs. Hodgson, Stelfox, Hinde, and Willoughby, terminated the meeting.

A petition having been presented to the Local Government Board to issue a provisional order to empower the Cheadle and Gatley Local Board to acquire land in the Board's district for works of sewage purification and disposal, an inquiry was held at the offices of the Local Board at Cheadle by Mr. Arnold Taylor, one of the inspectors of the Local Government Board. There was no opposition to the scheme. The clerk stated that the Board proposed to acquire eight acres of ground near the river. The estimated cost of the scheme was £24,300.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

## TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.). To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—T. F. K.—T. W. H.—M. and M.—D. and B.—D. and E. G.—J. W.

MILLBROOK CHURCH COMPETITION. (We are unable to avail ourselves of the information volunteered in this matter, as sender has not authenticated same by any name or address.)

## Correspondence.

## IS NOT REGISTRATION DESIRABLE?

To the Editor of the BUILDING NEWS.

SIR,—Inclosed is an advertisement cut from a local paper. Perhaps its insertion in the BUILDING NEWS may tend to strengthen the cause of Registration.

21st January, 1890.

**BEGS** to thank the Public and Friends for the patronage bestowed on the Firm carried on for the last 15 years by **BEGS** to state that he is still carrying on the Business, and has made the Premises more suitable for all its Branches. Joiner and Builder, Architecture in all its Branches. Special attention to House Factorage and Valuation. FURNITURE of all kinds supplied, also a Good Stock of Dressers kept on hand. UNDERTAKING—Coffins of all kinds kept, also Hearse and Machine supplied reasonable. NOTE.—I am prepared to erect Buildings of all kinds, finished for a lump sum, and to give Probable Cost for Houses to be built, or Price for Old or New Buildings FREE of CHARGE.

—I am, &c., X.

SIR,—The following advertisements appeared in the Daily Telegraph on February 18th and 19th respectively:—

**IMPORTANT NOTICE.**—To Property Owners and others.—D. Vernon and Co., Auctioneers, Architects, and Surveyors, are prepared to include in their forthcoming SALE, at the Mart, Tokenhouse-yard, any eligible PROPERTY at fee from one guinea, including all expenses.—City Offices, 3, Ludgate-hill.

**HOUSES WANTED.** furnished or unfurnished. Good positions. Moderate rentals. D. VERNON and CO., Auctioneers, Architects, and Surveyors, have many clients still unsatisfied. Full particulars of genuine property sent to their City Offices will insure speedy Letting or Sale.—Address 3, Ludgate-hill.

—I am, &c., F. N. K.

## "QUEEN ANNE" REVIVAL IN LONDON.

SIR,—Your portraits of Contemporary British Architects are so good that no word of praise from me is needed, and the letterpress notes with the photographs are most interesting. It is stated, I notice, in the particulars furnished with reference to Mr. John J. Stevenson, in last Friday's BUILDING NEWS, that the Red House on Bayswater Hill, which he built for himself, was the first house in the so-called "Queen Anne" erected in London. Is this correct? If my memory serves me rightly, the house in Lincoln's Inn Fields, on the north side, near the Inns of Court Hotel, and the mansion just out of High-street, Kensington, not far from the Palace, were the first "Queen Anne" houses built during the "Free Classic" revival, and they were designed by Mr. Webb. It is well to state these matters correctly for future reference, hence my inquiry.—I am, &c.,

IMPURE RENAISSANCE.

## THE REBUILDING OF ST. CUTHBERT'S CHURCH, EDINBURGH.

SIR,—The time has now come when this strange chapter of architectural romance falls to be reviewed.

It is also fitting that the columns of the BUILDING NEWS, which were freely opened to the strictures passed upon it in October last, should contain these concluding animadversions, for it cannot be that such an occurrence in a city which boasts ascendancy in art and all things excellent, can escape the shafts of distant sharpshooters in due time.

By way of blunting the sharpness of their barbed points, I would say that, though the promoters of the present scheme are entitled to be saddled with the full responsibility of it, yet, as each of these gentlemen is but a part of the great system of church establishment, it is possible they may not have had altogether a free hand, as citizens, in the matter. This, at least, is a charitable assumption, as, otherwise, the appeals that have been made to them, formally and informally, would be comparable to those which "inspiration makes to unreason, rather than to reason." On the other hand, the fabled "coach-and-six" can always make short work of an Act of Parliament, if it has a mind to do so. Thus, Toryism and the Church by law established, and possibly even an Act of Parliament, may each have a share of responsibility in this matter. But there are others: the leading daily journal of our city, which poses as the enlightened champion of great causes, turned a deaf ear to the appeals made to it to save the city from the mistaken kindness of its friends; yet it could hug, in close editorial embrace, whole lengths of learned puerilities, and much innocent trifling besides (of a quality, for example, of the late Art Congress), while refusing to deign a glance at the foulness of its own ecclesiastical doorstep, and the unsavouriness of its own immediate surroundings. A band of enthusiasts also, in our city, has of late been clamorous for Home Rule for Scotland, who yet have failed to perceive this unarchitectural and unsanitary monstrosity in their midst; and, assuredly, they may set to work at once, for St. Cuthbert's Church is about to be transformed into a melancholy perpetuation of imbecility, and a great opportunity for the city is being lost, without a word or gesture of dissent or disapproval from them. Politics may be "a progressive science," and history "a progressive art," and there may be "a time to cast away stones"; but Toryism and the Established Church can, it seems, snugly nestle beneath the folds of an Act of Parliament, and, defying all sanitary and æsthetic considerations, and the claims of other citizens to be heard, comfortably say—"This is our rest, here will we stay, for we do like it well!"

It was satisfactory, however, to receive from the principal promoter of the scheme, recently, the following:—"I quite recognise the right of any public-spirited citizen to form and express his opinion in regard to the rebuilding of St. Cuthbert's Church." Such a privilege, conferred upon a citizen not of their ilk, was consoling; but, alas, when I ventured to press home the following simple inquiry—"Would you personally be willing to sink your own prepossessions, &c., in regard to the proposed rebuilding of St. Cuthbert's Church, if the public voice were to be adequately shown to desire it?"—no answer was vouchsafed to this moderate request. Yet herein lies the hope that this impending misfortune to

the city may yet be averted. It is but a hope, however, for in Scotland people "esteem their ministers very highly for their work's sake," and have not yet got beyond the pawky stage, even in Auld Reekie, when principles rather than persons, and measures rather than men, turn the scales.

The most that can now be done, therefore, in the way of mending matters, is to endeavour to state the case against the proposal in such a way that the promoters may be constrained (influenced yet, perhaps, by public opinion and the action of the city authorities) to make a holocaust of their present scheme, and yield up the site as a benefaction to the city. Here, surely, would be a magnificent opportunity for Religion to lay its offering upon the altar of Secularism, and be the better for it! Let any intelligent citizen also view the present structure from one of the city's western approaches, and, as he sees the upper half of it alone visible, and the under part hidden away as if in a pit, honestly declare whether £17,000 would be wisely or even sanely spent in giving a new lease of life to any building upon such a site, much more an ecclesiastical one. Let him next obtain a glimpse at the Caledonian Railway Station of the landscape-view, which would be Edinburgh's exclusive possession and delectation to all strangers entering the city there, if the present hulk were removed and did not obstruct it. Let him say whether ten such structures would be too great a sacrifice to make to secure it. Lastly, there would still be the double gain to the city of a new site, enriched with a more worthy edifice, and much more entitled, perhaps, to the appellation of a "National Zion."

Much has been heard of late from scientists of the importance, and even of the "indestructibility," of the atom. In political circles this is probably synonymous with the phrase, "One man, one vote." Scottish patriotism also demands in this matter that every citizen, irrespective of creed, should do his duty in making his voice heard upon it, or in endeavouring to influence others around him. Yet, should this proposal be actually carried out, it will be comparable to the act of a man who sets back his timepiece one hour, and refuses to be anything else than one hour behind "the correct time." Unfortunately for the city, this means being a century or more behind the age; unless, forsooth! a kind fate interposes, or something more than "church blasts of mimic thunder" are heard rattling round the new building before then.

I was just on the point of returning thanks, in anticipation, for giving publicity to these observations in your widely-circulated paper, when the postman handed in the following reply from the senior minister of St. Cuthbert's to the question I ventured to put:—"All I have any right to say in answer to yours, is, that if the public voice were adequately shown in the direction to which you refer, and adequately supported by the public pocket, it would receive, so far as I am concerned, very careful consideration."

I feel almost inclined to say here, "For what I have now received, I am truly thankful"; yet possibly the reverend doctor may, on consideration, make the terms easier, without going all the length of St. Paul, who made his benefaction "first to the Lord," and then to the recipient, "by the will of God."

AUDI ALTERAM PARTEM.

## THE WATER-CLOSET.

SIR,—As an old sanitarian with 30 years' experience, I have been amused, and sometimes almost provoked, to see the efforts of ingenuity bestowed upon this apparatus. The scientific plumbers and mechanicians combined have at last brought forth a machine which for complexity and liability to derangement, consequent repair, and subsequent bills for plumbers, beats everything I could have conceived.

I have before me a drawing of a w.c. which I will not name more specially than that it contains no less than ten distinct mechanical movements. It is, I think, as nearly complex as it can be; but perhaps some plumber with several, to me unknown, letters after his name will immortalise himself by adding another scientific crank or two—who knows? I know there are very many kinds of closets, but what I mainly write for is to protest, in the name of a long-suffering public who don't know what is really the thing, against this making a simple domestic appliance into a piece of clockwork.

I have put up perfectly good and working



closets at a cost of one-fourth of the general run of the advertised machines, and years of work have not caused half-a-crown's expense. I wonder that our architects and engineers do not protect the public from the gew-gaw apparatus which, if it goes on improving, will at last be good enough for a special lecture with diagrams in explanation of the working parts.

A water-closet with gauged quantity for each flush can be put up on the best, because most simple, principle, with all needful apparatus, for about thirty-five shillings, instead of a clock-work machine costing about four pounds.—I am, &c.,  
SANITARIAN.

## Intercommunication.

### QUESTIONS.

[10230.]—**Shutters.**—Towards the completion of a building it was found that the window-shutters which had been specified by the architect were entirely omitted in the bill of quantities by the surveyor. Does the owner have to pay extra for having them done, and can he get this extra cost from the architect or surveyor? Who is to blame?—CARELESS.

[10231.]—**Crematoria.**—Could any reader enlighten me as to the kind of furnace used for the cremation of the dead and how the process is conducted? Any information will be esteemed. Is there any work published bearing on the subject?—INQUIRER.

[10232.]—**Saline Stains in Wall.**—Can anyone give a certain remedy for the following?—Three years ago I restored a large country mansion situate close to the seaside. The new walls were plastered six months after being built with mortar composed of blown sand, ashes, and a mixture of fine, sharp gravel. According to specification, all old and new work was tied together with cement mixed in equal proportions with the same fine gravel. Wherever cement has been used the plaster has become stained and unfit to paint or paper. I am advised of numerous quack remedies to be applied on the outer walls. But what is to be done with, say, an 18in. inner brick wall, built in cement and showing both sides? If the saline matter is destroyed one side, I presume it will immediately eat out in another direction.—SALINE.

### REPLIES.

[10224.]—**Sound.**—No doubt an air space is a non-conductor to some extent. Sawdust is better, but objectionable on account of its tendency to harbour vermin. I have found, however, that the very best deadener of sound is a lin. thickness of silicate cotton (slag wool). It is also inexpensive.—C. A. GARDNER.

[10229.]—**Velocity and Volume of Flow in Sewers.**—Before the velocity of flow and the volume of discharge in a sewer can be calculated, the rate of inclination, or the length and fall of the sewer, must be given, together with the extent of the wetted perimeter and the sectional area of the waterway. Taking first the case of the egg-shaped sewer, 3ft. 9in. by 2ft. 6in., and assuming it to be a mile in length, having a fall of 6ft. in that distance, and to be running two-thirds full, also that the radius of its invert is one-fourth the transverse diameter—the first step will be to ascertain the sectional area of the waterway. This may be found by multiplying the square of the radius of the upper arch of sewer by 3.0232 (the area of a sewer of similar proportions, the radius of whose upper arch is unity), thus:  $1.25^2 \times 3.0232 = 4.72375$ . Of course, this might easily have been obtained by calculating from the known proportions of the given sewer the areas of the three sectors formed by the radii of the sides and invert of sewer, and deducting therefrom the area of the triangular portion of the side sectors. The length of the wetted perimeter would be also evolved in this latter operation. To obtain it otherwise, multiply the transverse diameter by 2.3941, thus,  $2.5 \times 2.3941 = 5.98525$ ft. Proceeding, then, by the following formula, which is Weisbach's reduced to the simple form of Eytelwein's, and is practically correct for the velocities usually met with in sewers—

$$v = 58 \sqrt{2Hr}$$

Where  $v$  = velocity in feet per minute;  $H$  = fall in feet per mile; and  $r$  = hydraulic mean depth or mean radius, or  $\frac{\text{area}}{\text{wetted perimeter}}$  in feet, and substituting the values in the data above, we have—

$$\begin{aligned} v &= 58 \sqrt{2 \times 6 \times .78923} \\ v &= 58 \times 3.07746 \\ v &= 178\text{ft. per minute.} \\ v &= 4.72375 \div .78923 \\ v &= 5.98525 \end{aligned}$$

The cubic feet discharged per minute is obtained by multiplying the velocity by the area, or  $178 \times 4.72375 = 840$ c.ft. The 12in. pipe sewer to be self-cleansing will require a greater fall than the preceding example. Let us assume that it has a fall of 20ft. in the mile length, and that it is running half-full. The hydraulic mean radius for a circular pipe, whether running full or half-full, is equal to one-fourth the diameter; the equation will therefore be—

$$\begin{aligned} v &= 58 \sqrt{2 \times 20 \times .25} \\ v &= 58 \times 3.16228 \\ v &= 183\text{ft. per minute.} \end{aligned}$$

$$\therefore Q = \frac{12 \times .7854}{2} \times 183 = 72\text{c.ft. per minute.}$$

—FREDERIC ELIE GAY, Bath.

The chair factories of Messrs. Hector and Inglis and Messrs. A. and A. Weir, in Berkeley-street, Glasgow, were destroyed by fire on Wednesday night, the damage amounting to £10,000.

### LEGAL INTELLIGENCE.

IN RE THOMAS QUINN, M.P.—A receiving order having been made on January 9 last against Mr. Thomas Quinn, builder and contractor, of the Estate Office, Popham-street, Islington, and M.P. for Kilkeny, the debtor has now furnished a statement of his affairs in which his liabilities are returned at £75,697, of which £9,097 only will probably rank, the amount of the assets being dependent mainly upon the realisation of various properties from which a surplus is anticipated. The debtor has been extensively engaged in the erection of workmen's dwellings in different parts of London.

### CHIPS.

Mr. Arnold Taylor, an inspector from the Local Government Board, held an inquiry at the Stockport Court-house on Friday, as to the application by the Town Council for a provisional order enabling that body to acquire from the Charity Commissioners 95 acres of land at Cheadle Heath for the purpose of a sewage farm, to carry out a number of street improvements, and to use land at Offerton Roughs for the reception of ashpit refuse. Much opposition was offered to the sewage farm and refuse-tip propositions.

The Improved Industrial Dwellings Company reported to their members, at the annual meeting on Tuesday, that of the forty-one estates belonging to them, all but two were in occupation. The houses were well filled, except those at the East-end, and the amount lost by defaulters in their rent was very small. The mortality among the tenants was very low—only 11 in the 1,000, as compared with the average of 17 throughout the Metropolis—and the birth-rate was high. When all the buildings are completed they will accommodate about 30,000 persons. A dividend of  $2\frac{1}{2}$  per cent. was declared for the half-year, making 5 per cent. for the year.

The prizes gained by the students of the Birmingham Municipal School of Art were distributed on Tuesday night, at the Midland Institute, by Mr. Thomas Armstrong, Director for Art of the Government Department of Science and Art. In a subsequent address, Mr. Armstrong defended the policy of the Science and Art Department, and said that what was wanted was an educated public opinion to insure that the advantages afforded by the Department were properly applied. But the future of art in this country in its application to manufactures depended upon a larger amount of time being given to it in the elementary schools, and in the thorough art education of those children of the wealthier classes who were destined to control manufacturing concerns.

From a return just presented to the Liverpool corporation, it appears that the cost of the Vyrnwy water supply scheme, now on the eve of completion, has been, up to December 1st last, £1,990,000.

The foundation stone of a Soldiers' Home was laid on Monday in the Edinburgh-road, opposite the barracks at Piershill, N.B. The building is being erected from plans by Mr. W. A. Carter, architect, of Edinburgh.

The contract for the erection of the second part of the new military stores at Forthside, Stirling, has been obtained by Messrs. James Hay and Son, contractors, Perth, by whom also the first portion was erected. The estimate is understood to be considerably over £30,000, and the work is expected to last for at least two years.

The York city council received a report at their last meeting, stating that the total cost of the restoration of the city walls (Bootham Bar to Monk Bar) had been £3,531, the original estimate for the work having been £3,500.

Mr. T. Stevens, of Bournemouth, has been appointed architect of a new Wesleyan Chapel about to be erected at Christchurch, Hants, on the site of an existing and smaller place of worship.

The parish church of St. Anthony in Menage, Cornwall, has been reopened after restoration. The contractors were Mr. C. H. Eva, Mr. Richards, and Messrs. Solomon and Co., all of Truro.

An action to recover compensation for damage done to a house by the fall of an adjoining building was tried on Saturday before Mr. Justice Charles and a Jury. The plaintiffs were Miss Ashley and Miss Shannon, living in Simpson-terrace, Victoria Dock-road, and the defendant, Mr. Simpson, was the owner of adjoining property, the point in dispute being whether the defendant had been negligent in the mode of repairing his houses. The jury awarded the plaintiffs £25 damages.

The old residence of the Grosvenors in Watergate-street, Chester, a well-known and picturesque feature in the Rows, having a half-timbered porch and magnificent staircase, has been purchased at £2,500, and will be converted into a city and county Liberal Club.

## Our Office Table.

THE London County Council are promoting a Bill this Session to enable them to introduce new supplies of water into the Metropolis, and to acquire the rights of existing water companies. The Bill, which is backed by Messrs. O. V. Morgan, Beaufey, Buxton, Causton, Cremer, Howell, Lawson, Montagu, Pickersgill, Rowlands, and Stuart, declares that the Council may purchase by agreement with any of the following companies:—The New River Company, East London Waterworks Company, Southwark and Vauxhall Waterworks Company, West Middlesex Waterworks Company, Lambeth Waterworks, Chelsea Waterworks, Grand Junction Waterworks, and Kent Waterworks, notwithstanding any enactment to the contrary, by a deed of conveyance. The Council are to have all the privileges of the companies, and be subject also to their obligations and liabilities, but will be freed from all the provisions of the special Act regulating the constitution, management, capital, and profits of such companies. Every officer and servant attached to any company at the time of the transfer shall, from and after the transfer, become an officer or servant to the Council, and shall hold his appointment upon the same terms as if the Bill had not been passed. The receipts for supplies are to be devoted to reducing the charge to the consumers, and also the metropolitan consolidated rate. The Bill, if passed, is to be cited as the London Waterworks Purchase Act.

THE sixty-fourth annual exhibition of the Royal Scottish Academy, opened on Monday, shows a praiseworthy effort on the part of the hanging committee, in obedience to public criticism, to raise the standard of the works admitted. The display is above the average, although the number of works hung has been reduced to 738, as compared with 1,032 in 1889. The space allotted to architecture and sculpture has been increased, and the latter is now shown in a room hung with pale green drapery. Of the 459 oil paintings, no fewer than 169 are sent in by members of the R.S.A.; but the President, Sir Noel Paton, and W. L. Lockhart do not exhibit this year. Millais is represented by his "Last Rose of Summer," a portrait of his daughter; Orchardson by "Deserted" and "Her First Dance," both examples of the spacious interiors in high life, with a graceful lady's figure, by which he has popularised his art. Flemish landscapes by Beattie Brown, Robert McGregor's "For the Crimea," Yorkshire scenery by Keeley Halswelle, portraits by J. L. Shannon, Thomas Graham (W. Q. Orchardson, R.A., being the subject), Martin Hardie, Burn Murdoch, and Hugh Cameron are among the oil pictures which attract the eye on a first visit.

"AN OLD EDINBURGH CONTRACT" was described in considerable detail by Mr. T. M. Rickman, F.S.A., in a paper read before the Institute of Builders on Thursday night, the 13th inst. The contract in question was that made and actually carried out for building the existing Exchange in Edinburgh in 1754, and the parties to it were the Dean and Guild of the city on the one part, and the mason, three wrights, and John Fergus, architect, all of Edinburgh, on the other, and the latter tendered to do the works for £19,707 16s. 4d., and to take the land forming the site off the hands of a city at £11,749 6s. 8d., making up a total sum of £31,457 3s. The tenderers, including the architect, seemed to undertake this as a speculation, and both architect and surveyors were apparently paid by the builders. The premises now on the site correspond, with singularly few variations, with the plan and elevation given with the contract, and in the minutest details named in the specification the works were evidently scrupulously carried out. The Exchange was, however, never used for its proper purpose, the merchants preferring to meet as of old at the Cross, and it was therefore sold by the corporation in apartments to a multitude of people, who are now the freeholders. The contract threw, Mr. Rickman showed, much light on the subject of building estimates and operations in Scotland 136 years ago.

THE distinguished Austrian architects, Messrs. Fellner and Helmer, have prepared plans for the "Mozart Festspielhaus," or Concert-hall, which is to be erected on a splendid site on the



Plateau of the Monchsberg at Salzburg. The building will form a sort of rival institution to the Wagner Theatre at Bayreuth, and the concert-hall is to be of unusually vast dimensions. It is intended for the performance of classical music during the summer months.

"THE NATIONAL GALLERY" was the subject of a lecture given by Dr. J. G. Fitch at the Working Men's College, Great Ormond-street, on Saturday evening. Mr. Frank Dicksee, R.A., presided. A visitor, said Dr. Fitch, could not get the full intellectual advantage which the Gallery was capable of rendering unless he examined the pictures with a clear and definite purpose. One special subject of interest was the history of religious beliefs as embodied in painting. The representation in fuller detail of the scenes of Sacred and Classical story came later, and was contemporaneous with the revival of an interest in Classical literature in Italy and in Germany. The serious, solid, and sincere, though somewhat prosaic, character of Dutch painting found in the Gallery was more fully represented than perhaps in any collection in Europe outside of the Low Countries; and the Peel collection and the Wynn-Ellis collection showed us at its best the power of Teniers, of De Hoogh, of Ostade, and of Mieris and Cuyp. In portraiture, also, our national collection was especially rich. A parallel was to be traced between the treatment of landscape by painters and the expression of a love of nature and her works in the literature of their contemporaries. A picture gallery was an epitome of history, and a record of the sweetest fancies, of the highest aspirations, and of the deepest religious convictions, of some of the most gifted men of past times. But it was also in a minor degree a test of character and of honesty; for there was always a temptation to be beguiled by great names or by the story of large prices into insincere admiration. Those who would guard themselves against this temptation, and endeavour by careful study to seek out the full meaning of any picture which they could honestly admire, would find at Trafalgar-square a mine of treasure, a store of new thoughts, and a source of genuine and innocent delight.

A report has been issued by Mr. F. Brady, chief engineer of the South-Eastern Railway and Channel Tunnel Companies, stating that the experimental boring carried on by the latter company near Dover has resulted in the discovery of coal, which first came to the surface mixed with clay, while a specimen of clean coal was taken at a depth of 1,183ft. 6in. The inhabitants of Dover, Folkestone, and Deal will not contemplate the creation of a Black Country on the south-eastern coast with feelings of unalloyed satisfaction.

At the last meeting of the Warwick Corporation it was reported that the works of water supply at Haseley had just been completed satisfactorily from plans by, and under the direction of, Mr. Richards, the borough engineer. The cost had been £1,100, exclusive of an honorarium of £55 to Mr. Richards, voted at that meeting.

In response to an appeal to the public by the council of the Yorkshire College for £40,000 to enable them to erect new buildings for the medical department, and also a college library and examination hall, more than half the required sum has been contributed. The council are prepared to devote £25,000 of the total sum to the buildings and equipment of the department of medicine, and £15,000 to the erection of the college library and hall.

A well-known buyer of English pictures has, it is stated, offered the whole of his fine collection to the nation on the condition that new rooms to hold it are added to the National Gallery within three years. If the offer is accepted it will be easy to carry out the conditions attached to it, for the space on which the new rooms would have to be built adjoins the site proposed for the new portrait gallery.

The fourth annual reunion of the Glasgow School of Art was held on Friday evening in the Corporation Galleries, Sauchiehall-street, when there was a large gathering of students and others. Mr. Lewis F. Day gave a lecture on "Art and Handicraft," after which a concert was given.

The corporation of Warrington have made terms with the local waterworks company for the taking over of their property on a basis of 30 years' purchase of the maximum dividends, the total capital liability being £267,569.

The local board of Hebburn has elected Mr. Humble, of Jarrow, as surveyor, in succession to Mr. West, resigned.

#### MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Society of Engineers. "Application of Water Pressure to Machine Tools and Appliances," by R. H. Tweddell. 7.30 p.m.  
Surveyors' Institution. "Establishment of a Tribunal for the Trial of Compensation Cases," by Sidney Woolf, Q.C. 8 p.m.

TUESDAY.—Institution of Civil Engineers. Discussion on "Waterworks at Shanghai, Hong-Kong, and Yokohama." 8 p.m.

WEDNESDAY.—Carpenters' Hall Free Lectures. "The Domestic Fireplace," by Prof. Armstrong, F.R.S. 8 p.m.

Society of Arts. "The English in Florida," by A. Montefiore. 8 p.m.  
The Ecclesiology of Denmark," by Major Heales, F.S.A. 7.30 p.m.

Society of Arts. "The Northern Shan States and the Burma-China Railway," by W. Sherriiff. 8 p.m.

FRIDAY.—Architectural Association. "Architecture in Oxfordshire," by W. A. Pite. 7.30 p.m.  
Royal Academy. "Florentine Sculpture in the Fourteenth and Fifteenth Centuries," by Prof. J. H. Middleton. 8 p.m.  
Royal Institution. "Evolution in Music," by Prof. C. H. H. Parry, Mus.Doc. 9 p.m.

Architectural Association, 9, Conduit-street, W.—February 28, paper on "Architecture in Oxfordshire," by W. A. Pite, Esq. 7.30 p.m.  
FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

#### BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The 23rd ANNUAL GENERAL MEETING of the donors and subscribers will be held at the offices, 21, New Bridge-street, E.C., on TUESDAY, March 4th, 1890, at 7.30 p.m. H. H. BARTLETT, Esq., President Elect, in the chair, to receive the Report and Balance Sheets for the past year, and elect officers for the present year.  
The TWELFTH ANNUAL DINNER will take place at the Holborn Restaurant on MONDAY, March 31st. Tickets, 6s. each.  
H. J. WHEATLEY, Secretary.

#### CHIPS.

The London County Council on Tuesday reversed its former decision, declining to assist in the widening of Green-street, Leicester-square, and decided to contribute three-fourths of the cost of the proposed improvement, after deducting the recoupment.

The new Board schools, Normanton, are warmed and ventilated throughout by means of Shorland's patent Manchester grates.

The local board of Widnes have passed a resolution asking their surveyor, Mr. Higginson, to resign his appointment.

A stone reredos is now in course of construction for St. John's Church, Canton, Cardiff, in memory of the late rector, from designs prepared by Messrs. Kempton and Fowler, architects, Llandaff.

The Mayor of Gateshead opened, on Friday, a new café in the High-street of that borough. Messrs. Stout and Dockwray, of South Shields, were the architects, and Mr. William White, of Heaton, was the builder of the premises.

At the last meeting of the Leamington town council, the health committee reported that they had directed the medical officer to supply a list of the houses in the borough which are considered to be unfit for human habitation. The recommendation was adopted *nem. con.*

A meeting of the York Architectural Association was held on Thursday evening, the 13th inst., when a lecture on "Legs and Wheels" was given by Mr. George Mosley.

In the Chancery Division, on Saturday, Mr. Justice Kay made an order granting a petition for the sanction of the Court to resolutions for the reduction of capital of the Hitchens Fireproof Plastering Company.

The Edinburgh joiners are agitating for an advance on their wages of ½d. per hour.

The foundation stone of a new Orange Hall for Limavady, co. Londonderry, was last week laid by the Hon. Mrs. McCausland, of Drenagh. Mr. R. Eccles Buchanan, C.E., of Londonderry, is the architect. The cost of the building is £600.

The Nuneaton Gas Company are about to extend their works, and have instructed Mr. J. S. Pickering, C.E., of Nuneaton, to prepare the necessary drawings and specifications for a new gas-holder 70ft. diameter and 20ft. deep.

A new church is about to be built at Blaengarw, and will be dedicated to St. James. Messrs. Bruton and Williams, Queen-street, Cardiff, are the architects.

Designs have been approved for decorating the chancel of the Church of St. Michael, Bournemouth, and the works are in progress, under the superintendence of Mr. R. G. Pinder, F.R.I.B.A.

Mr. James W. Szlumper, M.Inst.C.E., of Victoria-street, S.W., was in error referred to in a "chip" on p. 259 as the contractor for, instead of as the engineer of, the Barry Railway.

## Trade News.

### WAGES MOVEMENTS.

A COMBINATION OF BRICKMASTERS.—A meeting of Kent and Essex brickmasters has been held, and it has been decided to form a Union of the Medway and Thames brickmasters and flint merchants to protect the interests of the masters.

NORTH WALES SLATE TRADE.—At the March monthly letting of bargains in Lord Penrhyn's slate quarries full time will be worked. The output for many months has been restricted to five days. At the Llanberis quarries things continue very brisk. In the Nantlle Vale district, on the contrary, matters are flat. Three quarries are closed, and at a fourth work will cease after next settling day.

HOLLOWAY'S PILLS.—The Great Need.—The blood is the life, and on its purity depends our health, if not our existence. These pills thoroughly cleanse this vital fluid from all contaminations, and strengthen and invigorate the whole system, healthily stimulating sluggish organs, and establish order of circulation and secretion throughout every part of the body.

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Wood in Planks and Boards, dry and fit for  
immediate use.

### TENDERS.

Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BROMLEY.—For residence at Bromley, Kent, for the Rev. R. H. Lovell. Messrs. W. A. Williams and Hopton, 156, Regent-street, W., architects:—

Grubb ... ..	£1,675 0 0
Eccardt ... ..	1,473 0 0



**BROMLEY.**—For house at Bromley, Kent, for Mr. B. G. Gardner. Messrs. Wadmore, Wadmore and Mallett, 35, Great St. Helen's, E.C., architect:—  
 Crossley, Bromley ... £2,000 0 0  
 Arnold and Son, Bromley ... 2,079 0 0  
 Wiltshire, Sevenoaks ... 2,060 0 0  
 Jones, Tunbridge ... 1,985 0 0  
 Payne, D., Bromley ... 1,978 0 0  
 Grubb, Bromley ... 1,950 0 0  
 Holloway Bros., Battersea ... 1,893 0 0  
 Rooms, Clapton ... 1,850 0 0  
 Holt and Son, Croydon ... 1,850 0 0  
 Allen and Son, Kilburn ... 1,838 0 0

**BROMLEY.**—For additions to residences, Widmore-road, Bromley, Kent, for Mr. H. Mitchell. Messrs. W. A. Williams and Hopton, 156, Regent-street, W., and Bromley, Kent, architects:—  
 Lowe ... £494 0 0  
 Gregory ... 420 0 0  
 Rooms (accepted) ... 374 0 0

**BIRKENHEAD.**—For additions to house, Manor-hill, Birkenhead, for Mr. G. R. Clover. Mr. J. Clark, 19, Castle-street, Liverpool, architect:—  
 Bricklayer's and joiner's work:—  
 Hughes, T., and Son, Chester ... £1,400 0 0  
 Slatting and plastering:—  
 Johnson Bros., Liverpool ... 248 0 0  
 Plumbing, &c.:—  
 Catlow, B. and J., Liverpool ... 200 0 0  
 Gasfitting and bellhanging:—  
 Hamilton, R., and Son, Birkenhead ... 19 10 0  
 Concrete and oak-block flooring:—  
 Homan and Rodgers, Manchester.  
 Glazing:—  
 Williams and Watson, Liverpool.

**BIRMINGHAM.**—For house, Westfield-road, Edgbaston, for Mr. F. Wright, jun. Messrs. J. P. Sharp and Co., architects:—  
 Harley, J., and Son ... £1,585 0 0  
 Gill, G. ... 1,580 0 0  
 Gowing and Ingram ... 1,571 0 0  
 Whitehouse, B. ... 1,549 0 0  
 Goodman, J. ... 1,539 0 0  
 Webb, J. ... 1,489 0 0  
 Hughes, R. M. ... 1,441 0 0  
 Davies, F. ... 1,425 0 0  
 Giles, E. ... 1,378 0 0  
 Briley, F. J. ... 1,351 0 0  
 Jones and Mason, St. Mary-street, Ladywood, Birmingham\* ... 1,345 0 0  
 \* Accepted.

**BRIGHTON.**—For alterations and additions to No. 88, Preston-road, for Mr. G. H. Quin. Mr. E. J. Hamilton, Brighton, architect. No quantities:—  
 Barnes, J. ... £1,172 0 0  
 Lockyer, G. R. ... 1,170 0 0  
 Lynn, G., and Son ... 1,164 0 0  
 Cox, A., and Sons ... 1,088 0 0  
 Patching, and Son (accepted) ... 1,067 0 0

**BIRKENHEAD.**—For additions to house, 5, Cearn's-road, Birkenhead, for Mr. R. Marquis. Mr. J. Clarke, 19, Castle-street, Liverpool, architect:—

Bricklayer's and joiner's work:—  
 Lee, J., and Son (accepted) ... £226 0 0  
 Plumbing, &c.:—  
 Catlow (accepted) ... 48 10 0  
 Gasfitting, &c.:—Hamilton and Son.  
 Glazing:—Williams and Watson.  
 Concrete, &c.:—Johnson Bros., Liverpool.

**CAMDEN TOWN.**—For erecting shops, stables, &c., and executing various repairs at Nos. 13 and 20, High-street, for Mr. J. Bryan. Mr. R. J. Beale, A.R.I.B.A., Westminster, architect:—

Lamble, S. R., Kentish Town ... £1,067 0 0  
 Gould and Brand, Camden Town ... 1,019 0 0  
 Pryor, G., Walthamstow (accepted) ... 961 0 0

**CAMDEN TOWN.**—For erecting shop and executing various repairs at No. 80, High-street, for Mr. R. C. Widdicombe. Mr. R. J. Beale, A.R.I.B.A., Westminster, architect:—

Toms, E., Camden Town ... £339 0 0  
 Lambie, S. R., Kentish Town ... 332 0 0  
 Gould and Brand, Camden Town\* ... 319 0 0  
 \* Accepted.

**CAMDEN TOWN.**—For erecting shop and executing various repairs at No. 78, High-street, for Mr. H. James. Mr. R. J. Beale, A.R.I.B.A., Westminster, architect:—  
 Gould and Brand, Camden Town (accepted) ... £191 0 0

**CARMARTHEN.**—For alterations to the Carmarthen work-house, for the Board of Guardians. Mr. G. Morgan and Son, Carmarthen, architects:—  
 Jones, T., and Chapman, C. ... £1,141 15 6  
 Davies, W., and Thomas, T. ... 960 0 0  
 Jones, J. and D., Carmarthen\* ... 875 0 0  
 \* Accepted.

**CATFORD.**—For additions to Priory Cottage, Catford, for Mr. R. Archer. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect:—  
 Laird ... £144 0 0  
 Jerrard, S. J. ... 121 0 0  
 Robson, Lewisham (accepted) ... 108 0 0

**CHRISTCHURCH, HANTS.**—For putting on a new roof over St. Michael's loft at the east end of the Priory Church:—  
 Howe, W. (accepted) about ... £1,000 0 0

**CLATTERBRIDGE.**—For two wards, &c., Infectious Hospital, Clatterbridge, Cheshire. Mr. J. Clarke, 19, Castle-street, Liverpool, architect to the board:—

Builder's work:—  
 Lee, J., and Son, Higher Bebbington (accepted) ... £1,898 11 9  
 For railing:—  
 Hill & Smith, Brierly Hill Ironworks ... 189 0 0  
 Concrete:—Homan and Rodgers.

**DAWLISH, DEVON.**—For building new banking premises at Dawlish, for the Devon and Cornwall Banking Company. Mr. G. S. Bridgman, of Torquay and Paignton, architect. Fittings not included:—

Stevens, C., Newton Abbott ... £2,156 0 0  
 Shapter, J., Dawlish ... 2,100 0 0  
 Stevens, H., Ashburton ... 2,090 0 0  
 Hatcher, W. J., Dawlish ... 2,040 0 0  
 Stacey, F. A., Newton Abbott ... 1,800 0 0  
 Webber, H., Paignton (accepted) ... 1,665 0 0

**DAWLISH, DEVON.**—For building a dwelling house, Brookdale-terrace, Dawlish, for Mr. J. Heam, solicitor. Mr. G. S. Bridgman, Torquay and Paignton, architect:—  
 Lamacraft, Dawlish ... £852 5 0  
 Hatcher, W. J. (accepted) ... 783 10 0

**DEVONPORT.**—For the erection of board schools at Morice Town, for the Devonport School Board. Mr. W. Curtis, architect. Quantities by Mr. T. Mullins, Plymouth, surveyor:—

Tozer and Son ... £4,040 0 0  
 Sanders, A. ... 4,030 0 0  
 Healy and Son, Devonport ... 3,524 0 0  
 Finch, J. ... 3,520 0 0  
 Jenkin and Son, Devonport ... 3,479 0 0  
 Roberts, S. ... 3,403 0 0  
 Lethbridge and Son ... 3,326 0 0  
 Laphorne and Goad ... 3,207 0 0  
 Pethick Bros. ... 3,140 0 0  
 Reed, J. ... 3,098 0 0  
 Blowey, P. ... 2,946 0 0  
 Debnam, A. R. ... 2,865 0 0

Rest of Plymouth.

**KENSINGTON.**—For the erection of a billiard-room, for Mr. F. Bailey, Addison-road, Kensington, W. Mr. F. Le Rossignol, F.S.L., 1, Gresham-buildings, Basinghall-street, E.C., architect and surveyor:—  
 Langham, J. (accepted) ... £649 0 0

**KILBURN.**—For rebuilding the Red Lion p.h., Kilburn, for Messrs. Warman and Co.; and alterations and additions to the Bon Marche, for Mr. W. Roper. Mr. W. T. Farthing, 46, Strand, architect:—

Bon Marche.	Red Lion.	Total.
Wall Bros. ... £4,297	£8,894	£13,191
Burman ... 4,177	8,350	12,527
Leslie and Co. ... 3,883	8,653	12,536
Holloway, H. L. ... 3,990	8,334	12,324
Scrivener ... 3,880	8,420	12,310
Godfrey ... 3,814	8,344	12,158
Shurmer ... 3,798	8,290	12,088
Baalam Bros ... 3,976	8,083	12,059
Spencer and Co. ... 3,684	8,183	11,867
Oldrey and Co. ... 3,767	7,990	11,757
Allen, J. ... 3,777	7,906	11,683
Todd, G. ... 3,690	7,889	11,579

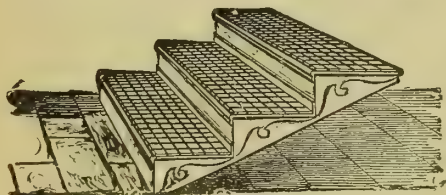
**LIVERPOOL.**—For making up Mark-street, for the city council:—  
 Sterling and Swann (accepted) ... £284 0 0

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	Burdett Road	Earl's Court	Kensal Green	Moorgate Street	Whitechurch	Whitechapel	Police Barracks		
Accrington	Burscough	Edgware Road	Kentish Town	Newcastle	South Bromley	Whitefield	Eastney	Belfast Method-ist College	Stratford, Salway Place
Acton Green	Junction	Fairlough	Kilburn	Monument	South Kensington	Whiteley	Fleetwood	Battersea, St. Sutton	
Aldersgate street	Burton	Farringdon	Kilby	Newcastle-under-Lyme	Southport	Whitley	Fulwood	Mary's Church St. Jude's	
Aldgate	Bury	Fenchurch	King's Cross	New Cross	Speke	Widnes	Halifax	Birmingham, Tayport	
Althorp Park	Borough Road	Finchley Road	King William	Newport	Spring Grove	Willenhall	Hamilton, Glasgow	Cowper Street	Torrington
Altrincham	Mersey Tunnel	Firsby	Street	Newton Heath	Stechford	Willesden	Hulme	Clapham	Upton Cross
Aston	Canonbury	Forest Gate	Langley Green	North Brentford	Stepney	Wood Green	Knightsbridge	Colchester	Wandsworth
Ash Street, Stockport	Chalk Farm	Forest Road	Lea Bridge	North Bridge	Stoke	Wormwood	Leicester, Glen	Forest Gate	
Birmingham, New Street	Charing Cross	Level Crossing	Lamington	Northampton	Stourbridge	Scrubs	Parva	Hanway Place	<b>Hospitals.</b>
Banbury	Cheddington	Fulham	Leman Street	(Castle Station)	Stratford	Worsley	Manchester	Harrow	Belfast County
Barnsbur	Cheetham Hill	Gedley	Leyland	Nottingham	Stretford	Wolverhampton	Newbridge	Havestock Hill	Lunatic Asylum
Barnsley	Junction	Gloucester Road	Leyton	Old Ford	Sudbury	Wolverton	Newcastle-on-Tyne	Orphan Working School	Greenwich Infirmary
Batley	Chequerbent	Gower Street	Lichfield	Oldham (Mumps)	Sutton		Normanton	Jamaica Level	
Bedminster	Clayton	Grantham	Limehouse	Paddington	Sutton Coldfield		Northampton	Leyton, Grammar School	Guy's Hospital
Bescot Junction	Clifton	Greenwich	Lincoln	Parsons Green	Temple		Norwich	mar School	Lincolnshire
Birmingham	Clitheroe	Hackney	Little Ealing	Patriot	Thornton		Portsea	Leyton, Church Road	County Asylum
Bishopsgate	Crew	Haggerston	Liverpool Road, Manchester	Penzance	Torquay		Portsmouth	Newhaven	Middlesex
Blackfriars	Crooked Billet	Hammersmith	Liverpool Street	Pickle Bridge	Tower of London	Barnet	Preston	County Lunatic	Asylum
Blackfriars	Level Crossing	Heaton Park	Llandudno	Plastow	Tring	Belfast	Regent's Park	North Bow	
Bridge	Cross Lane	Hereford, Barr's Court	Long Buckby	Plymouth	Tynemouth	Budbrook	Salford	Old Ford	Netley Hospital
Blake Street, Sutton Coldfield	Crumpsall	Hollyhead	Loudoun Road	Portsmouth	Upton Park	Burnley	Shorncliffe	Poplar, Byron & Old Ford	Peterborough
Blaydon-on-Tyne	Cullercoates	Highbury	Ludgate Hill	Prethwich	Victoria	Caterham	Trim	Southsea, Church Path	Rubery Asylum
Blanchley	Dalston	Highland Road, Wallsend	Mark Lane	Ratcliffe	Waltham Green	Chatham	Worley	Southsea, Omega Street	St. Thomas's Hospital
Bolton	Daybrook	Hollinwood	Maidstone	Road	Walsall	Chester	Winchester		
Bolton Bridge	Denholme	Hollyhead	Manchester, Exchange	Salisbury Road	Walsall	Coventry	Woolwich		
Bombay, India	Derby	Honerton	Manchester, Exchange	Seething Lane	Waterloo, Liverpool	Curragh Camp	Wrexham		
Bow	Drayloden	Honley	Manchester	Shadwell	Weaste	Dublin, Beggar's Bush			
Bowdon Central	Drighlington	Hounslow	Road	Shedfield	Werneth, Oldham	Dublin, Island			
Brick Lane	Dudley	Hounslow Bar-racks	Mansion House	Shoreditch	ham	Bridge	Ship		
Bristol	Dudley Port	Keighley	Millway Park	Sloane Square	Westbourne	Dublin, Street			
Broadfield	Dundee	Kemble Junction	Millhill	Snow Hill, Birmingham	Park	Dublin Royal Barracks			
Broad Street	Ealing Common		Milverton		West End Lane	Dundalk			

**Barracks.**

Aldershot

Ashton-under-Lyne

Barnet

Belfast

Budbrook

Burnley

Caterham

Chatham

Chester

Coventry

Curragh Camp

Dublin, Beggar's Bush

Dublin, Island

Werneth, Oldham

Dublin, Street

Dublin Royal Barracks

Dundalk

**Hospitals.**

Belfast County Lunatic Asylum

Greenwich Infirmary

Guy's Hospital

Lincolnshire County Asylum

Middlesex County Lunatic Asylum

Netley Hospital

Peterborough Infirmary

Rubery Asylum

St. Thomas's Hospital

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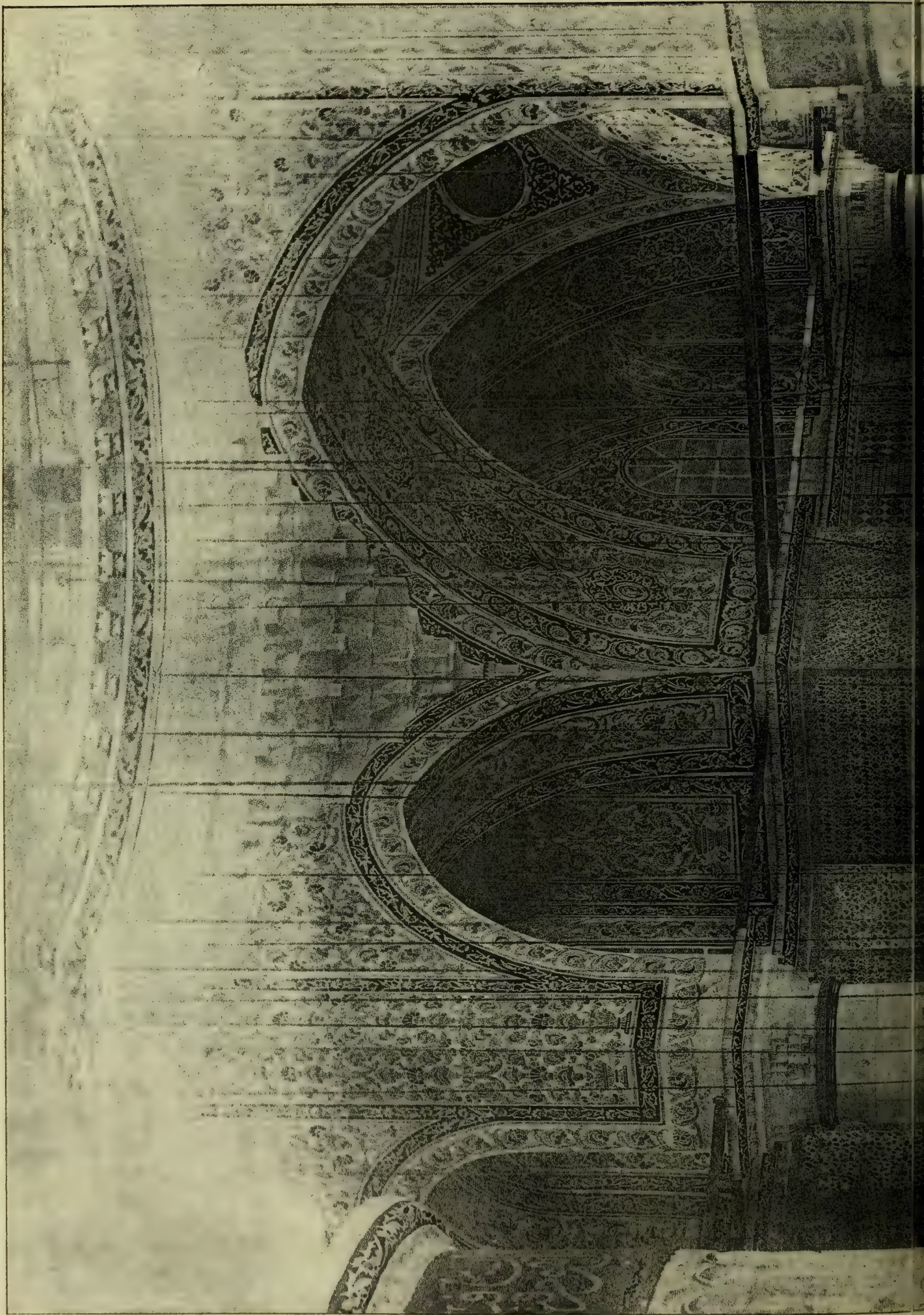
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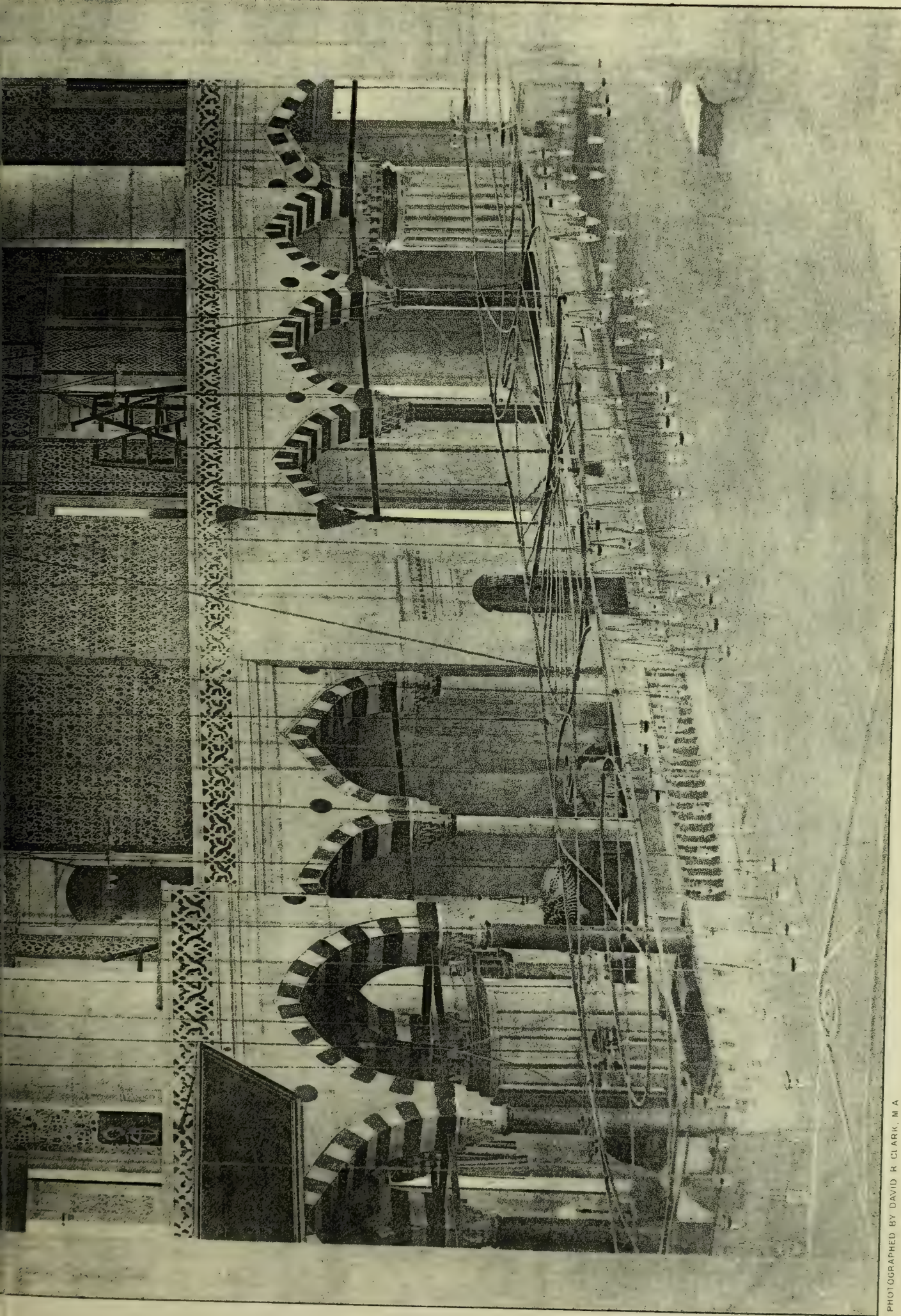




THE BUILDING NEWS, FEB. 21. 1890.







PHOTOGRAPHED BY DAVID R. CLARK, M. A.

MOSQUE OF SULTAN ACHMED, CONSTANTINOPLE.

"Photo-Tint" by James Akerman & Queen Square, London W.C.









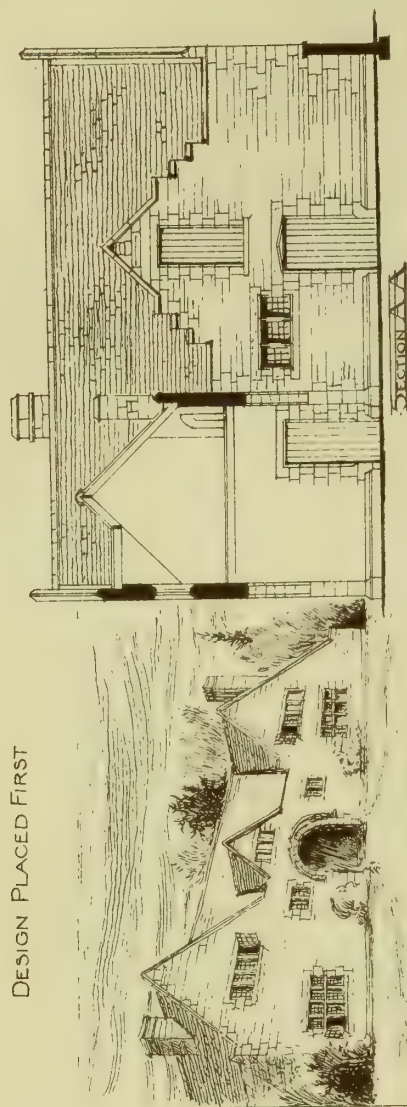


THE BUILDING NEWS, FEB. 21, 1890.

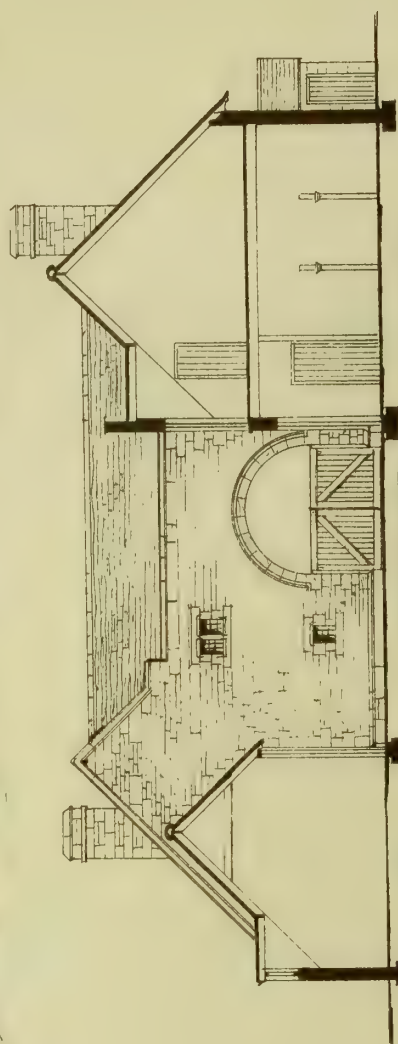
BUILDING NEWS DESIGNING CLUB  
DESIGN FOR A COUNTRY STABLE

BY  
"FIDLER"

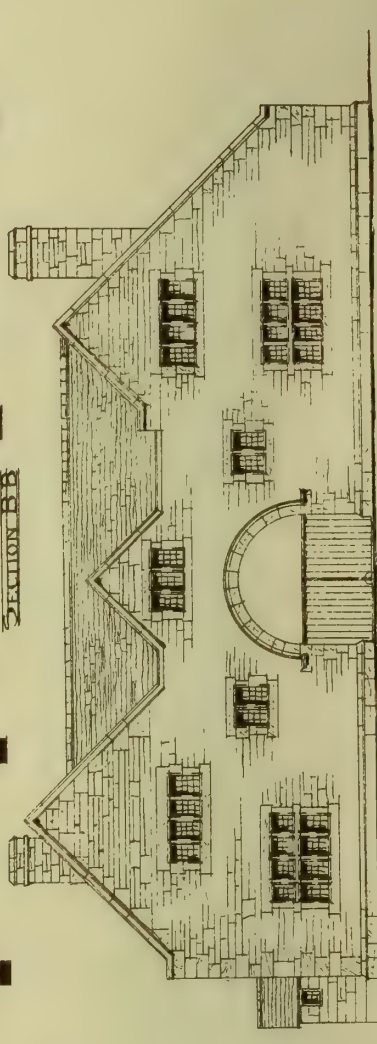
DESIGN PLACED FIRST



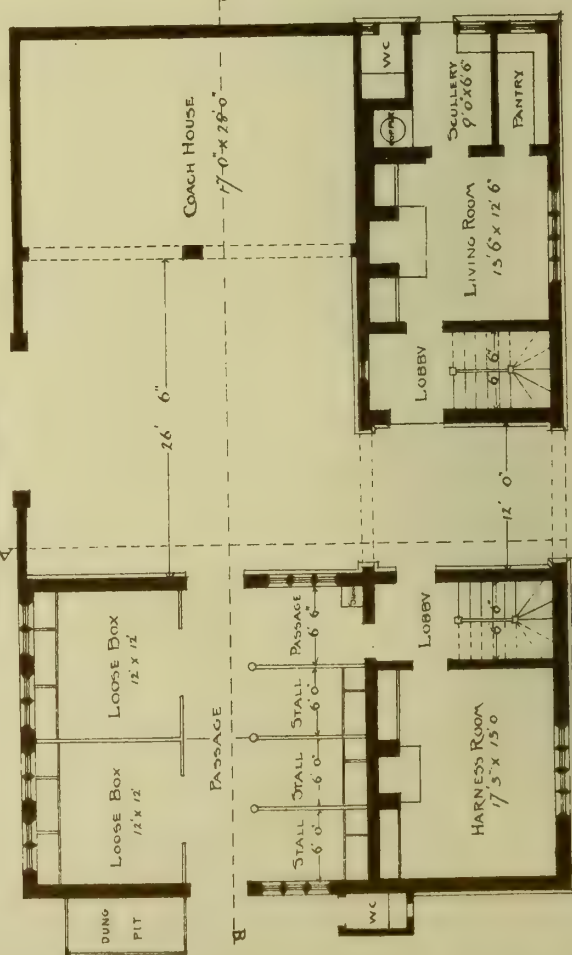
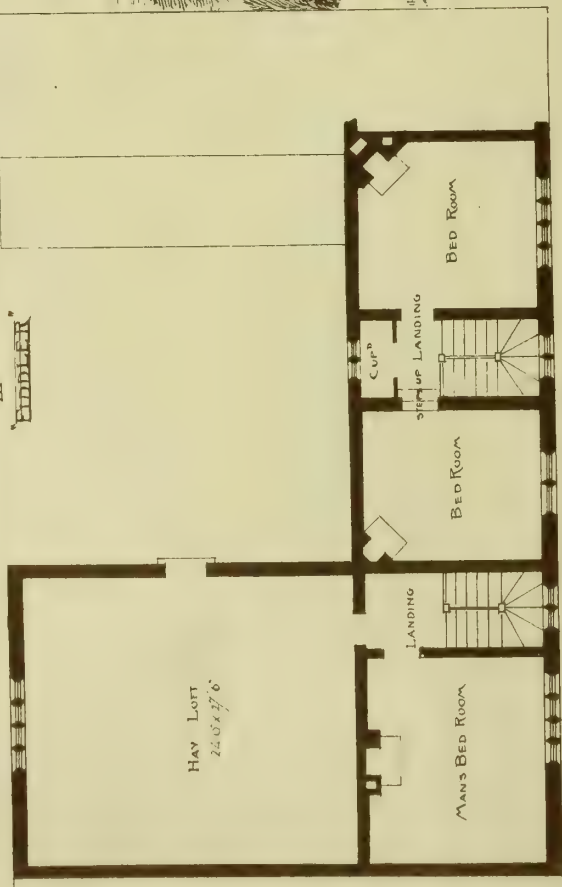
SECTION AA



SECTION BB



FRONT ELEVATION



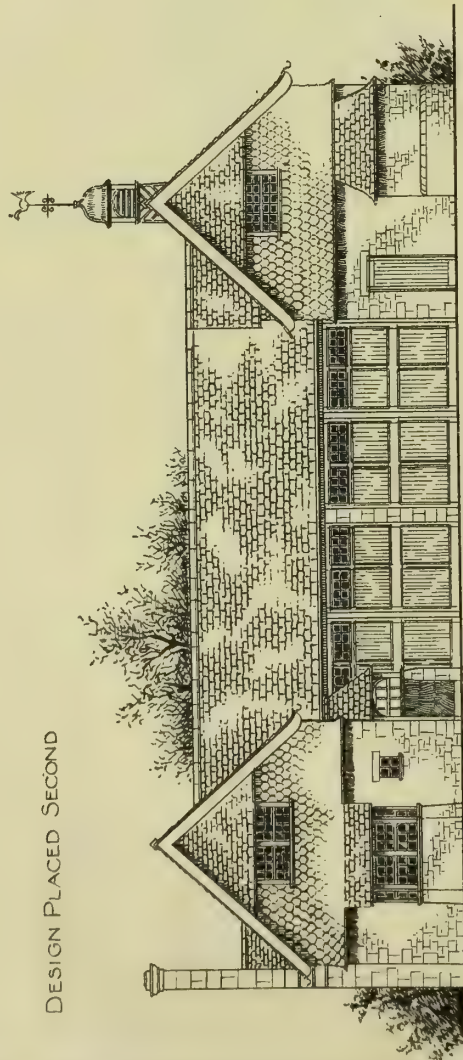




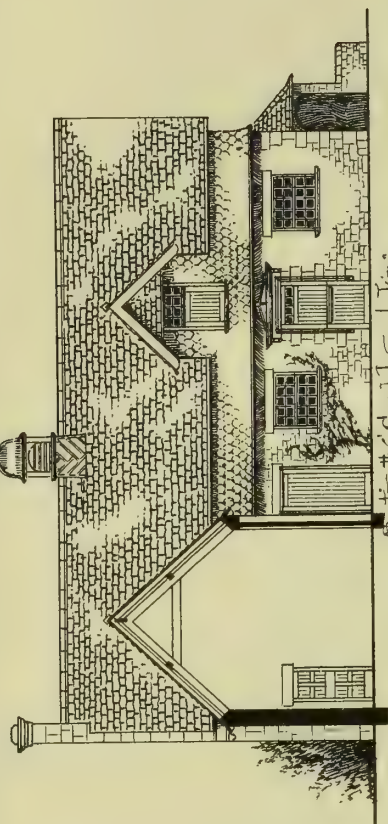


THE BUILDING NEWS, FEB. 21. 1890.

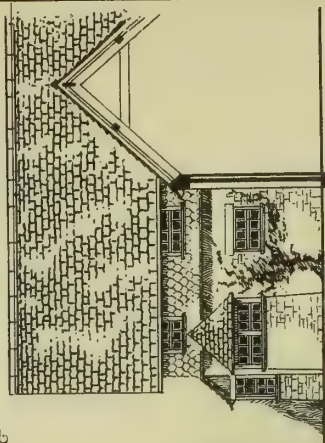
## DESIGN PLACED SECOND



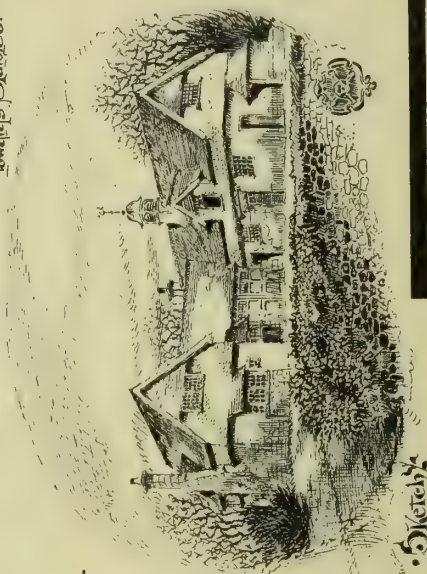
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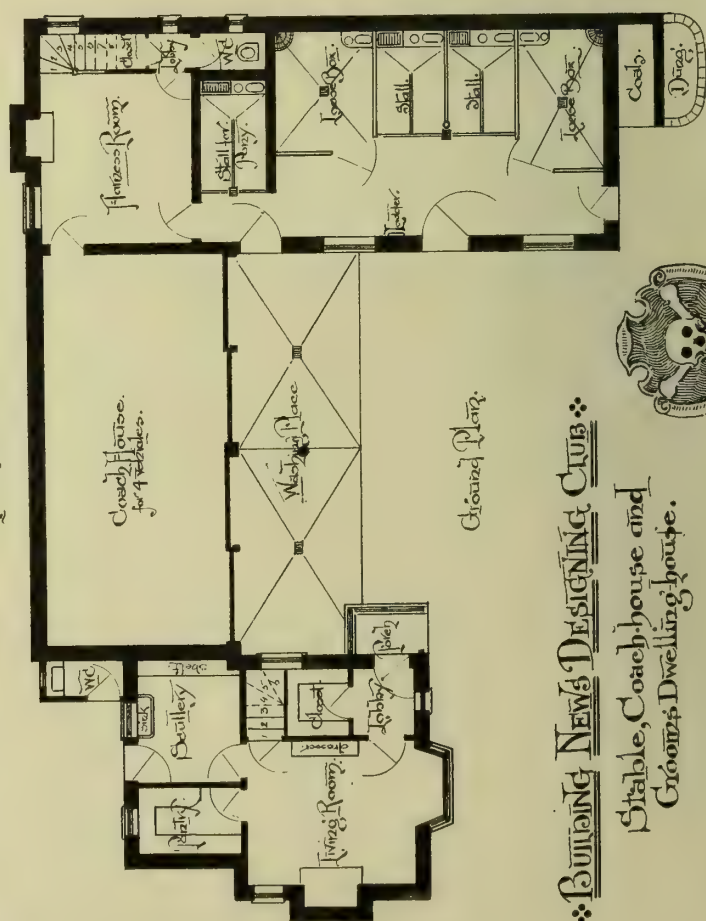
Direction th<sup>t</sup> Coach-house looking  
towards Stable.



Section 170 Coach-house looking  
towards Dwelling-house.

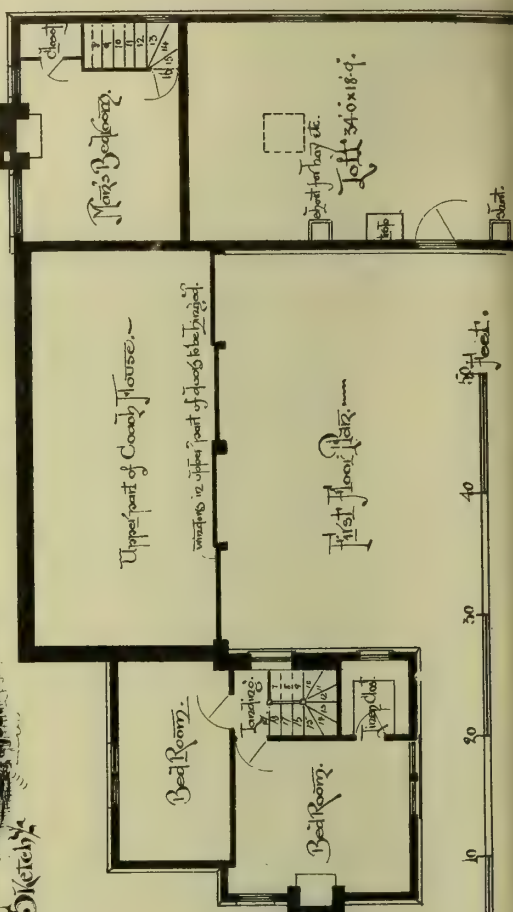


Sketch 2/2



# Building News Designing Club

Stable, Coach-house and  
Grooms Dwelling-house.







Ground Plan 30m.

# The Fox & Mounds

High St  
Sydenham

For E. W. White Esq. J. H. Smith, Archt.  
17 & 18 Basinghall St E.C.









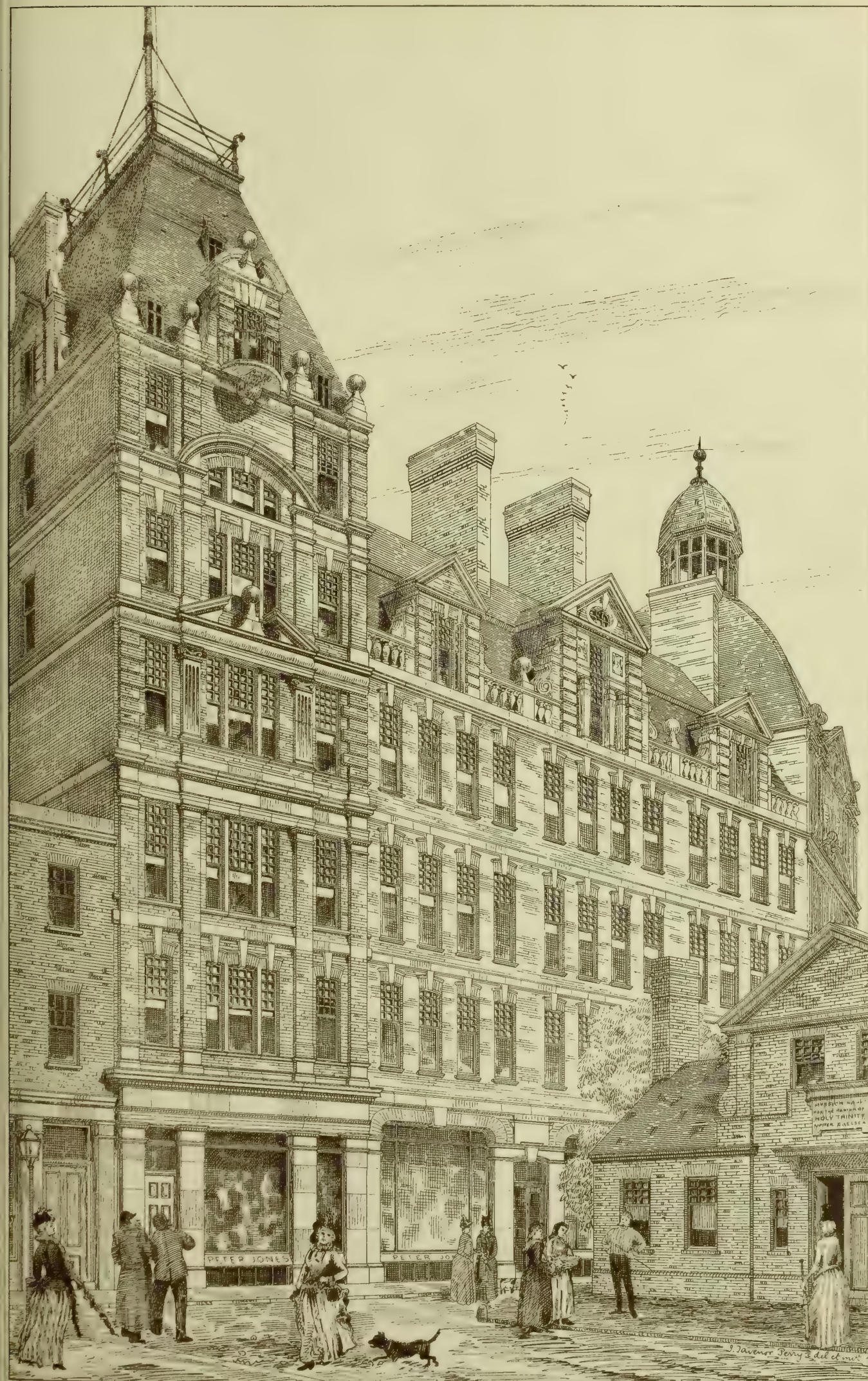


Photo lithographed & Printed by James Akerman 8 Queen Square W

BUSINESS PREMISES CHELSEA S.W. MESSRS DEDDY & DEED ARCHTS

















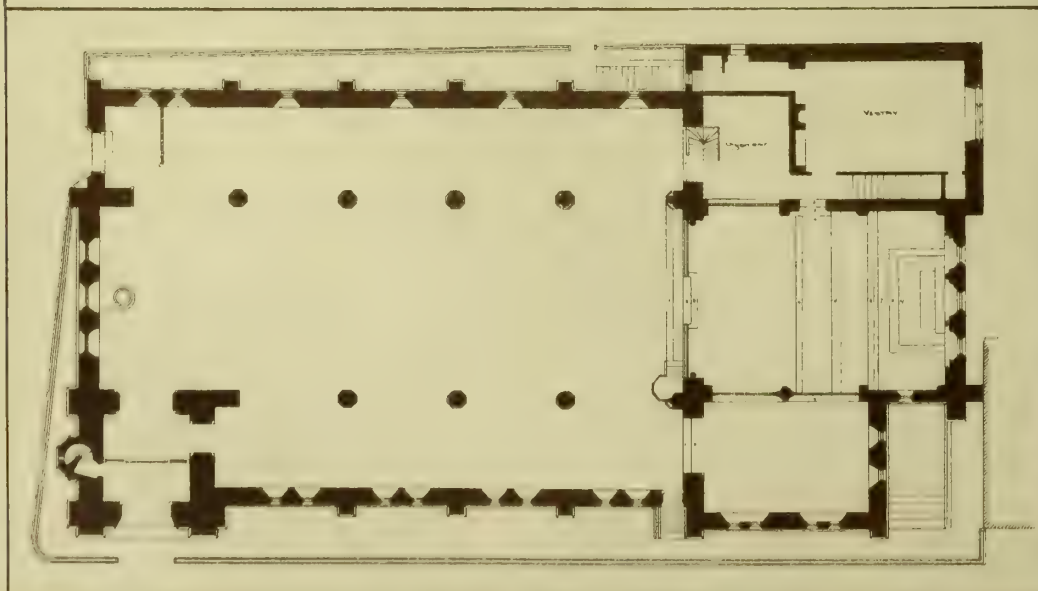












CHURCH OF S. JOHN



Feb. 21. 1890.



ST. MARY'S THE MARTYR : SUNDERLAND : — CHODGSON FOWLER, F.S.A., ARCHITECT.

Photo. lith. Deshpande & Co. Printed by James Alexander & Co. Queen's Square W.C.







# THE BUILDING NEWS

## AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1834.

FRIDAY, FEBRUARY 28, 1890.

### ARCHITECTS' ESTIMATES.

TO arrive at any intelligent idea of cost a certain amount of knowledge is requisite. It not only becomes necessary to know the market value of materials, but the manner they are to be employed, in order that the labour expended in the work, whatever it may be, can be valued. Ideas of cost, nevertheless, are almost as varied and numerous as ideas of design: they can be often summoned for the occasion—spring up, Minerva-like, in the brain of the zealous bidder, or can be produced on the shortest notice by some rule-of-thumb method, but which idea may be as far from the truth as the merest guess. The all-believing public imagine it to be as easy to find the cost of a building as the cost of any everyday article; therefore the man who can give them at a moment's notice an idea of cost is the more likely to suit them, than he who retires to his office to take out rough quantities before he feels justified in submitting a fair estimate of any given building. The rough-and-ready guesser at estimates may now and then make a near hit, but the chances are against him: the actual fact being that he has omitted something, or overlooked the state of the market. Another class of estimators derive their knowledge second-hand: they obtain a quotation from a tradesman or manufacturer, which often is an overbid on the assumption that there will be no competition, and in this manner they become the dupes of designing firms who desire to obtain the work. Estimating by cubing implies a large experience and ample data; we do not deny that with these two necessities an estimate prepared by it may be a reliable guide, as it certainly is a valuable verification and a means of establishing a scale of comparative values.

An architect's estimate ought to avoid the two extremes of high and low pricing. It should be the result of an independent inquiry as to cost of materials of the required quality, and the lowest possible cost of conversion of material in labour and expenses, including a fair profit. He ought not to assume on the one hand the reputation of any builder who generally tenders above the normal price, nor should he, on the other, believe that he will have tenders from men who will be glad to work at cost price. Let those who tender send in prices based on one or the other of these suppositions, for such differences constitute the marketable advantage to be derived from open tendering; but the adviser has no right to base his calculations on these probabilities. From what we see and gather of competitions amongst builders, it is too plain that architects are inclined to make the surmises we have suggested above, and base their estimates on the knowledge they have of local builders who are likely to tender. In this manner their estimates are either high or low, and a really "protecting" estimate is impossible. We often wonder at the differences between tenders for works of a special kind, as, for example, a conservatory or an iron structure; but when the manner in which the tenders have been obtained are considered, an explanation of the disparity is obvious. A general specification of what is required, with a very inadequately prepared set of drawings, is furnished of the building, for which engineers are requested to send in an estimate. Nothing is specified, and no details are furnished. The contracting firms prepare their own details and specification, and send

in estimates which vary to a considerable amount. Firms of established reputation will send in a price allowing for the best materials and construction; others of less standing will use their tact in reducing the sizes and dimensions of the various members to what they think sufficient, regarding chiefly the object of obtaining the contract at any risk. Hence the difference of tenders. How much is left to the contractor in the design and execution is obvious; he can afford to underbid his more responsible competitor for the work some 30 or 40 per cent., and obtains the contract. A great deal of very uncertain and unsatisfactory contract work is carried out in this way. Horticultural buildings, heating apparatus, laundry work, iron construction of all kinds, hydraulic balance lifts, and engineers' work generally—all classes of work, in fact, a little more special than ordinary building—are left to the contractor. We cannot be surprised at inferior workmanship, for the system leaves the contractor his own master, while the credit or discredit of the work falls on the architect. To insure fair tendering and good workmanship, the architect ought to supply detailed drawings and specifications, leaving as little as possible that will admit of any doubt or difference of interpretation. In this manner only can a fairly-priced tender be received, as it requires each competitor only to take out the quantities and affix his own prices. Mr. Ironcaster doubtless objects to the completeness of a design in all details, with a specification that has been written by one who knows what ironwork is, as his chances of winning by sending in a low tender are gone. So long as he was not tied to sizes and sections, he could do as he pleased, and try to turn out a satisfactory job in the bargain. Thus, in a large iron structure a slight reduction of size or design in the section of a bar or rib may make a difference of some thousands of pounds. The speculative contractor likes drawings to a small scale, and finds it profitable to deal with architects who do not specify in detail or too minutely. Clearness and precision are his greatest enemies, for he can make nothing out of them; on the contrary, he rejoices when he finds a confiding architect whose plans are imperfectly digested or ambiguously described. The other class of manufacturer, if asked to give a tender, likes to be supplied with an accurate bill of quantities, or, at least, a set of drawings and specifications that are complete so that he may affix his rates. Many contractors we know refuse in short to tender for anything unless a responsible surveyor has prepared quantities and they are fully made aware of the requirements. The mixing up of the two businesses of tenderer and designer is neither congenial nor business-like. If tenders are wanted, they should be invited on facts duly stated and clearly expressed.

From what has been said, it is obvious that estimating is now left very much to contractors. We mean that the profession are satisfied to obtain quotations from builders and engineers for any required work upon insufficient data, or a very rough specification. An estimate is regarded as a sort of speculative thing, depending on the financial position of the tenderer. This sort of estimation has been due to the want of more care in the preparation of architects' specifications, and the practice of depending entirely on builders' tenders. There are two methods of preparing estimates: One is to calculate the probable cost to the builder by taking out the quantities and weights of materials, affixing to them their proper marketable values, and estimating the actual time and labour in workmanship; the other method is to lump the materials and labour in a given item. The workmanship or time is not given in detail; but each trade is priced at finished rates. Thus, flooring and roofing will be so many squares, or yards—of

flooring and timbers in the first case, and timbering, boarding, and slating in the latter. In estimating such an item as iron columns, it will be so many columns at such and such a length and diameter, with bases and heads so many cwt. at so much per cwt. The weights are finished weights. The first method dissects the work as much as possible, the other collects the various labours and items. Through the want of some system, young architects fail as estimators. A course of quantity-taking is of great service as an analytical process; but it will not be of much value to anyone till he learns how to combine the items, and is master of the value of labour and materials. We believe it is through the want of knowing how to price that so many architects depend on builders' tenders. After all, very little knowledge of the cost and marketable price of such things as a rod of brickwork, a cubic foot of stone or timber, a superficial foot of inch deal, or a cwt. of cast iron in columns, is necessary to enable the architect to check the amount of tenders he receives. The study of builders' prices to bills is of much value in obtaining data of this sort, and a good schedule is all that is necessary with a fair knowledge of measuring drawings. We have known rough estimates, but very reliable ones, made by simply taking a very few lump quantities—the round of the walls by their height, deducting large openings only, to allow for stacks; taking the "squares" of flooring and roofing, the framed doors per foot super., the sashes and frames per foot super., the staircases per foot, and numbering other items of less importance. But to do this kind of rough-and-ready estimating with a degree of accuracy, it is necessary only to be acquainted with a few analyses of prices. One should know, for example, how a rod of brickwork is made up; how many bricks are required; how much lime and sand, and the price of each, besides the amount of labour required in building. The item also of cartage has to be taken into account. So with timber. The prime cost at the yard, the sawing and cutting, must be ascertained before the price per foot cube can be ascertained. The price of deal can only be known intelligently when one knows the prime cost per C., as the rule is simple which takes a penny for every £10, and a halfpenny for every £5. Thus, if the prime cost is £45 a C., the cost per foot superficial of inch deal will be 4½d., adding or deducting 1d. per foot for every ¼ in. difference in thickness. This rule includes profit. Knowing the items which constitute the unit of price like the rod reduced in brickwork, and the price per foot-cube of stone or timber, is half the battle in estimating. If prices fail one, the recollection of the separate items in the price, as that of the cost of bricks per thousand, the price of labour and mortar in a rod, or the prime cost of timber, sawing, and carting, is enough to recall the price approximately to the mind. At least it is the analysis or dissection of the unit of measurement that enables the architect to better remember the prices. A mere arbitrary price, if not forgotten, is likely to be altered. Having the prices of the principal items of building at command, the difficulty of estimating is much reduced. The value of being able to estimate approximately one's own design is not small. More care is usually expended on the design; there is little left for speculation or doubt. We should not hear of the complaints of quantity surveyors, who find fault with imperfect drawings and specifications, for a man who could make his own estimate would be more exact in statement, plans and details would be more complete, nor should we hear of the enormous differences that now appear in tenders. The architects' estimate, if only a guide and a check, is useful. Instead of tendering being the last operation, as it ought to be, it too



frequently is resorted to as a tentative means of finding out what a certain design will cost to carry out, and to save a lot of trouble in preparing details and specifications—a means, in short, of eliciting practical information from tradesmen and others. No wonder that under such circumstances tenders and designs are ominously associated in the minds of the public.

#### GALLERY CONSTRUCTION.

EVERY now and then we hear of the sudden fall of church galleries. A recent occurrence of this kind has happened at a Congregational chapel at Bromley, which, unhappily, resulted in the serious injury of several of the congregation. The gallery appears to have been crowded, and during the delivery of the sermon it suddenly gave way. In the absence of particulars, it is impossible to surmise the cause of the catastrophe, though it must be attributed to some fault in the construction. Many of our town churches are still fitted up with these means of accommodating the congregation, and in not a few of them the galleries contain a very large proportion of the total number of worshippers. It becomes, therefore, very necessary that they should be equal to the greatest strain likely to be put upon them, not as merely expedients for overflow provision. Notwithstanding the risks to which people are exposed in buildings having galleries, there is little or no guarantee of their safety. The London County Council regulations apply to theatres and safety against fire; but no provision is to be found about the safety of galleries in churches and chapels. Surely this is a defect in the present law which ought to be remedied. It would be easy to require certain requirements of construction to be complied with—that the scantlings of the timbers should be of certain size for certain spans and projection, and that every gallery should be tested for certain maximum loads. In London the only reference to be found to the construction of church galleries is that of section 30, cap. 122, where it states that every public building (including in that term a church or other place of public worship) shall have its walls, roofs, floors, galleries, and staircases “constructed in such manner as may be approved by the district surveyor,” which means only that the plans and sections of the said structure are to be submitted for approval. No definite rules of scantlings or details of framing are laid down, and practically any section which looks strong enough is passed, the main thing being that the walls, floors, and staircases are in accordance with the provisions of the Act. Public buildings, forming a class by themselves, are exempted from the statutory clauses in force for dwellings and warehouses, and section 56 merely requires, in the case of buildings to which the rules of the Act are inapplicable, that the builder give notice and deposit plans and sections with the district surveyor. The construction, therefore, of a church gallery is left to the Board to approve of. As a matter of fact, the details have not to comply with any particular rules, as in the case of walls of dwellings and warehouses, or as in the case of theatres, in which not only the drawings, but a specification of the works, describing the materials and the mode of construction, are required as may be necessary to enable the Council and its officers to judge whether the requirements have been complied with. In the case of buildings for public resort it is required also that the accommodation in the different parts of the house or room the area assigned to each person, which shall not be less than 1ft. 8in. by 1ft. 6in. in the gallery, is to be stated. Nothing of this sort is demanded of churches or chapels; they may be crowded with people, and their galleries be packed far beyond the safe limit. Now what is required for theatre

galleries ought to be necessary for those of churches. The least area assigned to each person in a gallery should be stated. The above dimensions give a superficial area of 2ft. 6in.; but for a church gallery 3ft. would be a more reasonable limit. When a popular preacher fills a place of worship the chances are this area of 2ft. 6in. is even reduced. For instance, the galleries at Spurgeon's Tabernacle, we believe, often have their maximum load, and the same may be said of many theatre galleries, which, further, have to bear the stress due to applause. Being on an incline, the load is somewhat reduced in the proportion of the rise to the horizontal; but there is a circumstance which ought to be taken into consideration. In gallery construction the inclined beams which carry the floor are made to rest on the wall behind, and in front upon a girder supported by columns. It is material how these bearings are made. If the inclined beam only rest on a corbelling or a plate, there is an oblique stress as well as a horizontal thrust; the latter is in proportion to the cosine of angle of inclination. By the former there is a tendency to slide or slip out of the wall which a heavy load will increase. A beam in an inclined position is much weakened by the load upon it. In the ordinary gallery it will be found that the horizontal thrust is nearly equal to the load distributed. If we apply the rule, the general expression of which in words is: Multiply the weight in pounds by the cosine of angle and by the distance of centre of gravity from lower end of beam, and divide product by height of beam at the wall end from the horizontal; we shall find what little difference there is. In many a gallery failure the sliding or horizontal stress has been one cause of the weakness. If the main girder is liable to become deflected by the horizontal thrust, there is considerable risk in a crowded gallery. The chief way of obviating the sliding or horizontal thrust is to frame the inclined beams into tie beams, and make them trusses for the cross bearers, or to introduce iron ties to restrain the feet of the inclined beams. A thrust outwards would cause many cast-iron pillars to snap or yield, owing to the cross strain that would be brought on them. There is also the risk of the pillars themselves being insufficient to carry the load. We often see two spindling looking pillars of cast-iron supporting a gallery front of the whole width of chapel, perhaps 30 to 40ft. wide. Each pillar would thus have to carry a load distributed of from 10ft. to 13ft. by the half-depth of gallery; if we say the area supported on one pillar is 60ft., and take 120lb. on every square foot, then each pillar will have to sustain about 3 tons 4cwt. So long, therefore, as galleries are necessary in places of worship, certain restrictions and rules become important. The safe load on each square foot, or, what is the same thing, the minimum area per person; the angle of inclination of gallery—the steeper it is the more the necessity for precaution; proper trusses or ties, scantlings of timber, and adequate pillars, are essential points for consideration in the design of every gallery. These are points, moreover, which ought to be made the subject of building legislation. The construction of galleries and roofs are as important as the walls of a public building, and their design and execution should be carefully examined and supervised.

One of the duties thus involved would be the testing of the iron pillars and girders. Many of the failures of these structures have been owing to imperfect castings and execution. In some instances the girder rests unequally upon the thin cap or flanges of the column, or the load is taken on the outer edge of the cap, causing the pressure to exercise a cross stress, instead of being perfectly vertical. Cast hollow columns, if not very accurately fixed, so as to take the load

vertically, are doubtful means of support, on account of the unequal thickness of one part or a defect in the iron, faults which can only be discovered by testing under conditions exactly similar to those they will be required to fulfil in the building.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of “Woodworking Machinery,” “A Handbook for Steam Users,” &c.

##### BRICK-CUTTING TABLES.

A VERY important point in connection with plastic brickmaking machinery is the cutting of the stream of clay into bricks after it has passed through the die of the moulding machine, and much ingenuity has been expended in this direction. The object to be attained is the cutting of the clay, whilst in motion, squarely across, so as to make an accurately-formed brick without wasting the clay or touching it with the hand. The plan almost universally pursued is to cut the clay by means of a series of vertical wires strained in a frame; these are either pulled through the clay, or the clay pushed through them, the bricks being delivered either at the side or end of the table. The inventor of the wire-cutting table in its improved form is Mr. Murray, of London, who introduced it some twenty-five years ago, and most of the tables now in use are based on this invention, although in America a series of knives attached to a fly-wheel or a number of revolving discs are sometimes used instead.

An improved form of brick-cutting table has been lately introduced by Messrs. John Whitehead and Co., of Preston, and this we illustrate by Fig. 8. The chief point claimed for it is, that the stream of clay as it comes on to the table is cut into the exact length required for a certain number of bricks without waste. This is effected as follows: The table is mounted on wheels, which run on two rails. The wires for cutting off the bricks are attached to a frame, which is rigidly connected with the carriage supporting the table. As the stream of clay issues from the die it eventually comes in contact with a vertical stop placed at the front end of the table, and pushes the table along the rails. The clay and the table then move at the same speed, and the stream of clay is divided squarely across into the length required for a certain number of bricks by a single wire at the rear of the table, actuated by a small lever placed under the hand of the attendant at the front end of the machine. The attendant now pulls the table towards him by the usual side-delivery action, which cuts the bricks, and deposits them on the boards without being handled. As the wires for cutting move with the table and the stream, the relative positions remain the same during the operation, thus securing a square cut. One of the supporting rollers, over which the stream of clay passes on its way to the table, is carried on a rocking lever, pivoted at its lower end, and as the gap which the clay has to bridge over increases, the supporting roller is shifted, so as to be always near the middle of the gap.

Our illustration, Fig. 9, represents an improved form of end-delivery brick-cutting table manufactured by Messrs. Clayton, Howlett, and Venables, of London. In this machine the table is worked by a lever action, and it is claimed for this arrangement that it is simple and better than a rack-and-pinion motion, and that the operator can cut and deliver the bricks on the barrow without moving his position. The bricks can be pushed forward on the board instead of lifted, and any thickness of bricks can be cut by a change of strain bars, which is readily effected. It can be used in conjunction with any kind of wire-cutting machine.

After the bricks or pipes are cut on the table, it is important that they are handled or shaken as little as possible, so as to avoid spoiling their shape. They are usually conveyed to the drying shed on bearing-off barrows, or trucks, or conveyor belts. If the former are used they should be mounted on springs, and wheeling plates should be laid down to insure a smooth road and avoid shaking. If boys are employed, trucks may often be used with advantage instead of barrows, as there is less danger of upsetting. In large works, where the semi-plastic process is in use, belt conveyors will effect a considerable



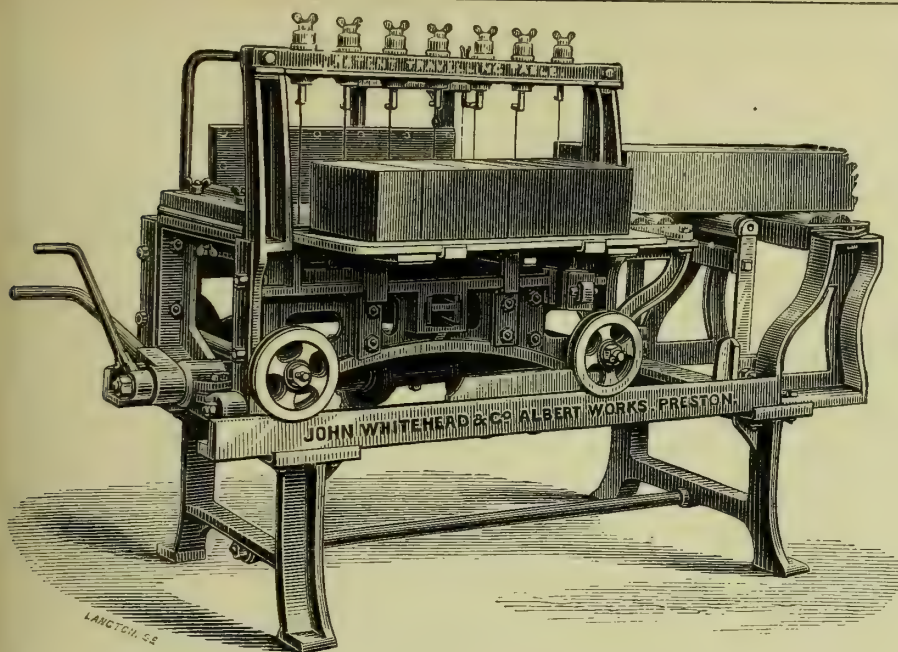


FIG. 8.

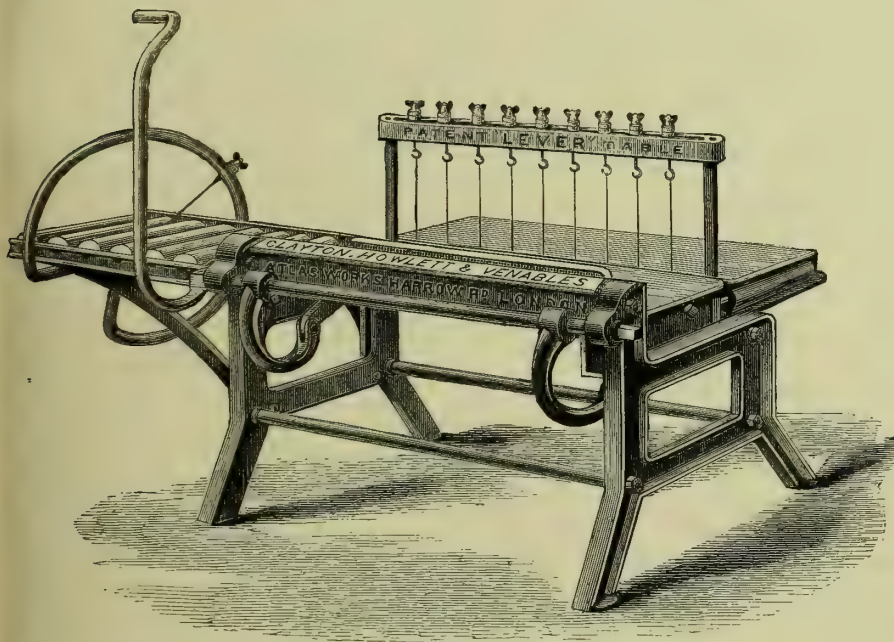


FIG. 9.

saving over hand-labour, as the clay is made into bricks always at one or more fixed points, and is sufficiently stiff to stand the journey by the conveyor to the drying shed or kilns without damage, and if the conveyors are well arranged very little handling will be necessary. In fields where hand-making is in vogue, and moulding is in operation at numerous points, they cannot be so readily applied.

#### DRAIN-PIPE AND TILE-MAKING MACHINES.

As the manufacture of roofing-tiles and small pipes is usually combined in one machine, we propose to notice them under one head. Owing to their thinness, to make good pipes and tiles, it is necessary that the clay should be of better quality than the ordinary brick clay, and more care taken in its preparation. It should be entirely free from stones, lime, and foreign substances, or the pipes, &c., will burst in the burning. The clay is usually prepared in the same fashion as for making ordinary plastic bricks; at after its passage through the pug-mill, it is screened and freed from stones, &c., by being forced through a perforated metallic plate. By fitting screens and altering the dies, small pipes or land drainage, &c., can be made by ordinary iron-cutting, brick-moulding machines; but for large pipes a special form of machine is necessary, and when a number of small pipes are required, a machine especially designed for pipe-making is to be preferred.

We illustrate herewith Fig. 10, a direct-acting steam-machine manufactured by Messrs. John Whitehead and Co., of Preston. It is especially adapted for the manufacture of socketed sanitary pipes. The chief novelty in the machine is Robinson's patent ventilating die, by means of which three pipes can be made at the same time. Fig. 10 gives an elevation of the machine and table; the top cylinder is a steam cylinder which operates a ram working in the bottom or clay cylinder. It has a metallic piston fitted with three steel rods, which are attached to the ram. The pipes as made are received by a rising and falling table placed immediately below the die at the bottom of the clay cylinder. The die is made of one solid piece of metal, and is without flaps; provision is made for the free flow of air to and from its interior. The clay cylinder is fitted with an expanding mouthpiece at the bottom, by means of which pipes of large diameters can be made. The dies for both small and large pipes are attached to this mouthpiece. Three pipes of the smaller sizes can be made at the same time.

Mr. W. Johnson, of Castleton Foundry, Leeds, constructs a horizontal machine (Julius Whitehead's Patent) for making large solid socket-pipes. The machine is self-contained, and fixed a little below the surface of the ground. The feeding and die part of the machine are on the same level, and immediately under the eye of the attendant. The clay is forced through the die by a steam cylinder and ram in the usual manner.

Messrs. Bradley and Craven, of Wakefield, manufacture a very simple and effective steam machine for the manufacture of large sanitary pipes. In this machine the steam acts directly in pressing the clay into and through the dies which form the socket and pipe, and the socket is made solid on the pipe at the same operation. The steam and clay cylinders are arranged vertically at the top and bottom respectively of an intermediate frame, which rests on supporting beams. The clay piston is attached to the steam piston by three rods, and forces the clay into the dies which form the socket and pipe, and are attached to the bottom of the clay cylinder. The steam-valve is operated by means of a hand-

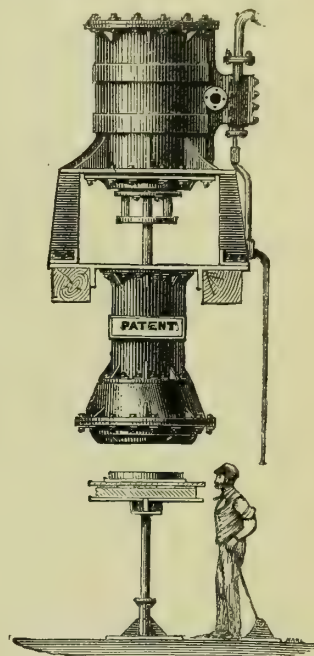


FIG. 10.

lever, and another lever opens and closes the socketing. The method of working is as follows:—The ground clay is fed into the clay cylinder, and when this is filled the steam-valve is opened and the clay piston descends and presses the clay into the socketing die, which has been previously closed by means of the lever, and the socket and a portion of the pipe are formed, the exuding of a small stream of clay from an escape-hole indicating when the operation has been properly completed. The steam pressure is then taken off to allow of the socketing die being opened and the socket to pass out of it. Steam is again put on, and completes the pipe, which descends, socket first, on to a table beneath. The table is arranged to rise or fall as required, and regulates the length of the pipe being made. In addition to ordinary circular pipes, oval or egg-shaped pipes, ridge tiles, &c., can be made with equal facility.

For the manufacture of encaustic tiles various forms of pressure machines are employed, but we must defer our notice of them to another occasion.

#### THE SOCIETY OF ARCHITECTS.

AN ordinary meeting of the Society of Architects was held at St. James's Hall, Piccadilly, on Tuesday evening, Mr. E. Clerk Allam, vice-president, in the chair. The following members were announced to be duly elected by ballot: Anton Anselmus Andries, of Johannesburg, S.A.R.; William Joseph Jennings, Canterbury; and John Stalker, 31, Stramongate, Kendal.

#### THE PHYSIOLOGICAL BASIS OF THE SENSE OF BEAUTY OF FORM.

Mr. Albert Goodman read the following paper, which was illustrated by numerous diagrams, on this subject. Some may, the lecturer remarked, have a difficulty in abstracting the idea of form from that of colour. Turner's pictures especially excel by reason of their colouring. Yet a skilful engraver can entirely dispense with that element and still produce a copy of one of them which conveys many of the artistic merits of the



original. Apart from connection of ideas with regard to his subject and beauty of texture in his material, the sculptor has little besides beauty of form to depend upon. This connection of ideas is apt, more than we are aware of, to obscure many of our finer artistic feelings. To arrive at the correct estimate of the art-beauty of any form, we should choose some object that does not in our mind connect itself with the idea of an especial use or purpose. It is difficult entirely to fulfil this condition. Perhaps a beautiful vase is as good an object as any for practical experiment in analysing sensations as to beauty of form. A design intended solely for ornament would do still better, being in itself far more free from any connection of ideas of use. But an ornament bears relation to those surrounding forms and outlines, apart from which it would not have been designed; nor can it be considered properly or to such advantage when isolated. But in looking at any art-form the eye, and the eye alone, is concerned in transmitting to the brain, or producing in the mind, the consciousness of the particular form observed. The eye, like a machine, acts upon the art object which may be instructively thought of as the raw material, while the sensation of beauty may be regarded as the manufactured article. To vary the metaphor, the eye is the interpreter between the object and the mind, and he who would have his message properly conveyed must so arrange it as to be within the powers of the interpreter. To do this he must know the limit and range of those powers. In purely optical questions the eye is generally considered apart from the muscles which guide it, and is thought of as a system of lenses which project a picture upon the retina on the inner surface of the globe of the eye opposite the pupil. That the picture is there, and that some sort of an impression is conveyed to the mind by the mere fact of its being there, is not to be denied, but that any impression approaching in delicacy to an art-sensation can be produced while the eye is unmoved, is not to be believed; and such an idea is negated by the very structure of the retina itself, which shows that the continuous and varied use of the eye-muscles is a necessity for acute vision. Although like a globe in actual shape, the eye may be fitly likened to a photographic camera. The camera has compound lenses, so has the eye. Both have a focussing apparatus; the camera has a piece of ground glass at the back, and the eye has a retina to receive the image. On the ground glass the photographer rules some lines in pencil to show the limit of accurate definition, and the intersection of two diagonal ones indicates the point where he intends that the most important part of the picture shall be brought by the adjustment of the camera, and where he will place the sensitive plate to receive it. The retina of the eye has just such another point or spot, vision being there most acute. When any object is carefully examined or examined at all, or perhaps one may say even looked at or consciously noticed, the eye is so moved as to bring in succession upon the sensitive spot each part of the image of the object that is engaging the attention. These eye movements are produced by the eye-muscles and are instinctively performed. Impressions are conveyed without any muscular action to the brain by means of the optic nerve; these impressions are very vivid as regards colour and amount of light, but in the particular matter of appreciation of art-form, a retina rigidly fixed seems to have little or no power; indeed, the ordinary appreciation of form is not nearly so acute as we are apt to imagine. Until instantaneous photography came in, artists had failed, after generations of observation, to obtain a correct idea of the shape of a flash of lightning. For, although the effect through the optic nerve was most intense and lasting, such is the inconceivable shortness of the time that even the excessive rapidity of the eye-muscles could have no effect whatever in conveying an exact appreciation of the form by bringing the outline of the flash successively on to the sensitive spot. Now that we are familiar with these photographs, we can easily persuade ourselves that we can now see distinctly and correctly that which we failed to see in years gone by. We have then to consider how the muscles of the eye, like the arms of the photographer adjusting the camera, so move the globe of the eye as to cause each part of the image of the outline examined to pass over the sensitive spot. When a blind man endeavours to obtain an idea of the shape of an object, he moves his hands along its outlines

by means of the muscle of his arms. If the object were moved by another person so that it touched the blind man's hand, no impression of form would be conveyed to the blind man's brain. Now the image upon the retina of the eye is like a little model of the outline of the object, and this model is within reach of the sensitive spot; and the sensitive spot, like the hand of the blind man, is moved along the image by means of the eye-muscles. It is our purpose to consider the nature of these sensations of the eye-muscles. As a rule we use our two eyes in combination; but there is no reason to suppose that for artistic purposes a single eye would not be able to derive similar artistic pleasure from art-forms. Indeed, the flatness of pictures not being considered a drawback to them almost proves this. It will be best to consider the action of one eye alone, remembering that in whatever manner the muscles of one eye are moving, the corresponding ones of the other eye are moving in just the reverse way. Of the six muscles which move the eye, four are called the recti and the remaining two are called the oblique. The four recti consist of two pairs, and the two oblique are also a pair; thus making three pairs. The superior rectus pulls the eye so as to aim it upwards; thus in looking at a vertical line this muscle would move the eye upwards, and its pair, the inferior rectus, would pull it downwards, one resting, while the other worked. The external rectus moves the eye along horizontal lines, and its companion, the internal rectus, pulls it also horizontally in the reverse direction. The superior rectus and the inferior rectus may, for convenience sake, be called the vertical muscles, and the external and internal recti may be called the horizontal muscles. For working upon all oblique lines one horizontal muscle and one vertical muscle act in combination, and the same is true as respects all curved lines. Having made these broad statements, which lead up to the solution of salient problems connected with vision, certain corrections must be added which may enable us to solve some of the more recondite points connected with art sensations. It is not strictly true of all these muscles that each one acts in exact opposition to its companion. But, as with most muscles in other parts of the body, the vertical muscles slightly miss of this. Greater steadiness of movement in a joint results from the additional action of a third muscle, however weak it may be, provided that it pulls in a slightly different direction; just as a flag-staff is more steadily raised or lowered by three cords instead of two. The eye, although not a joint, moves in a socket, and is no exception to the rule we have mentioned. The oblique muscle seems primarily and almost entirely designed for steadying the eye during all the movements to which it is liable. As this goes on without intermission, and as this seems to be their especial function, we will not take account of them for our present purpose, except as regards one class of line—namely, vertical ones; these cannot be followed by a vertical muscle alone, but it calls in the assistance of one of the oblique muscles, which fact must be borne in mind, when examining the art-properties of perpendicular or nearly perpendicular lines. The knowledge of the peculiar action of these eye-muscles when used in observing straight and curved lines placed in certain positions with regard to the horizon will help us to account for some of the otherwise inexplicable phenomena of visual and artistic sense; why, for instance, the moon looks smaller when in the sky than when near the horizon; why a man, say 200ft. distant, on a tower appears far smaller than the same man standing at the same distance on the level road; why an oval is more pleasurable to look at than a circle; why a square held vertically appears higher than it is wide; why a square placed with its side obliquely to the horizon produces a different mental impression than that produced by the same figure placed in the first position; why certain arrangements of lines are visually delusive; why certain races of men have consistently for many ages preferred certain curves and arrangements of lines which find little favour with other races; why the individuals of every race have certain differences of taste from their relations and neighbours, although subject to exactly similar mental training. Little has been done to solve these points, except upon the lines that visual impressions as to form have some intimate relationship to the movements of the muscles which guide the eye. Of the fact that certain motions are pleasurable to the muscles

while other motions differing slightly are not pleasurable, we have many instances. Certain arrangements of muscles render certain motions enjoyable, while another arrangement renders those motions distasteful. When we wave our farewells to our friends, our hands move in ovals, not in circles. The grindstone and the treadmill for the man, and the mill for the horse, are proverbially unenjoyable. In short, all pleasurable muscular movements have a certain character, and all tedious movements possess another character. Change and variety, exercise and rest, are necessary for each individual muscle, if it is to be a source of pleasure to its owner. Even human eyes do not seem primarily constructed to produce artistic pleasure, but art adapts itself to the construction of the eye. But while art adapts itself to the eye, the eye trains itself to appreciate art. The trained eye of the artist can readily detect if an art object will give lasting pleasure to the ordinary man, or whether it will only give temporary pleasure. At a glance he can estimate that which the public takes a decade to experience. But the public is, for a time, pleased with anything which has a certain mixture of novelty from and resemblance to that which, just at that epoch, happens to be familiar to their eyes. Artists—and in that term I include all architects—have to appreciate this, and act accordingly. But architects especially should never forget that behind and above all this there is a right and wrong in art-forms, and that the public is really trusting to them to keep this standard in mind, and not to depart from it more than is needful. The stronger our belief that there is such a standard of right and wrong in art, the more we shall search for it, and the nearer we shall attain to it. Why should art be on a less assured footing than is music? And if the very natural question be put, "Of what practical use is a physiological theory as to the art-sensations of form?" it may be said, in reply, that this subject holds the same relationship to art as the science of air vibrations and the construction of the human ear does to music. The identification of certain rapidities of vibration with certain musical notes, and the responsive action of certain parts of the ear to those vibrations, may not directly help a great composer in the remotest degree. Yet music, being placed upon the assured foundation of scientific consistency, reaps an advantage from it in many other ways. Ruskin has from his own point of view felt the need of bringing art nearer to the fraternity of the more exact sciences; and that which masterly use of language can effect he has effected. Vague generalities have for ever been banished by his magic wand; and he has supplied thought far more exact and fruitful, and ideas which serve as great encouragements to the young artist, who delights to find that his own artistic instincts are in agreement with his great predecessors, and are consistent with immutable laws common to all ages. If, therefore, we can to any extent explain the mode in which sensations are produced in the brain when the eye falls upon an object of art, we shall go far to place art itself upon a more assured footing in the public estimation. Beyond this, we shall have a better means of properly estimating, at all events intellectually, the artistic merits of the art productions of other races of mankind. The practical application of these theories will be less tedious than the consideration of the theory itself. It is interesting to take certain art-forms and draw their outlines in colours or any other diagrammatic way which will show the especial muscles used as each part of the object is brought upon the sensitive spot of the retina of the eye. Let two colours, say red and yellow, represent the use of one of those two which we have termed the vertical muscles—namely, red for the superior rectus, and yellow for the inferior rectus. Let brown and green represent the use of the horizontal muscles—namely, brown for the external (say the right) rectus, and green for the internal rectus. Blue and black may be used for the superior and inferior oblique muscles. One eye alone, say the right, is taken into account; and that eye is supposed to be going round in a certain direction, say with the clock. First, take a square placed with its sides horizontally and vertically. This figure thus placed alternately employs a single muscle and then two in conjunction. The whole of the bottom line is green, showing that the internal rectus is alone employed upon that line. The left vertical line is



red, showing that the superior rectus does nearly all the work, the top line is brown, and the downward line yellow. Thus each of the four great muscles work apart from the other four—and every muscle rests three times as long as it works. The horizontal muscles work alone, but this they are the better able to do, being relatively strong. The vertical muscles are weak, but, receiving a little help from the oblique, they are thus slightly but not much more worked when looking at the square than are the horizontal muscles. That they are a little overworked is brought about by the fact that a square thus placed looks to be higher than it is wide. This may not be readily detected, but careful trial will prove it. Man's easy range of vision, even with one eye, is more extensive horizontally than vertically. Hence the outline of the majority of pictures, especially large ones, is greater in that direction: not that the four straight lines which inclose a picture are for the purpose of inducing the eye to travel over them continuously, but they inclose an area over all parts of which the eye may pleasantly range. In the light of these ideas we can well understand that a vertical line will be more apt to be objectionable when unduly prolonged than will a horizontal one. Hence a dado will be an improvement in a high room, but may be inappropriate to a low one, and a wall paper with vertical lines will be more suitable to a low than to a high room. Now place the same square with its sides at 45° with the vertical, and notice the great difference in its effect upon the mind. We hardly recognise it as the same figure. We now think of it as more resembling the diamond shape. Beginning at the bottom, the first line is an equal admixture of red and green, the next of red and brown, then brown and yellow, then yellow and green. In this case every muscle when working does half the work; and each muscle works half the time and rests half. The whole effect may be said to be fairly good artistically, certainly better than when the square is otherwise placed. Without the muscular explanation as to why the same figure produces a different mental impression when varied in its position relative to the vertical we should have been at a complete loss, as we have nothing analogous to this in purely mental operations. The colour representation of the muscular action when used upon the circular image projected by the sense of the eye upon the retina shows that each muscle gradually commences to act and stops equally gradually, and that no two muscles stop or start together; hence there is no particular point at which the eye can stop and reverse its action, or where it can easily glance off for the purpose of working upon other parts of the object, or the building, picture, or design, as the case may be. Hence there is no figure which tires the eye so much as does the circle. The circle is, however, an extremely useful figure when used as an ornament; for it, as it were, entraps the eye, and is thus able to divert it from other lines which are inartistic. When used for this purpose it should subtend a small angle, as in this case it is not nearly so wearisome to the eye as when the circle appears large; for it is not so much what the muscles have to do which fatigues them as the number of degrees through which they have to move the globe of the eye. Thus a circle should either be small, or only a portion of the whole 360° should be used. Hence the so-called Norman arch, whether stilted or otherwise, although consisting of as much as 180° of the circle, has an entirely different effect according to whether the arch is large or small relatively to the whole design. The oval, whichever way placed, presents, of course, somewhat the same features as the circle; with the exception that the relative proportion of rest and work of each muscle is different. It is, therefore, more pleasing as an ornament, but less forcible when so used, because the eye can leave it with more facility. It is, therefore, best used in close combination with other lines. But let us return to the circle, or rather the parts of the circle, for that curve is *par excellence* the one with which civilised architecture has to deal. The poor we have always with us, and also the compass and straight-edge. The civilised arts must ever chiefly avail themselves of such curves as the compass can produce. And in this necessity lies the great distinction, so far as art is concerned, between the architect and the artist of sculpture. However grand and beautiful may be the conceptions of the architect, only such of

them can be utilised as can be conveyed to another mind by means of straight lines, angles, and curves, which can be measured and reproduced by simple instruments. The compass is, therefore, the architect's necessity, and his endeavour should be to render it a useful slave rather than a tyrannical master. Mr. Goodman showed in detail and by references to examples how the particular curves and ornaments given to arches furnish the chief character of each style of architecture. Had there been no racial difference in art forms, the muscular theory would have been very one-sided and incomplete, however strong it might be against any other theory; but wherever a homogeneous race of men is found, there is also a distinct style of art. The gradual mixture of races, in some countries, confuses and obscures these differences of style. Conquered races generally receive an admixture of the blood of their conquerors, and hence cease to be homogeneous in their race and also in their art-forms, for the influence of the conquering race will be detected for an indefinite period after such an admixture. A closed and irregular figure, such as a vase, by the breaks in the line of any one colour, indicating the use of one muscle, better illustrates the successive and the proportionate work and rest of the muscles in a good art form than will the more geometric forms we have been considering. Any artistic picture, whether inclosed in four lines or otherwise, may in like manner be considered as a complex and interlocked system of outlines, so arranged by the artist that the eye of the observer is pleasantly exercised thereby, as, with inconceivable variety and rapidity, it travels in all directions, leaving no part of the picture unvisited. In a picture, although not coloured, gradations and alternations of light and shade take the place of outlines. But the addition of these new elements, and also the more complex one of colour, while they add to the intricacy of the subject, also add to its interest and importance. Although for our present purpose we speak of outlines only, and also speak of those outlines as though they were hard lines, yet a graduated shade, or the line of contact of two colours, is for our purpose virtually an outline, its attractive force to the eye being according to the difference between the two colourings or the abruptness of the change of shade. According to the same theory which we are considering, the principles of ornamentation are not far to seek. The general effect of any structure may be, or may not be, pleasing to the eye. If it be pleasing, it will require no ornament. If it be unpleasing, ornament becomes a necessity. But this is putting the matter in far too bald a manner when applied to an important work of art, such as a large building. And for this reason: the whole of such a building can never be seen at any one time; and every part will be looked at from a variety of distances. The influence of distance upon any line, as to the effect on the eye, is of great importance. Relative size of lines in art is self-evidently of supreme importance, as the whole thing depends upon that; but actual size, although all other parts are increased or decreased in the same proportion, is also of much consequence. It is an entirely different thing to the eye, whether it looks at a large circle or a small one, or, which comes to the same thing, whether the circle it looks at is near to or far off. A building, looked at from a certain distance, may require no decoration, but when viewed nearer may be ugly, unless that ugliness be corrected by decorative additions, or by slight or harmless modifications of the structure. When the eye is so close to a wall that no part of the structure of the wall is seen, the texture of the external substance of the wall acts as a decoration by giving the eye fit employment. On stepping farther back the texture is lost sight of, and at this point some structural lines, such as the joints of the stones, comes into view. But if texture is lost sight of before some such structural lines employ the eye, the wall must be decorated, and the size of the pattern of this decoration must be such as to employ the retreating eye until the observer can catch sight of some structure or ornament. Thus the wall-paper of a large room must have a larger pattern (supposing panels or dados, &c., are not used) than one employed for a small room. But let us imagine the observer to be so far away that some portion of the structure does catch his eye: at this point all texture and small decoration lose significance, and ornament may be needed—but

only in case of the lines of the structure then in sight not happening to be such as would please the eye. In that case an ornament becomes needful; but this must not be such as will arrest the eye when the eye is at such a distance as to allow of a more comprehensive view of the whole structure. To sum the matter up in a sentence: When the form of any structure is not pleasing to the eye, that is an evil which should be remedied as far as possible by ornament; but if the remedy does not cease to have visual effect at the distance at which the evil is lost sight of, then such ornament becomes an evil, and the remedy may prove worse than the disease. I have endeavoured to place the whole subject before you in its broad and comprehensive form. Hence I have not attempted extreme exactness in anatomically describing the combined action of all the six eye muscles. But you will find that the differences between anatomists as to these matters leave our theory unaffected. And had we still further simplified the matter by only taking into consideration one of the horizontal muscles, together with one of the vertical or even the superior oblique and the external rectus, and examined the effects upon those alone, most of the points we have noticed would have been brought out nearly, if not quite as well. I cannot now deal with the more fascinating part of my subject, which consists in the application of the muscular theory to details of ornament, such as to the exact sizes of circles, to the proportions of ellipses, spirals, quick and slow curves combined, contrasted curves, zigzags, angles acute and obtuse, checkered work, the inclination of roofs and spires, &c.

At the close, Mr. W. H. SETH-SMITH, ex-president, proposed a vote of thanks to Mr. Goodman, which was seconded by Mr. H. ROUMIEU GOUGH, past-president, and supported by Messrs. S. C. JOHNS and W. ALLPORT, and the Rev. S. O'BRYEN.

#### BOOKS RECEIVED.

*Laxton's Builders' Price Book* for 1890, seventy-third edition (London: Kelly and Co.), is well up to date, the prices show no tendency to fall, and advancing rates in several trades are anticipated. The new edition is noticeable for the attention paid to specialities in every branch. Electric lighting, sanitary inventions, new decorative materials, improved locks, machine-made joinery, American and Stockholm goods, wood-working machines, and a variety of other developments of building industries are treated and the prices quoted. Some useful advice is given upon sanitary work, though, of course, on matters of this kind opinions will differ. Reference is made to the upward tendency in the iron market; and the volume contains the usual notes and decisions of cases bearing on the Metropolitan Building Act, the text of the Act, by-laws of the County Council, regulations, brand marks, and other information of a general kind, of which all students of Laxton are familiar.

#### ZINC CEILINGS.

THE large use of zinc and sheet metal for architectural ornamentation in America and Australia is one of the notable facts which the records of contemporary buildings in those countries brings to our notice. Cornices, window dressings, Mansard and other roofs, dormers, and ornaments are largely formed of sheet metal, fixed upon brackets to the walls, or otherwise secured to the structure. Unfortunately, we have no definite information as to the durability of this sort of architectural decoration, though, judging from English experience of metalwork and zinc applied externally, there is little promise of the permanence of these appliances. In Sydney zinc appears to be used for ornamental ceilings, and a ceiling of this kind on a rather large scale has been recently fixed in an hotel dining-hall at Sydney, which for richness of ornamentation and "beauty of design" is said to be unrivalled. The ceiling is divided into 15 deep and rich panels, "handsomely decorated and gilded." The chief advantages of a zinc ceiling are that it can be soon fixed without dirt, and is a comparatively light material. Certainly, its internal employment is more likely to be a success than its external application. The metal can be moulded into panels or coffers, and fixed up in large pieces, and the material can be decorated or gilded. Moulded zinc cornices can be fixed *in situ*. The



acoustical properties of the material is a point that has to be tested. One thing in its favour is its durability. We are not aware that metal ceilings have been employed in this country to any extent, though there are many substitutes for plaster. One question is the fixing of the sheets, and the allowance to be made for expansion and contraction. To cover old ceilings, or to prevent the appearance of cracks, the metal ceiling is well adapted, as the sheets can be easily fixed, care being taken to prevent the unpleasant rattling of the sheets from vibration or shaking of the floor.

PRACTICAL ARCHITECTURE WITH  
DETAILED ESTIMATES.—LXII.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.

BELL TURRET (Continued).

ft. in.	ft. in.	
52	9 39 0	3in. W.I. bolt.
52	1 52	H. N. and W.
2	4 9 6	2 5 Fir-framed.
2	4 9 2 0	19 0 Planing to fir and S. S. and V.
2	20 3 2 0	81 0 Add.
2	20 3 2 6	101 3 Add.
10	3 6 2 0	70 0 Add.
8	6 0 1 4	64 0 Add.
1	1	18in. diameter bell, of good tone, Messrs. Warner's manufacture, and hanging where directed, with all necessary gear and fittings, 3in. gal. iron chain and rope to ring from ground, about 52ft. from floor level.

PLASTERER.—CEILINGS.—FIRST FLOOR.

2	48 9 15 9	1535 8	L. P. F. and S., and twice white ceilings in panels to girls' school.
4 1/2	3 0 3 6	24 6	Deduct do. for angle chimney-breast.
2	3 4 4 2	27 9	Deduct do. for turret.
4	4 1 4 11	80 4	Add for do.
	3 10 3 10	14 8	Add ceiling.
	1 6 1 6	2 3	Deduct do. for ventilator.

GROUND FLOOR.

15 9 15 0	236 3	L. P. F. S. and twice whitened ceiling, lavatory, &c.
6 0 1 9	10 6	Deduct do.
5 2 1 9	9 1	Add cloaks.
15 0 20 0	300 0	
4 6 4 1/2	1 8	Deduct do. chimney-breast.
50 6 22 0	1111 0	Add boys' schoolroom.
37 6 9	28 2	Add do.
2 15 0 20 6	615 0	Add classroom.
19 0 20 6	389 6	
2 3 9 3 9	28 2	Deduct do. for chimney-breast.
4 6 1 2	5 3	Deduct do.
15 0 10 9	161 3	Add lavatory.
15 0 20 0	300 0	Add cloaks.
10 0 8 9	87 6	Deduct do. for stairs.
2 15 0 9 6	285 0	Add porches.
2 15 6 31 0		Deal moulding out of 4 3/4in. by 3in. spiked to wall-plate.
2 2 4		Scribed ends.
2 15 6	15 0	4 C.

WALLS.—FIRST FLOOR.

74 0 13 6	999 0	R. F. S. and twice distemper as approved tint Kindergarten.
2 1/2 5 9 5 9	33 1	Deduct do.
2 5 9 4	46 0	Add cupboard.
15 0 1 0	15 0	
2 1 2 13 6	31 6	Add chimney breast.
99 6 13 9	1308 2	Add girls' school.

2 1/2 22 0 12 0	264 0	Add gables.
4 2 7 6 60 0		R. F. S. and twice distemper 5in. wide to recesses.
4 4 6 18 0		Cir. do. to soffit.
4 2 7 6 60 0		Keene's cement angle and arris to recesses.
4 4 6 18 0		Cir. do.
4 4 4 17 4		Portland cement, rendering 5in. W. to recess.
2 23 3 13 0	604 6	R. F. and S., and twice distemper class-room.
4 10 6 13 0	546 0	Add.
49 0 13 0	637 0	Add.

11 13 0	11 11	Add.
2 3 13 0	29 3	Add chimney-breast.
1 6 13 0	19 6	
4 8 6 34 0		Keene's cement, angle and arris.
39 9 13 6	536 8	R. F. S. and twice distemper teachers' room.
3 6 13 6	47 3	
9 3 13 6	124 11	Add w.c.
39 0 3 6	526 6	F.F. and twice distemper stairs.
1 5 9 5 9	33 1	Deduct do.
2 8 6 13 6	229 6	F.F. and twice distemper landing.
3 6 13 6	47 3	
2 7 6 4 6	67 6	R. F. S. and twice distemper in cupboard.
15 0 1 0	15 0	Add do.
1 15 0 8 9	262 6	L. P. F. S. and twice white partition in cupboard.
2 15 0 7 3	217 6	Add do.
13 0 12 6	175 6	Add w.c.
2 6 6 13 0		R.F.S. and twice distemper 5in. wide to cupboard.
4 9 4 9		Add.
2 6 6 13 0		Keene's cement A. and A.

DADO.

74 0 4 6	333 0	Portland cement rendering to form dado, and deduct R. F. S. and twice distemper Kindergarten.
2 1 2 4 6	10 6	Do. do. to chimney-breast.
2 4 6 9 0		Labour, angle, and arris in Portland cement.
3 6 4 6	15 9	Deduct Portland cement, rendering 4 C., &c., for door and fireplace.
3 0 4 6	13 6	
15 0 4 6	67 6	Portland cement on lath partition, and 4 C., and deduct L. P. F. S. and twice distemper partition.
3 6 4 6	15 9	Deduct Portland cement on lath and 4 C., &c., for door.
91 4 91 4		Flush bead 1 1/4in. wide in Portland cement and 4 C.
6 6 6 6		Deduct do.
6 6 2 2		Internal mitres.
4 4		External mitres.
99 6 4 6	447 9	Portland cement dado and 4 C., and deduct R.F.S., and twice distemper in girls' school.
2 3 6 4 6	31 6	Deduct do. do.
5 3 0 4 6	67 6	
2 23 3 4 6		
4 10 6 11		
639 9		Add do. and do. classroom.
99 6 99 6		Labour flush bead and 4 C. as before.
2 3 6 3 0	15 0	Deduct do.
2 23 3 4 6		
4 10 6 11		Add.
3 9 4 6		
43 3 4 6	194 8	Portland cement dado and 4 C. and deduct R.F. and S. and twice distemper teachers' room.
6 0 4 6	27 0	Portland cement on lath dado and 4 C., and deduct L. P. F. and S. and twice distemper partition.

ft. in.	ft. in.	
3 0 4 6	13 6	Deduct do. for door.
3 6 4 6	15 9	Deduct Portland cement dado and 4 C., &c., for door and fireplace.
3 0 4 6	13 6	
43 3 6 0	49 3	F. B. and 4 C., as before.
3 0 3 6	9 6	Deduct do.
2 4 1/2 7		Add.
7 2		Internal mitres.
2		External mitres.

GROUND FLOOR.

74 0 15 0	1110	F.F. and twice distemper cloaks.
2 15 0 15 0	11 3	
60 0 15 0	900 0	Add lavatory, &c.
4 5 0 7 0	140 0	Add partition walls.
2 5 6 7 0	77 0	
2 2 6 7 0	35 0	Add.
7 0 7 0	2 8	
60 0 15 0	900 0	Add lavatory.
6 5 0 7 0	210	Add partition.
4 2 9 7 0	77 0	Add.
15 0 7 0	105 0	Add.
2 5 0 7 0	70 0	Add.
12 0 7 0	84	Add cupboard.
70 6 15 0	1057 6	Add stairs.
99 6 15 0	1492 6	R. F. S. and twice distemper as before.

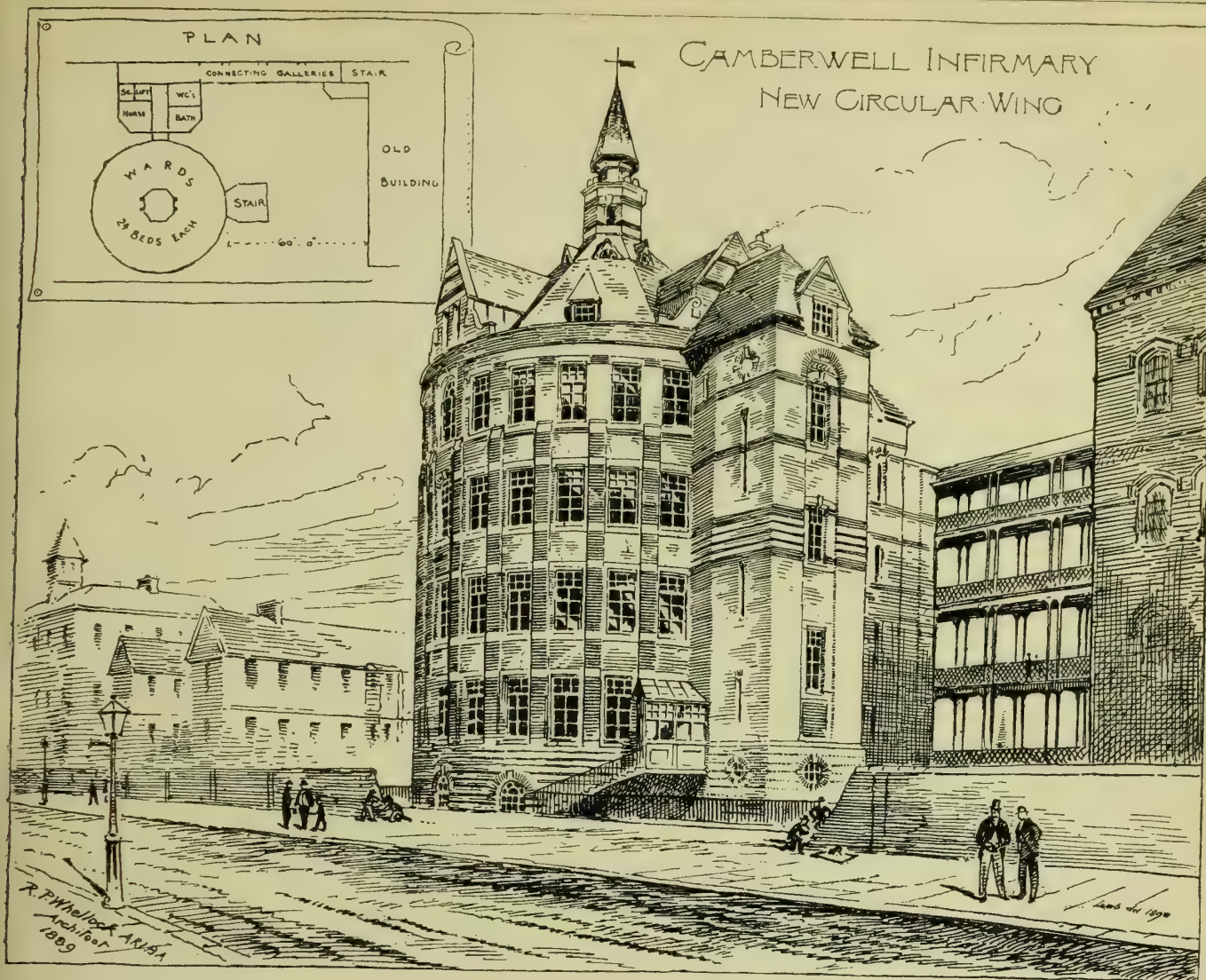
BOYS' SCHOOL.

8 2 7 6 8 4	90 0 27 0	Do. 5in. wide as before in recesses. Cir. do. to soffit.
8 2 7 6 8 4	90 0 27 0	Keene's cement angle and arris to recesses. Cir. do.
8 4 6 8 4	27 0 26 0	Portland cement rendering 5in. wide to recesses.
2 23 3 15 0	697 6	R.F.S. and twice distemper class-room.
4 10 6 15 0	630	Add.
49 0 15 0	735	Add
11 15 0	13 9	Add.
3 9 15 0	56 3	Add chimney-breast, &c.
4 10 6 10 6	44 0	Keene's cement A. and A.
99 6 4 6	447 9	Portland cement dado and 4 C., and deduct R. F. S., and twice distemper boys' school.
3 6 4 6	15 9	Deduct do. and do.
5 3 0 4 6	67 6	
2 23 3 4 6	209 3	Add classroom.
4 10 6 4 6	189 0	Add.
11 4 6	4 2	
3 9 4 6	16 11	Portland cement dado and 4 C., and ddt. R. F. S., and twice distemper.
49 0 4 6	220 6	Do. do.
99 6 99 6		Labour flush bead, and 4 C. as before.
3 6 3 0	15 0	Deduct do.
2 23 3 4 6	46 6	Add.
4 10 6 4 6	42 0	Add.
49 0 49 0		
17 5		Internal mitres.
12		External mitres.
		L.E.

The vestry of St. Martin-in-the-Fields, Westminster, proceeded on Thursday, the 20th inst., to elect a surveyor. There were 85 candidates, out of whom eight had been selected by a committee, and from these Mr. Charles Mason, A.R.I.B.A., assistant borough surveyor of Leicester, and late of Nottingham, was appointed.

The Duke of Westminster on Saturday opened the headquarters, which have just been completed, for the 2nd Middlesex (Customs) Artillery, in Leonard-street, City-road.





#### CAMBERWELL INFIRMARY EXTENSION.

THE new building, forming the extension of the Infirmary in Havil-street, is now completed, and is being rapidly prepared by the Board of Guardians for the patients. The new building, which is circular on plan, contains room for about 105 beds, including dormitory accommodation for nurses and a few cases requiring special treatment. There are four stories, each containing a ward for 24 beds, together with a nurses' kitchen, lavatories, bath, w.c.'s, and other conveniences. Also externally tiers of wrought-iron galleries, about 100ft. in length, connecting each floor with the present infirmary, and forming both ambulatories for air and exercise for convalescent patients, and, being fireproof, affording an additional mode of escape in the event of fire. Two lifts are also provided, the larger one for patients, actuated by hydraulic power, the smaller for coals being a hand-power lift. Dust and soiled-linen shoots are also provided. The floors are fireproof. The water storage for lifts, domestic, and heating apparatus is contained in iron tanks in a separate chamber at the top of the office buildings at the rear. The heating is obtained by means both of hot-water pipes and likewise by open fire-grates—two to each ward. The ventilation is effected by means of fresh-air inlets and foul-air vents into a central shaft, assisted by the open fireplaces, flues to which are collected in the same shaft. The circular form of the building has been adopted on account of hygienic advantages, affording, as it does, scope for the vivifying influence of the sun's rays, for the greater part of its circumference, for the ever-changing currents of air, and also because of its suitability to the nature of the site. The present pavilion or block forms one section only of the entire scheme for the infirmary, and which, when completed, would represent, inclusive of the original infirmary, a total accommodation of 700 beds, with suitable administrative

and other necessary offices. The works have been very satisfactorily carried out under Mr. Robt. P. Whellock, A.R.I.B.A., the architect to the Board of Guardians, assisted by Mr. C. Osborne, the clerk of the works, by Messrs. John Allen and Sons, of Kilburn; the contract price being £14,665, based upon quantities prepared by Messrs. Franklin and Andrews. The contract also includes sub-contracts for the following special works, viz.:—For the constructional ironwork and fireproof floors, by Messrs. Homan and Rodgers; that for the sanitary and internal plumbing by Mr. Geo. Jennings; and that for the lifts by Messrs. Smith and Stevens.

#### EDINBURGH ARCHITECTURAL ASSOCIATION.

A MEETING of this association was held on the 20th inst., Professor Baldwin Brown in the chair. Mr. Henry F. Kerr read a paper on "Ingress and Egress for Public Buildings." In Terry's Theatre the exit accommodation was sufficient for a house of four times its capacity. The Glasgow scheme of enlarging the exits for the upper floors was, Mr. Kerr, thought to be recommended. A plurality of exits for each block should in all cases be insisted on, and the exit capacity of the seat rows should also be attended to. Stairs for ascent and descent ought not to be of less width than the corridors between them and the auditorium, or wider than the corridors between them and the exterior. They should be provided with a hand-rail on both sides, and where six or more feet in width should also have a hand-rail in the centre. The straight stair was open to objection, if of any length, the square and the newel square—which doubled on itself—being the safest forms. It was desirable always, in the interests of safety, to reduce the number of steps required for access to the various parts of a building, as the danger was, generally speaking, in proportion to the number of steps to be traversed. Hence the object in sinking the

pit in theatres below street-level, to reduce the height from the street to the gallery, and hence also the merit of Mr. Tarver's plan which placed the gallery outlets at the level of the lowest seats in place of at the level of the highest. He recommended that all exit doors should be conspicuously marked as such, so that the audience might not use a door which did not lead to the outside of the building. Doors should open outwards or swing either way, and should not be secured except by some fastening which yielded automatically to pressure from within. Corridors and stairs should be kept clear of all obstructions barriers being very rarely, if ever, admissible.

#### CHIPS.

A marble tablet has been placed in the south aisle of Winchester Cathedral as a memento of the late General Sir Arthur A. T. Cunyngame, G.C.B., who died in 1883. Messrs. Newman and Son, of that city, carried out the work.

A site has been secured for the proposed new church at Wesham, near Kirkham, which is to be erected from the designs of Messrs. Paley and Austin, architects, of Lancaster, at an outlay of £2,500.

The parish church of Lyddington, near Uppingham, is undergoing restoration at a cost of over £1,200. A new roof has been put over nave, new flooring and seats are being laid, the glass in windows is being set in new lead framework, and the old screen has been cleansed from paint, while the new features include heating-apparatus, clock, and brass lectern. The church is about to be restored at the cost of the Ecclesiastical Commissioners.

The Louvre Museum has just purchased the "Portrait of an Old Woman," by the English artist Bonnington.

The partnership heretofore existing between Messrs. Isitt and Verity, of Wigan, architects, is announced in Friday's *Gazette* to have been dissolved.



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ILLUSTRATIONS.

NEW POST OFFICE BUILDINGS, ST. MARTIN'S-LE-GRAND—CONTEMPORARY BRITISH ARCHITECTS—SOANE MEDALLION DESIGN FOR A PUBLIC DAY SCHOOL OF 100 BOYS—CHURCH OF ST. ALBAN THE MARTYR, VENTNOR—A DRAWING-ROOM IN THE STYLE OF THE CONSULATE.—CANOPY AND TABLE FOR THE SPEAKER, PIETERMARITZBERG.—SKETCHES IN BELGIUM.

OUR LITHOGRAPHIC ILLUSTRATIONS.

GENERAL POST-OFFICE NORTH.

THESE buildings, of which we give elevations and plans, are being erected in St. Martin's-le-Grand on the site of the Queen's Hotel, the French Protestant Church, the old Money-Order Office, &c. The new buildings have frontages towards Angel-street and King Edward-street, also towards the burial-grounds on the north side. St. Martin's-le-Grand, Angel-street, and King Edward-street will all be widened. On the northern boundary stands a portion of the old City wall, the lower portion being Roman. This has been exposed to view and underpinned. The buildings have been arranged round a central courtyard, approached by carriage entrances from St. Martin's-le-Grand and King Edward-street. They will consist of seven stories, and over some portions there is an eighth. There will also be two stories under the courtyard. So far as possible, large rooms have been provided, together with ample staircase and lift accommodation. The area of the floor space, apart from corridors, staircases, &c., is 152,820sq.ft. The buildings generally will be faced with Portland stone; but in the courtyard glazed brick will be freely used, and Leicestershire bricks will be used throughout. All floors will be of concrete with steel joists, and the roofs will be flat and asphalted. The external doorways will be of polished granite, also the columns to the entrance roadway from St. Martin's-le-Grand. This entrance has a barrel vault with stone ribs. The contract for the foundations and lower portion is nearly completed, and has been carried out by Messrs. Brass and Son, Mr. Leake being the clerk of works. Mr. Henry Tanner, of H.M. Office of Works, is the architect. We shall publish some details of the main parts at an early date.

CONTEMPORARY BRITISH ARCHITECTS.

See description on p. 326.

PUBLIC DAY-SCHOOL FOR BOYS—R.I.B.A. PRIZE MEDAL DESIGN.

It will be remembered that in the recent Soane Medallion competition at the Royal Institute of British Architects, the Council considered that no one design submitted was, on all points, however admirable in some, worthy of the £50 and Medallion. Two medals were therefore given by the Institute to the authors of the first and second designs mentioned in the report of the judges. Both of these designs we are to illustrate, and we give the view and plan to-day of Mr. Charles Spooner's design, to which the second medal was awarded. His plans were not equal to the merit of his elevations, on which he certainly deserves congratulation, and we think he entirely merited the prize he won. We hope to illustrate Mr. Francis W. Bedford's first-medal design next week.

CHURCH OF ST. ALBAN THE MARTYR, VENTNOR.

THE site of the church is on the side of a steep hill, having a fall of about 23ft. from north to south. The approaches are from a roadway on the south, and from a steep footway, inaccessible for carriages, on the west. The level of the nave floor has been fixed rather higher than midway on the slope of the ground. The southern doorways will be reached by inclined paths and steps. The church, when complete, will consist of a nave, with north and south aisles, chancel, with clergy and choir vestries, on the south, and an organ-chamber on the north. The tower, forming a porch, is placed at the west end of the south aisle. The chancel will be separated from the nave by a high oak screen on a stone base. The choir seats are planned with returned stalls. The altar will be well raised above the nave, and the eastern windows placed high in the wall to allow of a lofty reredos. The whole of the walls have been built to the level of the nave floor, and the superstructure is about to be proceeded with. Grey ragstone is being used for the external facing of the walls, and hard freestone for the dressings—both stones being quarried in the locality. The architect is Mr. Chas. R. Baker King, of London.

A DRAWING-ROOM IN THE STYLE OF THE CONSULATE.

THOSE of our readers who have a knowledge of photography will appreciate the difficulty, successfully overcome as we hope, of reproducing in monochrome, a drawing in which strong yellow plays so conspicuous a part as in the present example. The ground colour of the wall panels is yellow, with coloured arabesques thereupon. The borders are in two shades of grey-blue. The ornament of the frieze is gold on a deep blue ground. The soffits of beams, two greys, and a small quantity of orange on cream colour. The ceiling panels are bordered by two shades of blue, lighter than that used for the walls, with variously coloured filling. Pilasters, red at the lower part, white and gold flutes above. The furniture and doors are darkened, polished mahogany, with brass mounts. The settees and easy-chairs are covered with a silk of which apricot is the prevailing colour. The dado is in dark greenish greys, with lighter-coloured mouldings. The original drawing, which was in the last Exhibition of the Royal Academy, is by Mr. Walter Hensman.

The new clock and chimes at Sunderland municipal buildings, which have been erected from the designs of Mr. Brightwen Binyon, of Ipswich, were formally started last week. The time is shown on four external cast-iron dials on the tower of the town hall. The hours are struck on a bell weighing about four tons, and the quarters by five hammers on four bells of about 3½ tons, making the total weight of bells 7½ tons. The clock was constructed by Messrs. Wm. Potts and Son, Leeds, and it is similar to those in Rochdale and Bolton town halls. The bells were supplied by Messrs. John Wainer and Son, bell-founders.

Mr. Frederick Jopling, C.E., engineer to the Tees Conservancy Commissioners, died last week after an illness of a few days. Mr. Jopling was a son of the late Mr. T. T. Jopling, of Sunderland, and came to Stockton as assistant to the late engineer, Mr. Jno. Fowler, at whose death he received the appointment of engineer. The deceased gentleman, who was only 35 years of age, leaves a widow and one child.

Acting under instructions from Mr. J. Wolfe Barry, of London, Mr. James Fraser, C.E., Inverness, arrived at Stornoway on Friday night to make preliminary surveys and investigations of some of the proposed works in Lewis, for the information of the Commission of experts who are shortly to proceed north to take evidence. Among the matters which will first receive attention from Mr. Fraser are the proposed harbour at Carlaway, the alternative schemes of an improved road and light railway or tramway from Stornoway to Carlaway, and the proposed harbour at Gress.

William Morris, the decorative artist and poet, has consented to give a lecture on "Gothic Architecture," at the Liverpool Artists' Club, on Saturday, April 12. In accepting the invitation, he writes:—"I fear that talking about the 'arts' to people in Liverpool is rather a waste of time, as they cannot have them there, or any beginning of them, until they have pulled Liverpool down to the ground and started practical equality among men."

The sewerage of the village of Abbots Langley, Herts, was commenced last week. Mr. H. Busby is the contractor.

CANOPY AND TABLE FOR SPEAKER'S CHAIR.

THE Canopy for the Speaker's Chair, which forms the chief subject of this illustration, has just been made by Messrs. Walker and Sons, of Bunhill-row, London, and was recently sketched at their works. It is designed for the Legislative Chamber at Pietermaritzberg, Natal, by Mr. F. W. A. Watson, a local architect, and is made to match the existing chair. The whole has been executed in teak, including the soffit of canopy and the panelled back. The British coat of arms surmounts the whole, emblazoned in colours and gold, the Natal coat of arms being contained in a cartouche in the long panel, with crown over. The greater portion of the back is covered with a dark crimson pleated cloth. The table is also made in teak, and is fitted with a sloping lift-up top to form writing-desk.

SKETCHES IN BELGIUM.

THE accompanying drawing represents a few buildings sketched during a trip to Belgium in the autumn of 1889. Bruges is too well known to need any description; but Dinant is perhaps, less visited. It is a pretty little town of about 6,400 inhabitants, and very pleasantly situated on the banks of the Meuse, 18 miles above Namur. The 13th-century church, with its double tower and bulbous spire, stands at the foot of a steep citadel-crowned cliff. From Dinant an interesting walk may be taken to the French frontier fortress, Givet, passing on the way the picturesque church and farm (combined) of Anseremme.

WILLIAM H. KEEL.

CHIPS.

The Education Department for Scotland have approved of plans prepared by Mr. John Robertson, of Inverness, for a new academy for 200 pupils to be built at Fortrose, close to the ruins of the old cathedral.

A new boulevard for Buxton, constructed at a cost of £1,200, was opened for the public use on Monday. It is called the Burlington, and is 1,600ft. in length, connecting with the Broad Walk, St. John's-road, and the park, the most fashionable quarters of the town. The Duke of Devonshire is about to parcel out sites overlooking the gardens, whereon villas will be erected.

The hangers appointed for the forthcoming exhibition at the Royal Academy will consist of the following painters:—Sir John Millais, Briton Riviere, Edwin Long, J. B. Burgess, and W. W. Oulless; H. H. Armstead, sculptor; and J. L. Pearson, architect.

New board schools, to accommodate 372 children in two departments, are to be built at Leigh, near Southend-on-Sea, at a cost of about £4,500. Mr. W. J. Wood, of Finsbury-circus, E.C., is the architect, and Messrs. Darke and Son, of Southend, are the contractors.

For the erection of a fountain in the village of Hawarden, in celebration of Mr. and Mrs. Gladstone's golden wedding, the design by Mr. E. Griffith, sculptor, of Chester, has been accepted. The fountain will be 16ft. in height, and surmounted by a lamp. It will be executed in Manley and Stourton stone, and will be circular in plan at the base, and above that level; triangular.

The town council of Faversham have elected Mr. Power as borough surveyor in succession to Mr. T. Ware, resigned, who has been appointed consulting surveyor.

A mural monument has been erected, at a cost of nearly £1,000, in the chancel of Llanbader Fawr Church, Cardiganshire, in memory of the late Colonel Pryse, Lord-Lieutenant, and for some time Member of Parliament for the county.

The Aberdeen art gallery is to be enriched by a presentation portrait of Mr. W. A. Hunter, M.P., to be painted by Mr. George Reid, R.S.A.

A font has just been placed in the Early English church built at Westward Ho! twenty years ago. It stands upon a raised dais of Portland stone, and the bowl and base are of Caen stone, the former being supported by clustered columns of red Corse-hill stone. Mr. Harry Hems, of Exeter, carried out the work from the designs of Mr. W. Oliver, of Barnstaple.

The tender of Messrs. Parnell and Son, of Rugby, has been accepted for building a new mansion at Springfield, Kent. Thirteen firms sent in tenders, and the building will cost upwards of £20,000.

The columns in the Mosque of Achmed, published by us last week, by a clerical error were described as being 3ft. diameter. It should have been 36ft.



## WAYSIDE NOTES.

I WAS interested in Mr. T. K. Oliphant's drawings of Danbury Church, Essex, which you reproduced last week. They cause me to remark that if, in more instances, those who go about the country sketching and measuring old work would give us their original rough sketches, rather than finished scale drawings, that may or may not be truthful representations of the building and its parts, it would be more to our profit. If not always to our profit, it would without doubt be to our pleasure, as it is pleasant to be able to follow the very touch of the draughtsman or sketcher. This one can do in a drawing made on the spot. From an examination of the method of delineating features and details, one can more accurately judge the character of the original work, and this would seem to be especially true of outlines and mouldings. A smart set of black-and-white plans, elevations, and sections have an imposing effect; but it neither evidences want of faith on one's own part, nor direct misrepresentation on the draughtsman's side, to very frequently feel dubious as to their accuracy. Not that I would do away with a line of the many sheets of scale drawings of measured work that we—thanks to the enthusiasm of others, and cheap methods of reproduction—are yearly able to enjoy. All I would ask is that sometimes sketchers will follow in Mr. Oliphant's footsteps, and give us rough sketches in preference to finished drawings.

I take it, of course, that these sketches were made on the spot, and are not merely home-made drawings. If there is one manner of sketching calculated to improve the "touch," and conduce to care and accuracy in detail and proportion, it is sketching in ink from the actual building. But the sketcher must be conscientious, as it is easy for clever people to make fine drawings that are about as like the actual thing as the speculative builder's elevation is like the surveyor's design. In sketches made on the spot, too, there is a freshness and crispness that gets "refined out," so to speak, in re-drawing. For all reasons, therefore, I would see a larger share of attention paid to this class of sketching. I do not refer to perspective sketches, but to elevations, plans, and sections, with a view to the preparation of accurate scale drawings. These sketches may be so prepared, by those practised in the art, as to be really beautiful specimens of workmanship, and not mere sheets of rough scrawls and notes. Students may depend upon it that studies of this nature are more productive of the power of designing with a crisp and artistic touch than any other kind of disciplinary exercise.

Mr. Albert Goodman delivered a very interesting lecture at the Society of Architects on Tuesday evening. Even if we cannot all agree with the views expressed, and refer the sense of the beautiful directly to the matter-of-fact construction of the eye and its muscles, the remarks of Mr. Goodman were such as are provocative of thought, and in some senses discourses of this nature are the most valuable of all. As regards the accuracy of the theories deduced, it is certainly very apparent that throughout nature, the most beautiful attributes of any material creation, are connected with some prosaic, matter-of-fact purpose. One can therefore believe that our sense of beauty of form is dependent upon the system of muscles that move the eye. But when all is said in this direction, the fact remains that beauty appreciated in this manner is but the cold, dry-as-dust beauty of the marble statue. The appreciation of the most beautiful forms, as of the most beautiful feelings and sounds, is referable to the emotions springing from the heart of man. This doesn't seem very clear to the reader, perhaps—it is hardly so to myself (!) and reminds me of the man who, on being asked the meaning of a certain passage in his book, said that at the time he wrote it only two persons could understand it—God and himself. "But now," said he, "God only knows."

Anyhow, even if one feels that, in future, a man who perpetrates an architectural monstrosity should come under the criminal law for inflicting injury upon the muscles of the eyes of the community, and that therefore Lord Grimthorpe should by this time be in durance vile, and, further, that the lecture at the Society of Architects has tended to destroy the poetry of our art,

yet I repeat that original lectures like that of Mr. Goodman are interesting, and lead one's thoughts into further research of problems in connection with design and composition. As such, therefore, let us accord them a hearty welcome.

We shall be getting quite Classic again, if the abundance of lectures and papers on Greek and Roman art and architecture is to continue. We have had some admirable discourses on Roman architecture by Professor Aitchison, and the students at the Royal Academy should begin to get something more than a smattering of the subject, since the lectures on Roman houses and other matters pertaining to the palmy days of the old Empire are full of information. Touching Classic architecture, we have had a paper from Mr. R. Elsey Smith that contains passages calculated to make us forswear the "Gothick" manner of building for ever, and live only to see the Propylæa and its wonders, and die—after, that is to say, comfortably "doing" the place.

There will not be another Classical revival such as that of the beginning of the century. The façades of the Parthenon that adorn (?) London thoroughfares in every part of the city, are a sufficient safeguard against the folly of reproducing for the sake of reproduction, and without any definite end in view other than an exact model of an ancient temple. Nevertheless, Classical studies should be persevered in with redoubled vigour. It was the "little knowledge" which is a "dangerous thing" that induced men to erect temple façades over grocery stores and butchers' shops. Since the Revival days we have learned that the old Greeks and Romans were not such fools as they would have been had they designed their buildings as the Revivalists imagine they did. Fertility of imagination, we are justified in supposing to-day, was as rife on Classical soil as in Medieval times, and it was left for wiseacres of the last generation to follow Palladian and Vitruvian principles and deduce therefrom certain arbitrary rules of proportion. To my mind, Grecian and Roman architecture should be viewed by architectural students in the same way as the general student regards the old Greek and Latin tongues. The latter do not want us to *speak and write* in a dead language, and the former should not think of slavishly copying an architecture which is no less dead.

There was considerable divergence of opinion at Tuesday's meeting of the County Council when the subject of the proposed Blackwall Tunnel came under discussion, advocates of *pro's* and *con's* being equally enthusiastic and positive. There is undoubtedly much to say for the free steam-ferry idea. If it could be shown that accommodation of this nature could be provided sufficiently ample to meet the demands of the traffic that it is said would be found to utilise any means of transit of the river in this district, then certainly it would be well to prefer it to a tunnel or bridge. And two large steam ferries of the type to be found lower down the river could accommodate a good deal of traffic—if, that is to say, both were to be kept going. There are, perhaps, objections to this scheme from the point of view of navigators on the river; of these I do not know. All that an independent observer can see is that the tunnel will cost a vast sum of money, and that a bridge of sufficient elevation to clear the masts of large ships is impracticable. A system of steam ferries, therefore, seems to recommend itself. I do not see any suggestion of a bridge on the principle of the one now being built near the Tower, and am a little surprised at this. Not that it is anything to regret. It has yet to be shown how the Tower Bridge is to answer in practice, and whether a person will not look upon the journey on to the bridge up one tower across the high-level bridge, down the other tower and over the remaining portion of the low-level bridge, as an undertaking on a par with a journey across the Atlantic. GOTH.

A new club has been erected at Hayes, Middlesex, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilators, and fresh air admitted by their improved air inlets.

The Petersfield Gas Company purpose making extensive alterations and additions to their works. Mr. John Chadwick, C.E., architect, Petersfield, has been appointed engineer to carry out the same.

## COMPETITIONS.

BIRMINGHAM.—The Free Libraries Committee of the Birmingham Corporation have selected plans submitted for new branch free libraries in Lingard-street and Summer-hill. The site of the former is at the corner of Salliey-road, that of the latter at the junction of Summer-hill with Icknield-street. The Salliey design is the work of Messrs. Cossins and Peacock, and is Renaissance in style, has a clock tower, and is to be carried out in brick and terracotta; the other (a Gothic design, also to be executed in red brick and terracotta) is by the firm of Martin and Chamberlain, all of Birmingham. The committee also approved of a provisional purchase of land for a branch library at Small Heath, and it is proposed to acquire sufficient land here to allow of the erection not only of a library, but of baths on the site.

READ AND LIMONSTONE CONSTITUTIONAL CLUB.—The plans of Mr. V. Dunkerley, architect, of Burnley, have been selected in a limited competition for the above club. On the ground floor are smoking, card, and store-rooms, together with a large reading-room; the first floor is occupied by a billiard-room for two tables, lavatories, &c.; in the basement is placed the heating chamber and cellar for storage. The elevation is of a substantial character, and will be built of local stone. The work is to be proceeded with at once.

LEEDS.—The town council have adopted Mr. W. H. Thorp's plan for enlarging the Victoria Hall from among nine designs received in competition. Mr. Thorp proposes, by means of an end gallery and a series of side balconies, to provide 636 ordinary sittings and 141 flap seats. This will not involve the projection of side balconies beyond the line of the existing pillars. The glazed screen dividing the gallery from the vestibule is to be set back to the arched opening adjoining the vestibule. The gallery will be confined within the limits of the first bay of the hall. It will be bow-shaped, and narrowest opposite the side entrances. Two large crush-rooms at the gallery end of the hall will be provided. The cloak-room and lavatory accommodation in connection with the Mayor's suite of rooms is to be entirely remodelled. The work generally will be carried on in fireproof construction, having rolled iron joists, filled in with coke-breeze concrete. The gallery and balcony fronts will be of cast iron, carried out to special ornamental design and afterwards gilded and decorated. The estimate for the work, exclusive of seating, is £2,560.

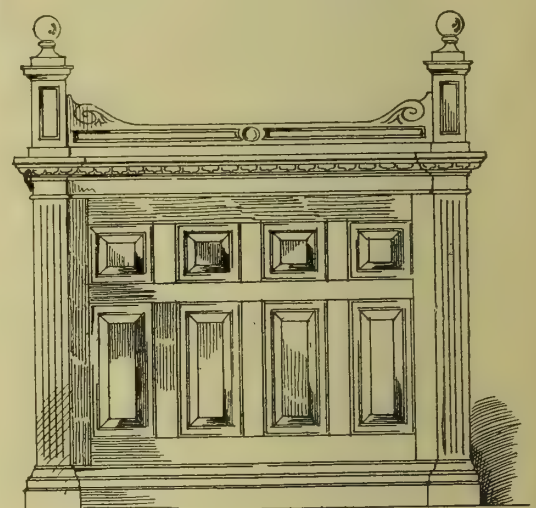
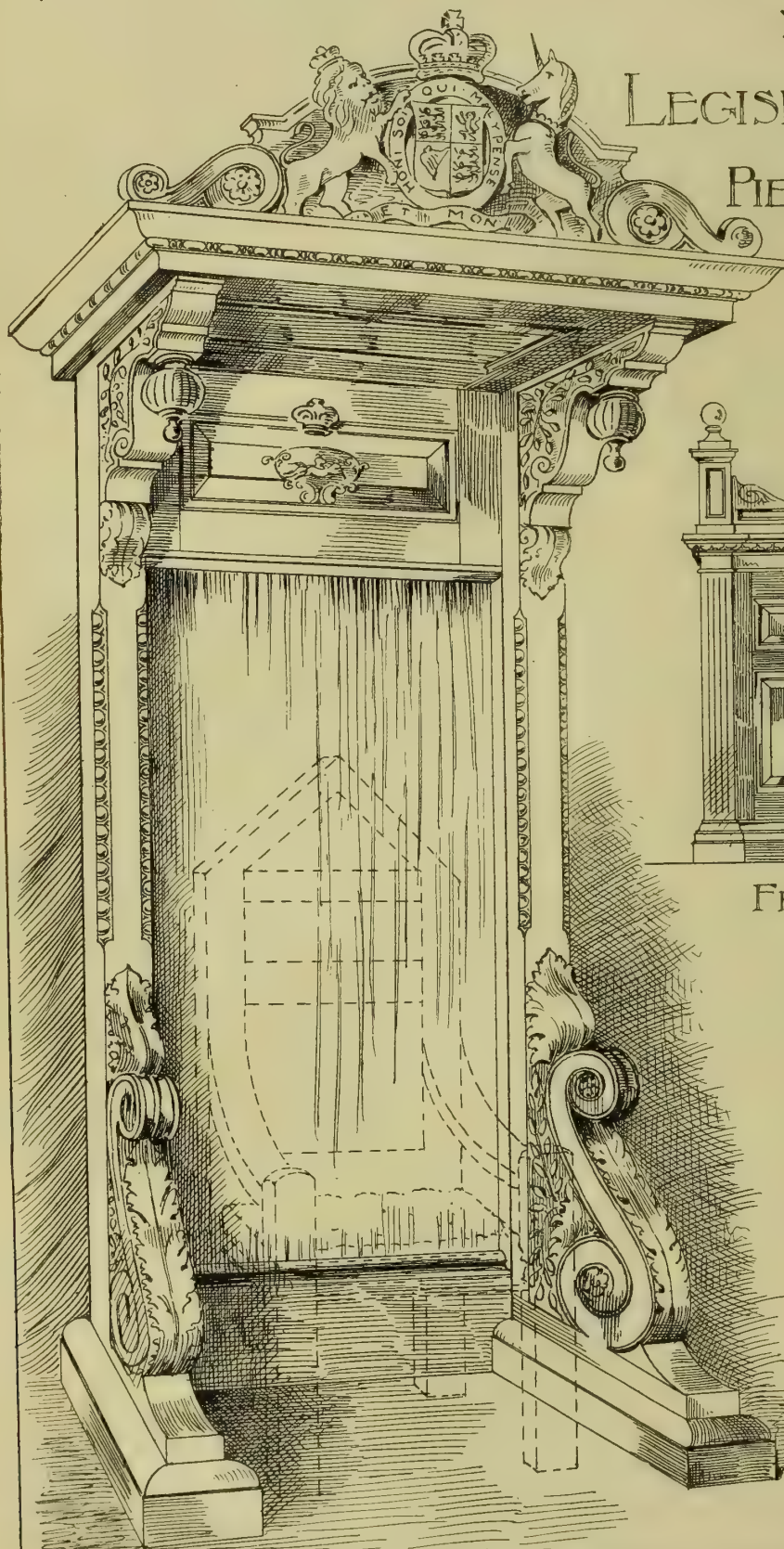
SOUTH STOCKTON-ON-TEES PUBLIC BUILDINGS.—The prizes in the competition for new public buildings for the local board of this town have been awarded as follows:—First premium, Mr. James Garry, 1, Church-street, West Hartlepool; second, Messrs. Edeson and Rowntree, Scarborough; third, Mr. H. Weatherill, Stockton. Messrs. Bell and Roper, of Manchester, and Mr. George Styant, of York, were highly commended for their plans. There were 25 competitors. The total cost is estimated at £4,000, including site and furnishing.

STRATHPEFFER.—The committee for the erection at Strathpeffer of an Episcopal church, as a memorial of the late Duchess of Sutherland, have selected from a list of three the designs submitted by Mr. John Robertson, architect, Union-street, Inverness. The other architects in this competition were Messrs. Ross and MacBeath, of Inverness, and Mr. Joan, of Dingwall. The church is arranged to accommodate over 300 sitters, independent of choir; and is designed with nave, aisle, baptistery, chancel, choir, organ-chamber, clergy and chorister's vestries, heating-chamber, and entrance porches. The circular bell-turret, a special feature of the design, is prepared for a chime of bells. The open roof will be of dressed pitch-pine, while the choir seating, reading desks, lectern, and litany desk will be of cedar wood. It is to be built throughout of stone from the estate.

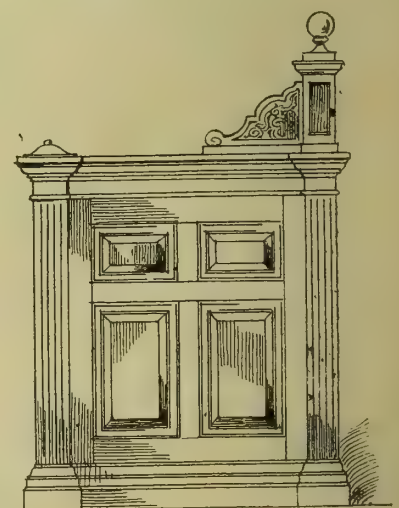
SWANSEA.—In the recent competition of architects for rebuilding the "Welcome" Hotel, High-street, Swansea, six designs were submitted by architects. The one bearing the motto "Well Considered" was accepted, the authors of which are Messrs. James Buckley Wilson, F.R.I.B.A., and Glendinning Moxham, M.S.A., architects, of Swansea.



CANOPY AND TABLE FOR THE SPEAKER  
IN THE  
LEGISLATIVE CHAMBER  
PIETERMARITZBERG  
NATAL.



FRONT OF TABLE.



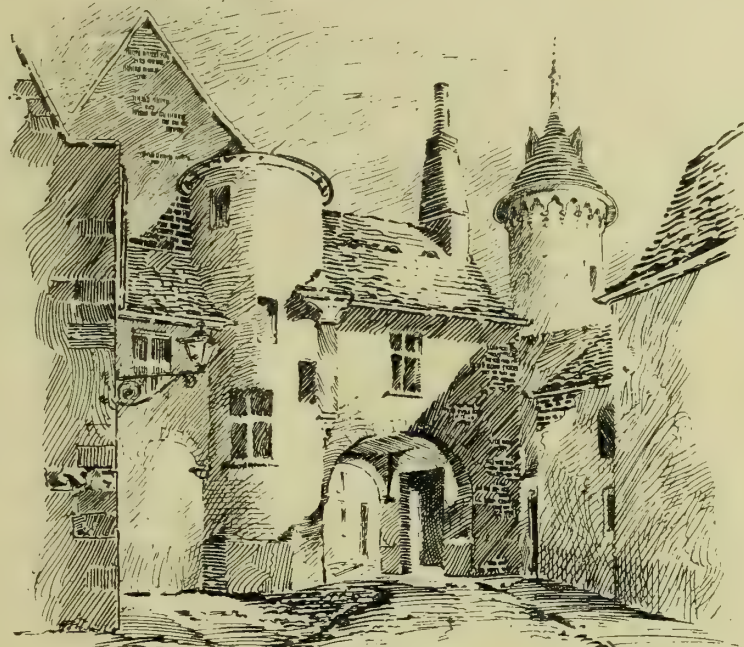
SIDE OF TABLE.

MADE BY MESSRS WALKER & SONS  
OF BUNHILL ROW E.C.

F.W.A. WATSON ARCHT. NATAL.

E. Chancellor. Sculp.

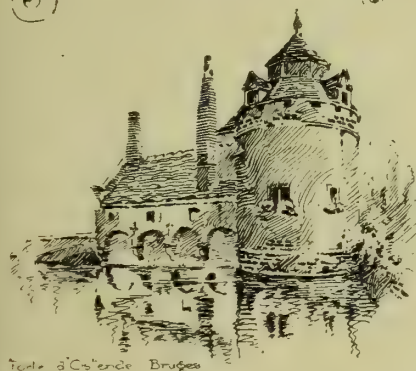
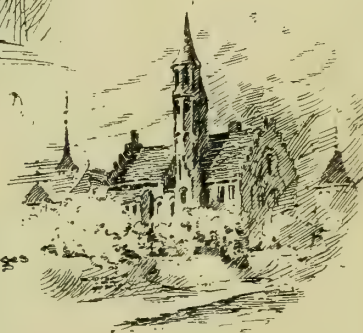




Courtyard in Bruges

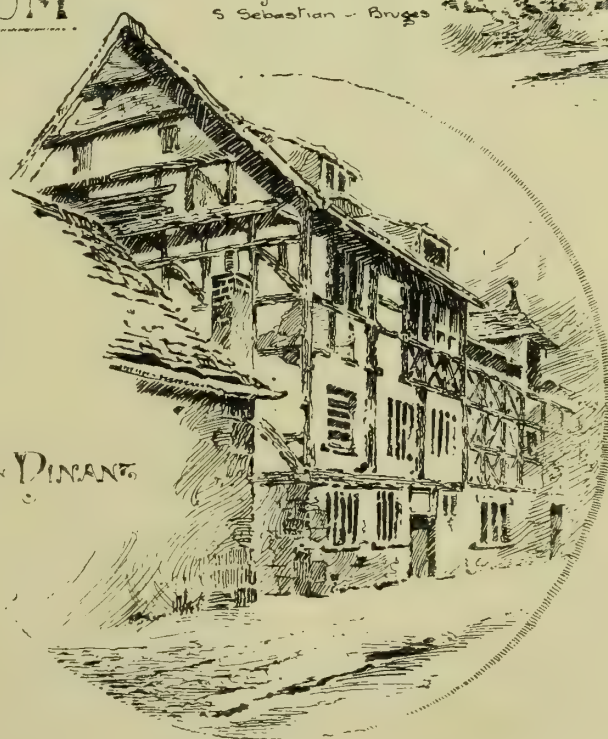
# SKETCHES IN BELGIUM

Confrérie du  
S. Sebastian - Bruges



Forte d'Orlande - Bruges

SIDE STREETS IN DINANT



W. H. H. 1890. 24



# CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE seventh double-page photo-lithographic plate of living architects is given herewith to-day, and the accompanying notes refer to those who are thus represented and grouped together. The arrangement of the portraits necessarily depends very much upon the date at which they were received for reproduction.

Mr. G. C. Ashlin, R.H.A., was a pupil of the late Mr. E. Welby Pugin, and, at the termination of his articles, became his partner in Ireland. The principal works carried out by him in conjunction with Mr. Pugin up to 1872, and since then on his own account, were SS. Peter and Paul's Church, Cork; Queenstown Cathedral, the Magdalen Asylum Building, Sunday's Well, and the Clonakilty Church, Co. Cork; the Augustinian Church and St. Kevin's Church, in Dublin; and churches at Donnybrook, Monkstown, Glashule, Rathfarnham, Dundrum, Tal-laght, St. Alphonsus, Clonliffe, and Raheny, in the neighbourhood of Dublin; several churches in the provinces, the most important being the O'Connell Memorial Church, Co. Kerry; churches at Carrick-on-Suir, Kilfinane, Emly, Templemore, Tralee, Delvin, Drogheda, Newry, and Dundalk. His principal domestic works were Tillyra Castle, Co. Galway, for Mr. Martyn; additions to Ballynastragh, for the late Sir John Esmonde; a Gothic bridge and other works at Ashford, Co. Galway and at St. Anne's, Clontarf, for Lord Ardilaun. He was the architect of the Dublin Exhibition Buildings of 1882, and of the Cardinal McCabe Memorial at Glasnevin. Mr. Ashlin has erected the Sun and the Northern Insurance Offices and other commercial buildings in the city of Dublin. He is a member of the council of the Royal Institute of Architects of Ireland, and a member of the Royal Hibernian Academy. The portrait is taken from a photo by Mr. Lafayette, of Dublin.

Mr. Edward Joseph Hansom, F.R.I.B.A., the President of the Northern Architectural Association, is the only son of the late Mr. Charles Hansom, of Clifton, Bristol, under whom he studied his profession, and in the year 1867 became a partner with his father. At this time many important works were carried out—viz., the Clifton and Malvern Colleges, and the Kelly College at Tavistock; St. Paul's Church, Clifton; St. John's Church, South Parade, Bath; the Franciscan Convent, Woodchester, &c. In 1871 Mr. Hansom left Bristol to join a former pupil of his father's Mr. Archibald Dunn at Newcastle-upon-Tyne, and the firm of Dunn and Hansom have carried out some of the most important Roman Catholic buildings undertaken since that date. Among others, the new college buildings at Stonyhurst, also at Downside, in Somersetshire, where a monastery and church are partly built, on a scale which will some day cause it to rival its Mediaeval prototypes; St. Bede's College, Manchester, and the first Diocesan seminary erected in England, at Olton, near Birmingham, for the late Archbishop Ullathorne. Among churches in Newcastle and the neighbourhood are St. Michael's, Elswick, and the spire of St. Mary's Cathedral, the new Collegiate Church at Ushaw, Washington, Burn-opfield, Monkwearmouth, &c.; St. Catherine's, Birmingham, and others at Harborne and West Bromwich; St. Mary's, Bath, and the new R.C. Church at Cambridge, now approaching completion. Many schools, presbyteries, &c., have been carried out; two for the Newcastle School Board. Last year they completed the new buildings (in Newcastle) of the "University of Durham College of Medicine."

Mr. Thos. N. Deane, R.H.A., is a son of Sir Thomas Deane, who was also an architect, and whose father and grandfather and brother followed the same profession. The works of Mr. Thos. N. Deane, as partner in the firm of Sir Thomas Deane, Son, and Woodward, were the Museum, Trinity College, Dublin; the enlargement of the library at Trinity College, and the museum at Oxford, as well as the debating-room of the Union, Oxford. Mr. Thomas N. Deane designed the new buildings in Broad-walk, Oxford; Christ Church College; Sir B. Brodie's house, Oxford; the chemical and physical laboratories at the Museum, Oxford; the Crown Life Office in Fleet-street, London, and another insurance office in New Bridge-street, Blackfriars, also in the Venetian Gothic style; Lord Clanricarde's Castle, Portumna; Tuam Catho-

dral; restoration Kilkenny Cathedral; restoration Kilkenny Castle; seven insurance offices in Dublin; the Munster Bank, Dublin. He also took part in the great competition for the Law Courts, London. In conjunction with his son, Mr. T. M. Deane, his present partner, the firm have carried out the Museum of Science and Art and National Library, Dublin, which was won in competition; various branch offices through Ireland for the Provincial and Munster Banks have been erected by them: the Royal Exchange Insurance Office, Dublin; the Commercial Union Insurance Offices, Dublin; the town hall and markets, Bray, co. Wicklow; the rebuilding of Lough Crew House, co. Meath, for Mr. J. L. Napier, D.L.; the M'Arthur Hall, Belfast; and various country houses in several parts of Ireland. Messrs. Deane and Son's design submitted in competition for the Imperial Institute, will long be remembered for its ability and the grandeur of the scheme. The Anthropological Museum and the Physiological Laboratory at Oxford are among their recent works, and also a house for Master Bruce near Dublin; the Church of Ireland Training College, Dublin, and other works of more or less importance have been finished from their designs. Mr. Deane is superintendent of Ancient Monuments in Ireland, under Sir John Lubbock's Act, also under the Church Act. He is a member of the Royal Hibernian Academy, and Lecturer on Architecture to the Science and Art Department, Dublin. His portrait is by Messrs. Werner and Son, of Dublin.

Mr. Arthur Cates, F.R.I.B.A., Vice-President R.I.B.A., was a pupil of Mr. Sydney Smirke, R.A. In 1852 he entered the office of Mr. James Pennethorne, with whom he remained till 1859. In 1870 he accepted the instructions of the Commissioner of H.M. Works in charge of the Crown property in London, to which his attention has since been almost exclusively devoted. He is also Surveyor to the Inner Temple, and has been Chairman of the Board of Examiners in Architecture since its establishment in 1882. Mr. Cates has designed and carried out numerous commercial and other buildings in London, in Fleet-street, the Temple, the Strand, Piccadilly, Jernyn-street, in Shoreditch, and elsewhere. His work in connection with the cause of Architectural Education has been carried on with great energy and much usefulness for very many years, and in the capacity of Hon. Sec. to the Architectural Publication Society he has had a large share in the production of the still unfinished Architectural Dictionary. Mr. Cates's photograph is by Mr. Bassano, of Bond-street, W.

Mr. Robert Walker, A.M.Inst.C.E., is President of the Society of Architects. He is the son of the late Mr. Walker, who was city surveyor of Cork for forty years. From 1851 to 1854 he served his time with the late Alexander Deane, architect, and with the late Sir John Benson, who was consulting architect to the Corporation, and engineer to the Cork Harbour Commissioners. His master also had a large private practice. From 1854 to 1859 Mr. Walker had charge of the architectural practice of Mr. Henry Clutton, F.R.I.B.A., of Whitehall-place, during which time he built several churches, mansions, schools, villas, farm buildings, &c. In 1860 Mr. Walker commenced independent practice at Cork, his earlier works being the National Cattle Show buildings at Cork, residence at Farren, and sundry small works and villas, additions and reconstruction of St. Fin Barre's Brewery, Turkish bath, Glebe House, Masonic Hall, Co. Cork, some Wesleyan chapels, warehouses, bacon factory, and printing works in Cork; Munster Arcade additions: a large residence, Queenstown; Wesleyan Chapel, Kinsale; large additions Cork City gaol; warehouse, 30, Patrick-street; Tralee Lock Gates; large bacon factory, Hamburg; Parliamentary plans, Cork bridges; mill, Kenmare; skating rink, distillery, brewery, and two hotels in Cork; St. Peter and Paul's schools for 900 children, and Presbytery, Cork; additions to some premises at Hamburg; Holy Trinity Church choir, Cork; new convent, library chapel of 3rd order, &c., Cork; and a doctor's residence, Barrow-in-Furness. In 1883 he designed the International Exhibition at Cork; the Methodist Central Hall, also at Cork; additions to Clairville, Reigate; bread factory, Cork; large bacon factory, Cork, for Messrs. Lunham Bros.; additions and alterations to Queen's Bacon Factory, for Messrs. J. J. Richardson, Waterford; additions to Lady's Well Brewery, Cork; Gresham Life Assurance Society offices, Cork, and many other works of

less importance. Mr. Walker's photograph is by Messrs. Guy and Co., Limited, of Cork.

Mr. Macvicar Anderson, Vice-President of the Royal Institute of British Architects, was associated with the late Mr. Burn, and succeeded to him in his practice. Among his new buildings we may enumerate the following:—Lockerley Hall, Hampshire; Meaford, Staffordshire; at Kimbolton Castle, Huntingdonshire, for the Duke of Manchester; Cheswardine, Shropshire; Sandhills, Surrey; Hedgecroft, also in Surrey; King's Beeches, Berkshire; and Highwoods, in the same county; at Lynford Hall, in Norfolk; Branstons Hall, Lincolnshire; Iden Manor, Kent; a country house in Russia for the Prince Scherbatoff; Doonside, Ayrshire; Moncorvo House, London; 17, Dover-street, W., for the Marquis of Anglesey; 14, Berkeley-street, W., the headquarters of the London Scottish Rifles; St. Columba's Church, for the Church of Scotland; Bank, 62, Lombard-street, E.C., for the Commercial Bank of Scotland; Union Discount Company's Bank, Cornhill, E.C.; and the Union Bank of Australia, Melbourne. Among the alterations and additions carried out by this architect are—Somerley, Hampshire, for the Earl of Northampton; Hartley Grange, in the same county; Weston Park, Shropshire, for the Earl of Bradford; Willey Park, Salop; Sundridge Park, Kent; Oxon Hoath, Kent; Wildernesse and St. Clere, also in the same county. Orwell Park, Suffolk; Criche, Dorset; Spey Park, Barrington Park, and Hartham Park, Wiltshire; Bowhill, Selkirk, for the Duke of Buccleuch; Patshull, Staffordshire; Blankney, Lincolnshire; Wellingore Hall, in the same county. In Yorkshire Mr. Macvicar Anderson altered and added to Wortley Hall, Hainton Hall, and Nostell Priory; Althorp Park, in Northamptonshire, for Earl Spencer; Osberton, Nottinghamshire; Broxbournebury, Hertfordshire; Crookham House, Berkshire; Rocheath, Sussex; High Ashurst, Surrey; Thorndon Hall, Essex; Inverloch Castle, Inverness-shire; Powerscourt, Ireland, for Lord Powerscourt. In London his works include alterations to the Naval and Military Club, the Windham Club, the Carlton Club, the Junior Carlton, and Brooks's. The premises of the Royal Institute of British Architects were altered by him. For many years Mr. Anderson was hon. sec. to the Institute. One of his last works is the restoration of the church of St. Mary-le-Strand, lately reopened. The photograph is by Mr. Bassano, of Bond-street, W.

N.B.—We are requested to state, with reference to the works mentioned in connection with the portrait of Mr. Thomas Verity, that Mr. Hunt, his late partner, had nothing to do with the "Nouvel Hôpital Français"; but that he was principally concerned in the erection and design of the Scarborough Spa Buildings, Nottingham Municipal Buildings, and the Agricultural Hall, Islington.

## THE ROYAL SCOTTISH ACADEMY.

THE sixty-fourth exhibition of the Royal Scottish Academy this year is exceptional, inasmuch as it inaugurates a new standard of selection, a more restricted space for pictures, and some other novelties of minor importance. The council, it is well known, have been long meditating some changes in their management, and the result of their deliberations has been formulated in the revised charter now under consideration of the Privy Council. The institution has prospered in a measure, but somehow or other not entirely to the satisfaction of a critical section of its own members and the public, who affirm that this is so because it has not worked on the lines indicated by the original charter, and has never been what it was intended to become, a great national institution. Its influence has been provincial and local mainly, and its exhibitions not superior to similar collections in the larger cities of the empire. Up to a certain standard, and only within the limits of painting, has its education or influence been felt; and there is nothing to induce ambitious students, after reaching a certain stage, to remain under shelter of its wing.

These critics must recognise in the new departure a step in the right direction. The result is apparent in the higher standard almost everywhere manifest in this collection, and in the more comfortable aspect of the several apart-



ments. The architectural section has had fair consideration, and all the subjects seem to be placed at good advantage for inspection of details. This result is attained by giving them place both in the north and south rooms—in the former with the water-colours, and in the latter opposite the sculpture, which is now arranged in a line in front of a specially selected drapery on the wall. The small octagon makes a good tea room, and the larger apartments have been decorated with palms.

In addition to these novelties of arrangement, the collection has the additional attraction of containing a larger contribution than usual of interesting works by artists of other schools. Of these one at least may be classed as work of the highest art—344, "The Prodigal Son," by J. M. Swan—which will no doubt be as fully appreciated here as it has already been in Paris and London. There are two characteristic samples of W. R. Orchardson—28, "The First Dance"; and 190, "Mariage de Convenience After." J. Pettie sends three portraits; the most interesting to the public will be the likeness of the popular author, H. R. Haggard (296). The subject is represented with an upward glance of the pale blue eye, and evidently off to dream of fairyland. Sir John Millais's "Last Rose of Summer" (271) is also here; and a comic piece by Briton Riviere (178), "Of a Fool and his Folly there is no End," where a jester on a donkey has put to disorderly flight, and down a steep descent, a company of heavily-armed horsemen, who naturally are indignant at the joke being carried so far.

The portraiture occupies a very large and conspicuous portion of the space; but, as a whole, it is rather inferior to the collection of preceding years. Mr. G. Reid has nothing but portraits; and of these the largest and the most carefully-finished is the likeness of Mr. McKenzie, of the Scottish Widows' Fund, whose stately figure, so well known in Edinburgh, is here excellently posed; whilst all the other details, which make not only a true but pleasant likeness, have been carefully studied and successfully portrayed. 197, his portrait of Lord Shand, is not so good. It is a small picture, and lacks dignity and sharpness of detail. Mr. Reid's other works are presentation portrait of Sir R. Menzies, Dr. Gloag (late Moderator of the General Assembly, E.C.), Mr. T. Brodie, and Professor Frazer, who has in the official crimson, and appears perhaps to less advantage in this costume, the background being rather light for good effect. Mr. R. Gill (292) gives all justice to his subject, the Rev. James Morrison, an author of high standing, and founder of a modern sect. Mr. Otto Seyde has six portraits as his contribution, of which the most important is a large presentation portrait of Dr. Mitchell, of South Leith. One of the best specimens is 45, portrait of Mrs. Lane, by Hugh Cameron.

Figure subjects are very numerous and interesting, and the ideal has not been neglected. 403, by G. O. Reid, is one which makes its mark in this department as one of a very high class—"Voltaire at the Café De Procopée listening to the criticism of his play of Semiramis." There are about 30 figures in the piece, and six or seven nearly complete studies in themselves. Voltaire has dressed himself as a clergyman, and sits in a dark corner with a newspaper, in the left foreground, the glance of his eye being towards two of the principal figures, who are plainly discussing, somewhat vehemently, the merits of the play from which they have just returned. These figures are dressed in costumes of velvet and satin, and are very naturally arranged, and there is nothing of the starchy character in any of the attitudes. 110, "For the Crimea," by R. McGregor, R.S.A., is perhaps one of more general interest, and both in its conception and execution unsurpassed by any of its class. It is a large picture, with each figure complete, and the story, which is full of pathos, most powerfully portrayed, has also its humorous incident, in the contrast between the principal figure—a youth who has evidently 'listed for glory, and another, "half seas over," who has 'listed under the incentive of the sergeant's hospitality. The female figures have each their own sentiments of wonder, sorrow, and painful anxiety clearly written on the countenance. 144 may be mentioned as another curious fancy picture, "The Girl I Left Behind Me," by J. Thorburn Ross. This is a very large canvas, with Pre-Raphaelite minuteness of detail; a cottage scene, with screen of trees and a low dyke, against which the figure of a Highland soldier

stands behind the girl he is about to leave behind. The trees are impossible as represented in relation to the dyke, but the charm of the picture lies in the brilliant display of crimson fuchsias on the bank, and fanciful arrangement of the details rather than in the pose or rendering of the principal figures. 77 should be noticed as another ideal subject, if only as presenting, curiously enough, another rendering of the Prodigal Son coming to himself. It is by Harrington Mann, and is apparently a piece with symbolic meaning. The Prodigal is represented in the very difficult and awkward attitude of one who, descending a steep mountain, suddenly discovers a precipice before him and makes desperate endeavour to recover his footing, slipping away from him with every step he takes on the stony debris. The canvas is large, and the whole of it, save a mere suggestion of sky at the top, is a foreground of sloping hill, where two dark-coloured swine are basking in the light, and would look supremely comfortable if they were not reposing on so sharp an incline. 198, "Letters and Love-Letters," by C. M. Hardie, represents an interior, with papa reading his business letters at one side of the breakfast-table, and his daughter, with her own business correspondence, at the other. In 334 the artist takes a higher flight, and his "Juliet" is, in every respect, a good interpretation of character and incident. 58, "A Midsummer's Day's Dream," is a lake scene, with water-lilies and a lady in attitude of lazy repose, dreaming her love's young dream from a boat, the water and its reflection being very nicely rendered. 371, "Early Architecture," by W. Hole, is a capital family picture of children building a house of cards. In 347, "The Covenanter's Refuge," by H. J. Dobson, the refugee minister is expounding the Scripture to the cottagers. 412, "The Pedlar," by J. Blair, is another excellent cottage interior, worthy of a better place.

In landscape the collection is enriched by a great variety of works of a high standard of excellence—mostly quiet summer and autumnal studies. Nature in her grander and stormy moods is not represented; but James Archer has gone to India, and in 316, "The Himalayas from Simla," has brought back a piece of Highland scenery very like our own. The soft velvety green of the nearest hill side is the only suggestion of the neighbourhood of a tropical climate, and is perhaps rather like a piece of cloth stretched smoothly over the rock below. W. Beattie Brown, in 234, has a fine study of Scotch firs in "The Forest of Ennich among the Grampians," and their sturdy strength is much more happily rendered than his mountain mist. His other works are all from Dutch scenery. J. Smart has a number of landscapes, and in his "Cradle of Argyle, Ardchonnell Castle," gives a view of Loch Awe and its mountain surroundings. 34, "Edinburgh from the Fife Coast," by J. Riddell, is a clever piece of painting, showing the city through a veil of transparent mist, a ship with vivid white sail spread appearing in the middle distance. The water-colours and architectural section are reserved for future notice.

#### CHARLES BRUCE ALLEN.

WE regret to record the death, on Wednesday last, of bronchitis, in his 71st year, of Mr. Charles Bruce Allen, a very old contributor to these columns, and a man of whom William Burges once said, in our hearing, he had learned more from than from any other man in his life. Mr. Charles Bruce Allen was articled to Mr. Henry Thomas Wyatt, and was afterwards in the offices of Mr. B. Ferrey and Sir Charles Barry, as also in that of Mr. Thomas Cubitt, the builder. His principal service to architecture was probably the formation of the Architectural Museum, which he originated in humble fashion, but with splendid enthusiasm and earnestness, in a loft over a coal-wharf at Westminster, with the aid of Sir Gilbert Scott, Professor Cockerell, Mr. Hardwick, the Bishop of London, John Ruskin, and others. For ten years—or until the time the museum was removed to South Kensington—Mr. C. B. Allen devoted nearly his whole time and energy to it, and his disappointment at the severance of his connection with it was intense. Mr. Allen was a frequent contributor to contemporary literature, and a man of wide information and genial nature, though of strong individual opinions. He had been practically confined to his room for more than a year, in consequence of a severe

chill caught in the early part of last winter. He will be buried next Wednesday at Brompton Cemetery.

## Building Intelligence.

HULL.—The two foundation stones of the Victoria Hospital for Sick Children in Park-street were laid on Saturday afternoon. The front elevation will be in the Gothic style of architecture of an Early French character, and the administrative department will contain board-room 22ft. by 18ft., matrons' sitting-room and bedrooms, house-surgeon's room, and offices. The first floor will contain sixteen beds for boys, and a second a similar number for girls. There will also be a ward which will contain four beds for the isolation of cases of a doubtful character. At the rear there will be the surgeons' consulting and examination rooms, and the out-patients' department will consist of an entirely separate building. The external walls are of red brick, with Ancaster stone dressings. Mr. W. H. Bingley, of Hull, was joint architect with the late Mr. Samuel Musgrave, also of Hull; Messrs. George Jackson and Son are the contractors, and Mr. J. Alcrow is the clerk of works. The cost will be £7,500.

ORATORY, BROMPTON.—Of the altar of St. Philip and the Sacred Heart, of the above church, portions of which were carried out some years since, orders have now been given to the architect of the church, Mr. Herbert A. Gribble, to proceed with the work as rapidly as possible. The material to be in the rarest of marble, all carving to be in the Early Renaissance. We hope at a future date to give some illustrations of these works.

## Engineering Notes.

BURNLEY.—A deputation, consisting of the chairman of the gas committee, Mr. Button (borough surveyor), and Mr. Leather (gas manager), have returned to Burnley from London, where they have been for a week, inspecting gasworks and inquiring into the best means of laying out the £30,000 which it is found necessary to spend on the Burnley gasworks, which are becoming inadequate to keep pace with the rapidly-increasing consumption. The deputation visited the Metropolitan, Greenwich, and Beckton Works, and inspected the new system of inclined retorts largely adopted both on the Continent and in America. It is, therefore, not unlikely that the system will be recommended and adopted at Burnley.

#### CHIPS.

Bristol is about to be provided with a third theatre, Mr. Reynolds having instructed Mr. E. Henry Edwards, of that city, to prepare the necessary plans.

The Local Government Board have formally approved the scheme prepared by Mr. James Mansergh, C.E., for sewerage of the city of York, at an estimated cost of £101,000. The approved scheme comprises the re-sewerage of a considerable portion of the old city, the erection of a pumping station at the southern boundary of the city near Fulford, and the construction of sewage-disposal works immediately above Naburn railway bridge.

New premises, including manager's residence, for the Cornish Bank are to be built at Helston. The building will be placed at the corner, immediately opposite the Town Hall, where Wendron, Coinage Hall, and Meneage-streets join. The proposed structure, designed by Mr. Trevel, of Truro, will show elevations towards the streets entirely of Mabe granite.

A special meeting was held in St. John's Episcopal Church, Alloa, on Friday, when the Bishop of Edinburgh dedicated three stained-glass windows, which have been erected in the south side of the nave as a memorial of the late Earl of Mar and Kellie.

A large clock and chimes have just been erected in the parish church of Thorncombe, Dorset, which is fitted with all the latest improvements, and shows time on dials facing south and west. The work has been carried out by John Smith and Sons, Derby, who are also making a large chiming clock for Portishead church.



## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

**BIRMINGHAM ARCHITECTURAL ASSOCIATION.**—At a meeting of this Association, the President, Mr. T. Naden, being in the chair, Mr. W. H. Kendrick read a paper, entitled "Notes on Wood-work," which had been jointly written by Mr. Kendrick and Mr. H. H. McConnal, A.R.I.B.A. After a brief account of the history of the craft of the joiner, Mr. Kendrick described some local examples of his art—among them being the timber-built house called "The Oaks," at West Bromwich, which, apart from its artistically-grouped masses and delicate detail, is of interest from having escaped the hands of the restorer. The screens and stalls of Tong Church, near Shifnal (the latter notable for their harmony of mass and vigorous variety of detail), and the screen in south aisle of Hamstall Richmore Church, were described as examples of the Gothic joiner's work in church fittings, and the screen in the north aisle of the last-named church and the gallery in St. Peter's, Wolverhampton, as typical of the work of the 17th century. The Bishop's Throne in Lichfield Cathedral, of 17th century work, and probably erected for Bishop Hackett, was the last example described, and was noticed in detail as being particularly fine. A number of very fine drawings, prepared by Messrs. Kendrick and McConnal, gave an especial interest to the paper, and at the close of an animated discussion following the paper, a hearty vote of thanks was accorded by the meeting to the authors.

**PROPOSED CO-OPERATION OF SCOTTISH ARCHÆOLOGISTS.**—At the monthly meeting of the Glasgow Archaeological Society held on Friday night, Mr. John Honeyman, F.R.I.B.A., the president, read a paper entitled "Suggestions for Co-operation with the View of Facilitating Archaeological Works in Scotland." At the outset Mr. Honeyman explained that, owing to the exclusion of Scotland from the co-operative scheme of the Royal Society of Antiquaries, it appeared to be their duty to devise a scheme for themselves. It was impossible for any one section of the country to achieve success in the direction indicated without advantage to the others and to archaeologists everywhere. He did not pretend to bring before them a scheme matured in all its details, but only so far sketched out that it might conveniently form a basis for discussion. Their aim should be chiefly and almost exclusively the aggregation of archaeological facts—the gathering together of facts in such a way that they might, with the utmost facility, be referred to. For this purpose two things would be required—1st. The construction of an archaeological map, which would grow in completeness with the years; and 2nd, the publication of an annual register, properly classified and indexed with a record of all finds, succinctly described and illustrated; and brief notices of important communications. These two aims might not seem very ambitious, but it would be found that they were very comprehensive, and they had at the same time that character of definiteness which was essential in all co-operative work likely to be useful. He proposed that every archaeological society in Scotland should help towards the accomplishment of those objects by the formation of a central executive committee. After discussion, the council was instructed to communicate with the Society of Antiquaries and other archaeological societies of Scotland, with a view to united action for the objects and on the lines indicated in Mr. Honeyman's paper.

The first contract in connection with the erection of citadel buildings in Westgate-road, Newcastle-on-Tyne, for the Salvation Army, has just been let to Messrs. Middlemiss Brothers, of the same town, for £3,125. The block comprises a large hall, seating 3,000 persons, divisional headquarters, shop, and other useful appurtenances. Total outlay will be about £8,500. Mr. J. Williams Dunford, of 101, Queen Victoria-street, London, E.C., is the architect.

The Corporation of Bristol having decided to substitute wood paving for granite in two streets traversed by tram-lines. The Tramway Company objected, and applied for an injunction. The matter was argued before Justices Denman and Vaughan Williams, who on Saturday announced their decision. The latter judge was in favour of the Corporation, but withdrew his judgment, as Mr. Justice Denman was of the opposite opinion. An injunction was granted, but it was intimated that the Corporation would appeal.

## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., LI., LII., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—E. and Son.—W. and Co.—J. B.—S. of A.—C. and F.

W. D. (1. They are republished by Batsford, 52, High Holborn. 2. We do not know.)

## "BUILDING NEWS" DESIGNING CLUB.

## FIFTH LIST OF SUBJECTS.

**SUBJECT F.**—A row of five cottages, the centre one to be a grocer's general shop. Each house to be on two floors, and to comprise living-room, 168ft. superficial area; kitchen 144 superficial area; scullery, w.c., pantry, tool-house, and coal place (the shop to the central house to be provided extra to this accommodation), three bedrooms and store cupboard to each house on first floor, separate and large wash-house for general use to the rear. The building to face a village street, and have frontage set back from public footway 14ft. Back way to cottages from either end of row. Style left to competitors. Material, stone, or walls with tile-hanging above, optional; roof covered with tiles, scale 8ft. to the inch. Sufficient drawings to show design, including sketch.

**DRAWINGS RECEIVED.**—"North Star," "Fiddler," "Coombe," "X. Y. Z." in a circle, "K. W. T.," "Serpa," "Nightlight," "Y." in a circle, "Wallaby."

## Correspondence.

## THE ARCHITECTS' REGISTRATION BILL.

## To the Editor of the BUILDING NEWS.

SIR,—Allow me to inform your readers that this Bill was brought into the House of Commons and read a first time on the 13th inst., and is expected to reach its second reading on the 19th March. Its provisions are precisely similar to those of the one submitted last year, but which, owing to the time given to the various architectural bodies to consider its clauses, was not presented till late in the session, and hence did not reach its second reading. The most serious objection raised to the original Bill, introduced by the late Col. Duncan, was that civil engineers and surveyors were included in its scope. The objection now taken in the same quarter is founded on the fact that engineers and surveyors (with the important exception of those holding public appointments) are excluded from its pro-

visions. The inconsistency of our opponents can surely be carried no further.

There is but little time between this and the second reading; but if the three hundred architects who gave their written approval of the principles involved some four years ago, and if the three hundred and fifty members of the Institute who signed petitions in favour of the Bill, and who have otherwise shown sympathy with its objects, will now bestir themselves, and invite their respective representatives in Parliament to support the Bill, they may do much to further its success. I ask all, therefore, to do this much at once, and not delay until it be too late. It must not be inferred that only 350 members of the Institute are in favour of the measure. I know of very many more myself, and believe the number may safely be doubled; but the majority have been waiting in vain for the Institute to move in the matter. If any of these still feel that they cannot support the present Bill let them at least make an effort to press forward their views at the Institute, and they will find that they have more support than they think for. Of those who have petitioned in favour, about 150 are Fellows, and the remainder Associates; 71 have obtained admission by examination (four in the class of proficiency), 23 have qualified for district surveyorships, and 15 have obtained travelling studentships, or are prizemen or medallists, and seven have been, or are, presidents of societies.

Let it not be forgotten that at the last Congress of the Institute a resolution in favour of the measure was lost by the casting vote of the chairman only; that a committee was formed to consider the subject, and a report drawn up, but never published. The Institute has admitted the principle we are contending for, by imposing a test for membership of its own body. All we ask is that that test be extended to all hereafter entering the profession. This is only fair towards those who do voluntarily offer themselves for examination, and until it be made compulsory upon all the Institute can only occupy the position of a more or less select club, instead of becoming, as it ought, the representative body of the profession.

The feeling in favour of such legislation is making rapid strides, not only in England, but in France, where four national congresses have approved of the principle; in Australia, where it is proposed to make it a Government measure; in the United States, where efforts in the same direction are being made; and in Canada. In regard to the latter country, the Secretary of the Ontario Association writes to me that "93 percent. of the whole profession in the province are in sympathy with the movement, with less than 1 per cent. in opposition, the view of the remaining 6 per cent. being unknown to us." Their president also, in addressing the annual convention, said: "There is hardly an architect of note practising in this province who has failed to identify himself with the movement. Our undertaking is no longer a mere Utopian fancy. We have accomplished as much in twelve or fifteen months as our brethren in the Mother Country have in more than as many years." Their Bill is now, I believe, before the Legislative Assembly.

With architects in France, America, Australia, and Canada I am in frequent correspondence. From Chicago a leading and well-known architect writes:—"Persevere in your noble work, for if the Registration Bill becomes law, I am confident the science of architecture will receive such an impetus for good that the rising generation will cherish your memory for ever."

From the Ontario Association of Architects I have received the following resolution:—"That the thanks of this association are due to Mr. Hugh Roumieu Gough for the courteous and valuable assistance he has rendered us; that we honour him for the glorious fight he is making in the cause of Registration, and heartily wish him the fullest success in the future."

I give these to show that the movement is not the mere whim of a few, as some of our opponents endeavour to believe, but that, on the other hand, it has a world-wide interest.

With these and other like expressions of sympathy and approval from abroad, I feel that Registrationists at home may well take courage and continue to persevere in their efforts until success is attained.—I am, &c.,

HUGH ROUMIEU GOUGH.

12, Carlton Chambers, Regent-street, S.W.  
Feb. 24.



## IS NOT REGISTRATION DESIRABLE?

SIR,—Your correspondents, "X." and "F. N. K.," by sending the extracts of advertisements for insertion in your journal, probably imagine that they have done something for the registration cause; but I am at a loss to understand the necessity of periodically drawing attention to such exhibitions. Surely no good and true member of the profession would envy the advertisers any business they might derive from their venture; but whether the course adopted by them is exemplary or otherwise remains an open question.

Who's to "bell the cat," when the profession teems with persons who arrogate to themselves the titles of "architect," or "architect and surveyor," and do not scruple to use any means, foul or fair (more often the former), to obtain commissions which their fellow practitioners have a right to expect from recognised clients?

I do not deny that the profession suffers from the ravages made by auctioneers, builders, and others, who either *do* plans or keep a cheap clerk for that purpose. Be that as it may, there are many builders—aye, and builders' clerks—whose skill in construction and details is of a higher order than many so-called architects. Again, I could quote illustrations of work by architects and surveyors which show such utter ignorance of the principles of design and construction as to make one blush for shame, and yet they make a good living, while their more competent brethren struggle to make both ends meet.

It is a 19th-century scandal that true merit is so frequently unrecognised and relegated to obscurity, while cheeky ignorance and incompetence, assisted by "a friend at court," flourish triumphantly.

The question for registrationists is how to effectually remedy this, not how shall we combine to fix a scale of charges for our work? else let us form a "professions" union, and disguise the fact no longer.—I am, &c.,

Feb. 24. SEMPER PARATUS.

SIR,—In my opinion, registration is desirable, and in classes. Firstly, a class of thoroughly qualified gentlemen (in every sense of the word) who have passed the examination which, no doubt, the R.I.B.A. officials are capable of conducting as expert architects. So is the class of M.I.C.E., that of A.I.C.E., that of A.S.I. (whose examination is now advertised in your paper), and others.

The class of expert architect seems to be defined by the R.I.B.A. as a gentleman of high general education (the higher the better, University if possible), having a general knowledge of building materials, of the labour necessary to fit them to their several uses, of the natural laws of their existence, of the statutory laws relating to property, tenure, Contract and Building Acts, and of the local by-laws (sanitary and building) in his particular locality, with ability as a modeller, specification writer, and draughtsman, to put in form intelligent to workmen his special knowledge of construction and design, which it is most important he should acquire in one or more styles of architecture, and of his possession of which he has convinced his client by his drawings, sketches, and general description, to which add some knowledge of "cost of production."

It is to the "cost of production" of such "expert architects" I wish to call your attention. Assuming the School Board "standard" to be necessary for all English boys, and to be reached by the "raw material" of which all "Britishers" are composed, we have, in quantity surveyor's vocabulary:—

Extra only to converting a School Board boy into a University degree gentleman (inclusive of books, food, and petty expenses), allowing for loss of time during education period.

Expense of pupilage, inclusive of premium and all, as last.

Cost of additional time as improver over actual earnings.

Cost of tours for professional experience during the last two periods.

Credit professional earnings during the remainder of active life.

My object in calling attention to these facts is that for architecture to pay its practitioner must have a very large clientage, and that there is very small chance of the ordinary pupil obtaining

such a clientage; nor (as the R.I.B.A. admit) is 5 per cent. remunerative on small jobs.

It seems to me that one of two things must occur: either small jobs must go on without the qualified architect, or he must work at unremunerative commission. If he is prepared to do the latter, let it be generally known; but if he is not, why does he grumble at others who will?

Again, would it not be possible to have a "lower branch" of architects, such as the country surgeon is to the consulting physician, or the registered chemist to the country surgeon, but qualified men of their class.

Then we come to clerk of works. We have men in large estate offices (at royal castles, at the cathedrals, and similar places), and men under our great architects; but this title, like architect, is assumable by anyone; it is held by many clever and honourable men, and by lots of dishonest duffers. The question of their "status" greatly affects that of architects, and if one takes the Royal Engineers as a copy, it almost seems as if a system of "rank" was required, men capable of small jobs and men expert in specialities. How could this be made workable?

No doubt the whole question of "qualification" of men engaged in supervision of work, whether as engineers, architects, clerks of works, &c., is one of the questions of the day. But it must be borne in mind that in small places and country towns there is no room for specialists, and those who have a small amount to expend should not be hindered by vexatious professional quibbles; yet a man who could not pass the higher examination might be found who could supervise small works cheaply, as the uncommissioned R.E., probably under a more qualified man. What is wanted, is on large or small works there should be qualified supervision; but on small works, say under a hundred pounds, this cannot be remuneratively given by the architect on present terms.

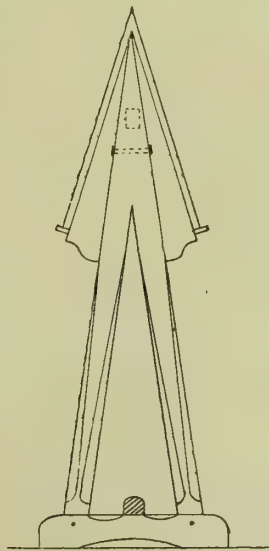
What would the proposers of registration recommend for these works if all works have to be under supervision?

Whilst leaving the central idea to more favoured hands, will you please give me room to plead the cause of, those like myself, on the

CHECKERED BORDER.

## A NEWSPAPER DESK.

SIR,—The desk for newspapers shown in last issue is not a good form, though commonly used; when the wood shrinks it gets rickety and soon



falls to pieces. I speak from experience, having seen a similar one under repair. It should be well braced from end to end, as it is often dragged about the floor while the latter is being washed. I inclose sketch of another which I think far stronger—at all events, it has not come to grief as yet.—I am, &c.,

JAS. SPARROW.

Reading.

Mr. Alfred Ivey, surveyor, of Clapham, while taking measurements last week for the rebuilding of the premises recently destroyed by fire in Aldermanbury, fell down the lift, sustaining fatal injuries.

## Intercommunication.

## QUESTIONS.

[10233.]—**Who is Responsible?**—In a competition for finishing a church in the south of Ireland a lithographed sheet of drawings was supplied to each of the competitors, in which four existing piers were scaled and figured 35ft. 9in. high. In the printed instructions issued to competitors there is a clause as follows:—"It would be well for intending competitors to visit the church and satisfy themselves on all points." In another paragraph farther on it is stated that the piers are of different heights, but that the pier figured 35ft. 9in. is the lowest. The successful architect prepared his drawings, showing the existing work according to the lithographs, and the new work coloured blue. A contract was taken for a sum within the amount stated in conditions. When the scaffolding was erected, and the existing piers measured it was found that they were nearly 8ft. lower than was shown in lithos (the lithographs were prepared by an architect who acted as umpire and adviser to the committee). The contractor claims payment for the additional work; but the committee maintain that the selected architect should have measured those piers before he sent in his drawings for competition. The architect, on the other hand, throws the blame on the umpire who prepared the lithographs. The conditions were rigid as to cost, and if his drawings contained more masonry than was shown by the other competitors he would be placed at a great disadvantage, and also that it was not just to expect him to go to the expense of providing ladders and men, and losing a day measuring the work, for the time was extremely limited—that is, supposing he had a doubt as to the accuracy of the measurement of the piers; but he had no reason to doubt their accuracy. Who should be held responsible for the mistake?—SUBSCRIBER.

[10234.]—**Radius of Arch.**—Will someone please give me an algebraic formula for finding the radius of an arch when the span and rise are given?—CLERK OF WORKS.

[10235.]—**School Plans.**—What areas per child are absolute in alterations to denominational schools where grant is requested? What for same where no Government regulations are compulsory? Have plans to be approved by any authority (except the local) when additions to national schools are contemplated? If so, name authority, and if regulations are to be had.—DOUBT.

[10236.]—**Damp Flags.**—I have a cottage property with stone flagged kitchens, which in some parts have the appearance of being damp; but I am of opinion that it is not caused by dampness, as one portion of a flag will have this appearance, and the other portion appears quite dry. Is there any remedy or application that will remove the damp appearance?—JOHN YATES.

[10237.]—**Moment of Inertia.**—Will someone explain fully and simply the meaning of moment of inertia, and show how to obtain the B.W. of any section (say an angle or tee-iron) by this method? A sketch of a good turned joint for connecting a series of C.I. columns would also be very acceptable.—READER.

[10238.]—**Boiler.**—Could any of your readers favour me with their experienced advice in the following case? A firm of contractors have agreed to do certain repairs to a house, and, among other things, it is specified they are to "examine, clean out, and put in proper working order the large boiler" in cellar. The contractors cleaned out and endeavoured to put the boiler in proper working order; but after testing it, the boiler was found to be worn out and perfectly useless for the purpose, so that a new boiler became necessary. Who is liable for cost of boiler and fixing?—ARCHITECT.

[10239.]—**Late Work in Yorks.**—Would some of your readers kindly give me a short list of 16th or 17th-century work in the north of Yorkshire which is worth sketching during a summer's tour?—PENCIL.

## REPLIES.

[10222.]—**Billiard-room Floor.**—To carry a billiard table, increase of rigidity is of far greater consequence than increase of strength, and I have tongued floors in the manner following:—Suppose the room to be 24 by 18, and the joists to be 12in. deep, give the last joist at each end of the room a bearing on the wall by corbel or set-off, and run a rod (say  $\frac{1}{2}$  iron) under each line of legs of the table from end to end of the room jointed in three lengths. The length of rod at each end will be about 7ft., and will be run in a slanting direction from the top of the end joist (where it will be turned over or bolted) through the intermediates down to the bottom of the joist, where the centre length meets it. This centre length may be a bar  $1\frac{1}{2}$  by  $\frac{3}{4}$ , and may be screwed up to the joists as well as connected with the rods. The trussing will then be effected by cutting in and driving tightly down to the top level from joist to joist a row of straight bridgings in a line over the rods.—WILLIAM WHITE, F.S.A.

[10224.]—**Sound.**—Some years ago I was troubled with noise from an overhead schoolroom. I worked up the theory and practice of the subject, and considered silicate cotton or slag wool, though evidently good, somewhat expensive. A happy inspiration induced me to try the moss litter I use in my stables, which costs about one-sixth the price of slag wool; a hundredweight also has the advantage of going much further, and, like it, no insects or vermin harbour in it. The result was eminently satisfactory. Since then I have used it successfully between match-boarded partitions, and for the latter purpose I believe it has no equal, for being so light, it exerts very slight thrust on the boards. I recommended it to the company I buy my litter of, and I believe they now advertise it for the purpose. A rough estimate for one square would be 1 to 2 cwt. —E. H. BELLARS, Christchurch, Southampton.

[10224.]—**Sound.**—To fill in the sawdust or deafening material will be the better plan to prevent the transmission of sound; as a timber-framed partition, match-boarded, is only partly hollow, the sound vibrations would easily pass through the studding. If an uninterrupted air-space existed, it would have some value in deadening the sound.—G. H. G.



[10225.]—**Echo.**—Try to confine the space over the speaker's chair by constructing a temporary ceiling of canvas on frame. The height is too great, and I should recommend the construction of a ceiling suspended from roof as the only plan likely to be a success.—G. H. G.

[10225.]—**Echo.**—No particulars are given as to whether the floor is boarded or the rafters lined with boarding or plastered, or the rafters shown. Probably there would be no echo if the room were ceiled across at the level of the wall-plate, with that proportionate height of wall. Perhaps an experiment might be made by suspending a tarpaulin horizontally at the platform end at that level, say over about half of the room, or laying scaffold planks across, from the effects of which some judgment might be formed as to what could or should be done.—WILLIAM WHITE, F.S.A.

[10227.]—**Natural Bed.**—The bed of stone in a joggled arch would be better placed in the direction to offer the greatest resistance to shearing. I should say perpendicular to the joints; but much depends on the form of arch. If flat, I should prefer the usual method for other reasons.—G. H. G.

### CHIPS.

We observe that in the report on agricultural implements and machines just issued by the Government of India, the hand pumps, as made by Hayward Tyler and Co., of Whitecross-street, London, for deep and shallow wells, are specially pointed out for their utility and adaptation, stress being laid on the advantages of their system as preventing pollution of the water in the well.

The town council of Longton, Staffs, discussed at length, on Friday, which they should adopt of two plans for the erection of a pavilion in the Queen's Park, proposed by Mr. J. Taylor. A committee recommended the selection of the larger scheme having wings, the additional cost of which was £1,752; but the council decided to adopt the less expensive design.

A committee of the Liverpool city council have recommended that body to accept Mr. P. H. Rathbone's offer to bear the expense of the completion with sculpture by Mr. Stirling Lee of the vacant panels in St. George's Hall. It will be remembered that after two panels had been filled by Mr. Lee, objections were raised to a nude female figure, and the council decided not to proceed with the work.

On Friday last, Mr. G. Herbert Bayley, engineering assistant to Mr. Ar. Jacob, B.A., Mem. Inst. C.E. borough engineer and surveyor of Salford, was unanimously appointed engineering assistant to Mr. E. G. Mawbey, A.M.I.C.E., the borough surveyor of Leicester. Mr. Bayley was formerly articled pupil to Mr. Jacob.

The Erith local board, at a meeting held on Monday last, had before them five selected candidates for the office of surveyor to their town. On the voting being taken, Mr. T. W. Franks, assistant surveyor, West Bromwich, and Mr. S. Toulson, assistant surveyor, Plumstead, received an equal number of votes, the latter being appointed by the casting vote of the chairman. There were 67 applicants.

The names of the following builders are included in the list of receiving orders in Tuesday's *Gazette*:—S. Horlock, Manor Park, Essex; Thomas Aldridge, Lewisham; and James Snelling, Pontypridd.

At a meeting held at the Council House, Birmingham, it was decided to take steps for the restoration and repair of St. Mark's Church in that city, one of three built fifty years ago. The architect for the restoration is Mr. J. A. Chatwin, and the estimated sum required is between £2,000 and £3,000.

On Thursday, the 20th inst., Mr. J. T. Harrison, M.Inst. C.E., an inspector of the Local Government Board, held an inquiry in the Town Hall, Crewe, with respect to the application of the town council to borrow £500 for works of street improvement and sewerage. The money is intended to be spent in the making of a relief sewer along Hall-o'-Shaw-street, at a cost of £150, and the re-paving of Cemetery-road and Market-street, which will cost £350. The borough surveyor, Mr. Geo. Eaton Shore, produced the plans and specifications for the work, and explained the schemes. There was no opposition.

Two years ago the condition of the Cathedral of Seville, once a mosque, excited great anxiety. A pillar and part of an arch in the nave fell, and fears were entertained that the whole building might collapse. The danger of further mischief has been averted. The fallen pillar and arch are being replaced, and other extensive repairs and restorations are being carried out. Especially the entrance known as the Portal San Cristobal, which was never finished, is being now renovated and completed.

A new schoolroom adjoining the Congregational chapel at Watford was opened last week. It is Gothic in style, and in harmony with the chapel, being built of red brick; it is seated for 150 persons, and has been built by Mr. W. Judge.

### WATER SUPPLY AND SANITARY MATTERS.

**OUNDLE SEWERAGE.**—The Commissioners of Oundle held a special meeting last week to consider plans submitted by Mr. W. H. Radford, C.E., of Nottingham, for the sewage disposal of the town. The engineer explained that he proposed to purify the sewage in duplicate precipitation and filtration tanks, the chemicals and filtering medium being supplied by the International Sewage Purification Company. The sewage mud would be pumped on to air-drying pits by means of a small circular windmill. The whole of the town sewage would be delivered to this site by various new pipe sewers, the sewage of one low-lying locality being pumped into a high-level sewer by a small compressed air-pump placed under the street, and supplied with compressed air through a pipe from the new water-works engine. The Commissioners decided to carry out the scheme in its entirety.

**THE POLLUTION OF THE RIVER AIRE.**—A conference was held at the Leeds Town Hall on Monday between members of the Leeds Rivers Pollution Committee of that corporation and a number of members of the Bradford Town Council upon the question of what steps can be taken to prevent the pollution of the Aire. The conference, which was private, occupied about two hours, and the various questions at issue between the two corporations were discussed. An agreement was arrived at, to the effect that the most effectual mode of promoting the purification of the Aire would be by the establishment of a Conservancy Board. It was concluded that the town clerks of Leeds and Bradford should write a joint letter to the West Riding County Council and the local authorities along the watershed of the river Aire, asking them to co-operate together in an application to the Local Government Board, under the Act of 1888, to constitute a joint committee to carry into effect the objects of the conference.

### LEGAL INTELLIGENCE.

**IMPORTANT TO ARCHITECTS AND SUB-CONTRACTORS.**—SMITH AND SONS V. KIRK AND RANDALL.—At the Brompton County Court on Tuesday last, before His Honour Judge Stoner, this case was heard, which has considerable interest for architects, as it raises the point whether after an architect has ordered special extras of a make detailed by him and the amount has been included in the additional account at the end of the job, the general contractor can refuse payment to the tradesman on the ground that he did not order the goods. In this case the plaintiffs, Charles Smith and Sons, locksmiths, Birmingham, sued Kirk and Randall, contractors, Woolwich, for £49 5s. 6d. as payment of a balance for extra locks supplied under an order by the architect, Mr. Thomas Verity, to defendants as contractors for the Kensington Public Baths. The defendants pleaded that while they did agree with plaintiffs to supply certain locks, and duly paid for them, they gave no orders for extras, nor did they receive payment for them from the Bath Commissioners. Mr. Rose Innes appeared for plaintiffs, and Mr. Raven for defendants. Mr. Charles Smith deposed that his firm were sub-contractors for locks and other ironmongery in the contract for the Kensington Baths taken by defendants. The plaintiffs were paid on that sub contract £97 10s. 3d., and an account was sent in for extras to Mr. Verity as the architect in the ordinary course of business. Mr. Verity certified that £49 5s. 6d. was due to the plaintiffs. As this sum was included in the final certificate on which payment was made to defendants, plaintiffs' firm applied for the balance, but never received it. Cross-examined: Defendants wished to give the contract to another firm. Plaintiffs had an order for the work, not from defendants, but from Mr. Verity. Plaintiffs never sent in an account to the defendants, having sent it in to the architect. Mr. T. Verity, F.R.I.B.A., proved that additional locks, the subject of this action, were ordered by the Bath Commissioners, and were supplied by plaintiffs, to his satisfaction. Witness examined them with the clerk of works, and passed the account for payment. Mr. F. H. A. Hardcastle, quantity surveyor, deposed that he measured up the work for the architect with Mr. Batstone, surveyor for Messrs. Kirk and Randall, and the bill jointly prepared by them, including the extras in question, was produced before the commissioners prior to payment of final certificates. No objection was raised to the payment of this item, which was duly included in the final account. Mr. Verity, recalled, said that none of the items included in the additions side of the account was repudiated by the defendants. Joseph Randall, one of the defendants, stated that he knew nothing of the account now sued for until some weeks after the transaction was closed. Witness declined at the final settlement, which ended in a compromise, to recognise the accounts prepared by the joint surveyors, Batstone and Hardcastle, and submitted a fresh set of accounts to the Commissioners. W. H. Murlis, one of the Bath Commissioners, deposed that at a meeting of the board for final settlement,

when a compromise was arrived at under which defendants accepted £2,500 in settlement of all charges, he heard no reference made to plaintiffs' claim for extras. His Honour, in giving judgment, said that if the defendants, as contractors, knew nothing of the sub-contractor's claim, it was their business to make inquiries, it being their duty to protect the sub-contractor. Constructively, they knew of all the items in the account which Batstone, as their surveyor, had assisted in preparing. It being, therefore, defendants' omission, he should give judgment for plaintiffs with costs.

**RE T. QUINN, M.P.**—A first meeting of creditors was held on Tuesday before Mr. Chapman, assistant-receiver, under the failure of Mr. Thomas Quinn, M.P. for Kilkenny, and of the Estate Office, Popham-street, Islington, builder and contractor. The statement of affairs showed unsecured debts £9,079, and debts fully secured £66,638, with assets estimated at £919. The debtor commenced business about 26 years ago with a small capital. In 1870 he was adjudged bankrupt, under which proceedings a composition arrangement was approved, and the adjudication annulled. The composition, however, was not paid, and in July, 1872, he was again adjudged bankrupt, under which proceedings his discharge was granted in January, 1886. No dividend appears to have been paid. He attributes his present failure and deficiency to his inability to sell his mortgaged properties, and to depreciation in the value of the same as now estimated for realisation; also to heavy law costs and other expenses in connection with his properties and business, and partly to his household and personal and medical expenses (about £800 per annum). The securities held by creditors, treated as fully secured, consist chiefly of mortgages on blocks of artisans' or industrial dwellings built by the debtor at Waterloo-road, Islington, and Bethnal-green. The debtor offered a composition of 5s. in the pound, payable in two instalments at fourteen days and six months from the date of approval. A lively discussion followed, but the proposal was entertained by the necessary majority of creditors.

### CHIPS.

On Friday an interesting gathering took place at the Stalls Workshops on the Longleat Estate, near Warminster. It was to celebrate the 38th wedding day of Mr. and Mrs. Buckenham, the coming of age of their eldest son, and to bid farewell to Mr. Buckingham on his resigning his position as clerk of the works to the Longleat Estate, a post which he has held for twenty-seven years. Mr. Buckingham invited the workmen at the Stalls to a supper. Mr. J. Sims (foreman) presided, and presented a marble clock, subscribed for by the workmen on the estate, to Mr. Buckingham, who suitably replied. A concert followed, in which Mr. Buckingham's sons and daughters took part.

The improvement committee of Newcastle-on-Tyne have decided to carry out a large number of drainage and paving works in various parts of the city, at an estimated cost of £28,140.

The Milnrow local board have just erected a handsome building of stone as their offices and fire station, and a committee have succeeded in collecting a sufficient sum to erect a tower and clock on the offices, in memory of the late John Bright. The clock has been specially made by Messrs. J. B. Joyce and Co., and includes all the latest improvements. There are four illuminated dials, and the bell can be heard for several miles.

Alterations have been made to the New River Company's premises, Finsbury Park, embracing the ventilation, which is now carried out on the Boyle system.

The Salvation Army has just purchased a very prominent site in Cowgate, Peterborough, and intend erecting on the same a large citadel capable of accommodating 1,000 persons, and two large shops. Mr. James Wenlock, builder, Peterborough, has secured the first contract, but the main portion has not yet been tendered for. The architect is Mr. J. Williams Dunford, of 101, Queen Victoria-street, London, E.C. The scheme will cost about £5,000.

The Departments of Antiquities in the British Museum have just been enriched by the purchase of a portion of the Earl of Carlisle's collections from Castle Howard, including a Late Greek vase, bearing the signature of its painter, Python, and representing the interrupted burning of Alcmena, who has been placed on the pyre by her husband, Amphitryon, and in answer to whose prayer Zeus extinguishes the flames; and also two Roman phalerae, consisting of busts of boys carved in bluish grey chalcidony. Among the Mediaeval and Renaissance gems acquired from the same collection the two most important are a contemporary portrait of Lorenzo de Medici, and another portrait supposed to be that of Louis II.

Professor Carl Bloch, the eminent Danish painter, died on Saturday night, at the age of fifty-six.



## Our Office Table.

THE profit-sharing scheme recently proposed by Messrs. Peto Brothers, under which they offered to give one quarter of the whole net profits to the men employed on the Cane Hill Asylum extension works, has been criticised by the London United Building Trades Committee. Special exception is taken by the committee to the following provisions:—“(a) All right to participate in the profit will be forfeited by any who earn less than a total amount of £5 in wages on the contract. (b) All share of profit will be forfeited by any who may individually, or in combination, do anything tending to diminish the profits on the contract by neglecting their duties, misconducting themselves, wasting their time, or by joining any strike for shorter hours, or for wages above the existing recognised rate of wages, whether the strike be general or otherwise. (c) All profit will be forfeited by anyone who may do anything tending to damage the character of the firm for good and honest work; the shares of any men so forfeiting their claims to be added to the shares of the others.” The committee “appeal to the workmen to withhold their co-operation until Messrs. Peto Brothers have shown that full confidence in their workmen which they evidently have in their own self-assurance and importance.” The committee further asked Messrs. Peto Brothers either to modify the conditions or consent to the withdrawal of the scheme; but they have replied that it is for the workmen asked to accept or reject the offer, and that it is not in their power to withdraw it without the consent of the men.

THE Trustees of the British Institution Scholarship Fund will proceed in July next to the election of five scholars—one in architecture, two in painting, one in sculpture, and one in engraving. The scholarships are of the value of £50, and are tenable for two years. Candidates must be between seventeen and twenty-three years of age inclusive; and, subject to this limitation, the scholarship in architecture is open to all art students who have obtained gold medals or scholarships or money prizes of the minimum value of £10 in any art school in the United Kingdom, and who submit for examination the following works:—(1) A measured drawing of a portion of an existing building; (2) a freehand shaded drawing of a capital, both on a half-imperial sheet of paper; (3) a design for a science and art museum in a provincial town. The drawings are to consist of plan and elevation both to a scale of  $\frac{1}{2}$  in. to a foot, and of a section to a scale of  $\frac{1}{4}$  in. to a foot. Further particulars and the regulations to be observed can be obtained on application (by letter only, and inclosing a stamped, directed envelope) to the Trustees, British Institution Scholarship Fund, 19, York Buildings, Adelphi, W.C.

THE Royal Society of Painter-Etchers elected on Tuesday night the following gentlemen as Associates:—Messrs. A. W. Bayes, W. Boucher, C. F. Robinson, and F. S. Walker. The Society announce that, their object being not merely the restoration of original etching, but the re-infusion into all forms of the engraver's art of the painter-like qualities which to a great extent it has lost, it has been determined to include in each annual exhibition of the works of its fellows a few typical examples by one or other of the great masters of etching, beginning at the forthcoming exhibition, which opens to the public on Monday next, March 3, with those of Rembrandt.

AMONGST recent developments of warming is “power heating” for large buildings. The requirements are boilers, a power fan to force the air through steam coils, and ducts to distribute the heated air-currents through the building. These ducts are proportioned to the several rooms. From the coil-chamber a brick tunnel of sufficient size is taken to the building, a rather smaller square pipe distributes the currents right and left, each room having its separate branch-pipe, and exhaust flues leading off to the outer air. These are considered sufficient for ventilation. To regulate the amount of air to each room dampers are placed below the registers. The ducts are proportioned to each room, and upon the proper size of these and the means of adjusting the amount of air to each, depends the success of the system. Mr. W. L. B. Jenney, architect, of Chicago, has applied the plan to the Normal

School at Terre Haute, a plan of which appears in the *Engineering and Building Record*.

AN Exhibition of Art Brasswork will be opened in London on the 20th of May, under the auspices of the Company of Armourers and Braziers. The exhibition will take place in the hall of the Company, 81, Coleman-street. Craftsmen's prizes are offered for ecclesiastical and domestic articles in brass and bronze, and metals with brass combined; also for modern armour, breastplates, and blades, as well as for designs and specimens of work in casting, brazing, hammered hollow-ware, repoussé work, engraving, applied ornament, niello, and damascening. There are also special prizes for apprentices, and for the joint work of designers and craftsmen.

ANOTHER effort, says the *New York Evening Post*, is being made to utilise the power of the Niagara River above the falls by means of a main tunnel two and a half miles long, with certain cross tunnels, and a large sum has been already subscribed. It is thought that if thirty mills are built and supplied with 500H.P. each, the investment would pay 5 per cent. The estimated cost is 2,250,000 dollars. It is strange more has not been done to utilise the power of the Falls itself, and many feasible schemes have fallen through.

ON Friday evening last Mr. Harland Lemon, the popular humorous reciter, gave an evening's recitals at the Ventnor Hall, Hove, to the whole of the staff and workmen, with their wives and families, of the firm of Mr. J. T. Chappell, builder, London, a most enjoyable evening being spent; Mr. Winter, the manager, represented the head of the firm. The programme consisted of a selection of humorous pieces, which were given in Mr. Lemon's inimitable style, and created roars of laughter. The principal pieces recited were “The Eatanswill Election,” “One More: the Tale of an Old Salt,” admirably rendered; “How Bill Adams Won the Battle of Waterloo,” being a new account of a great historical event; “The Three Parsons,” “One Niche the Highest” (by desire), this selection proving Mr. Lemon to be not only a humorous, but also a dramatic, reciter of a very high order; Sketchley's “Mrs. Brown's Vote Solicited,” and “Rubinstein's Piano”—the intense power and masterly description displayed in the delivery of the latter drew forth rapturous applause.

### CHIPS.

The fourth of the present series of free lectures at Carpenters' Hall was given on Wednesday evening by Professor Armstrong, who took as his subject “The Domestic Fireplace.”

The formal opening of Trinity-road Baptist Church Schools, Upper Tooting, S.W., after enlargement, took place on the 11th inst. A special feature in connection with the alterations is the provision of a church parlour, cosily furnished with every requisite for comfort, over a part of the school-room, which is intended to be used for small social gatherings in connection with the church. The alterations and additions were carried out by Mr. W. Johnson, of Wandsworth Common, at a cost of about £800, under the superintendence of the architect, Mr. E. Elton Hawkins, 19, York-buildings, Adelphi, W.C.

The Ashley-street board school, Carlisle, is nearing completion, and is being warmed and ventilated throughout by means of Shorland's patent warm air ventilating Manchester grates, and open fireplace Manchester stoves, the same being supplied by Mr. E. H. Shorland, of Manchester.

In the ancient parish church of Stockland, near Honiton, which was reseat and restored in 1888 under the direction of Mr. Edmund Ferrey, has just been placed a new pulpit, subscribed for by the parishioners, and designed by the same architect. In form it is octagonal, the superstructure of oak, with ornamental open panels and carved cornice, the pedestal being of the red Bishops Lydeard stone, with blue Keinton steps.

The foundation-stone of the new church of St. Hilda, at Hedgefield, Co. Durham, was laid on Saturday afternoon. The church will occupy a beautiful site overlooking the river Tyne, and with distant views of Heddon-on-the-Wall, Throckley, Newburn, and Newcastle on the opposite bank of the river. The architects have adopted the Cornish type of village church, characterised by low, massive western towers, low side walls, and barrel-vaulted ceilings. The accommodation is for 273 persons. The work is being carried out by Mr. Alexander Pringle, of Gateshead, from the designs and under the superintendence of Messrs. Oliver and Leeson, of Newcastle.

### MEETINGS FOR THE ENSUING WEEK.

- MONDAY.—Royal Institute of British Architects. Discussion on J. Slater's paper, “Building Regulations,” 8 p.m.  
Clerks of Works' Association. “Light-house Construction,” by T. Edmond. 8 p.m.  
Leeds and Yorkshire Architectural Society. “The Revival of Applied Art,” by Mervin Macartney.  
Liverpool Architectural Society. “The Decorative Panels of St. George's Hall,” by J. M. Hay.  
TUESDAY.—Institution of Civil Engineers. “The Hawkesbury Bridge, N.S.W.,” by C. O. Burge; “The Dufferin Bridge, Benares,” by F. T. G. Walton; and “The New Blackfriars Bridge, London, Chatham, and Dover Railway,” by C. E. W. Crutwell. 8 p.m.  
Manchester Architectural Association. “Notes in Holland and Belgium,” by T. Chadwick.  
Glasgow Architectural Association. Annual meeting. 8 p.m.  
WEDNESDAY.—Carpenters' Hall Free Lectures. “The Forth Bridge,” by Prof. A. B. W. Kennedy, F.R.S. 8 p.m.  
Society of Arts. “Recent Progress in British Watch and Clock-Making,” by Julian Trippin. 8 p.m.  
Civil and Mechanical Engineers' Society. “Fresco Cement,” by Edwin Lucas. 7 p.m.  
THURSDAY.—Royal Archaeological Institute. “Anglo-Saxon Ornament compared with Anglo-Saxon MSS.,” by J. P. Harrison; “A Brass at Newcastle,” by A. Oliver. 4 p.m.  
Edinburgh Architectural Association. Paper by J. Kinross. 8 p.m.  
FRIDAY.—Royal Institution. “Electrical Relations of the Brain and Spinal Cord,” by F. Gotch. 9 p.m.  
SATURDAY.—Society of Arts. “The Atmosphere,” by Prof. Vivian Lewes. 3 p.m.

## Trade News.

### WAGES MOVEMENTS.

EDINBURGH JOINERS.—At a large meeting of the Edinburgh and Leith Operative Joiners held in St. Mary-street Hall on Friday night to hear the employers' reply to the demand for an advance of  $\frac{1}{2}$ d. per hour, a letter was read from the secretary of the Masters' Association, expressing their willingness to meet the men half-way. The meeting heard reports from the various shops with a view of ascertaining the position of affairs. The reports submitted showed that 42 masters, employing 811 men, had conceded the demand in full, while 12, with 255 men, had offered  $\frac{1}{2}$ d. increase. This report was considered highly satisfactory, and it was unanimously resolved to continue the agitation.

NEWCASTLE-ON-TYNE.—The bricklayers' labourers of Newcastle and Gateshead sent notices for an advance of  $\frac{1}{2}$ d. per hour all round, but the masters have not so far responded favourably. The notices will expire to-morrow (Saturday), when, if the advance is not granted, the men will come out on strike.

NORTH BERWICK.—The joiners here who went on strike for an advance of  $\frac{1}{2}$ d. per hour resumed work on Tuesday, the masters having conceded the rise.

PAISLEY.—At a mass meeting of joiners, held in the Globe Temperance Hall, Paisley, it was agreed to ask an increase of wages of  $\frac{1}{2}$ d. per hour, and, if it were not conceded, to come out on strike on 17th March.

THE YORKSHIRE POTTERY TRADE.—A meeting of the Association of Earthenware Manufacturers of Yorkshire was held at Pontefract on Tuesday. With the exception of one firm, the whole of the manufacturers of the Castleford, Ferrybridge, Swinton, and Rotherham districts were present. A discussion took place as to the demand of the men for a return of the 10 per cent. on working prices conceded to the employers in 1884-5, and it was unanimously decided to adhere to the previous decision, not to grant the return asked for. The workmen have given notice, and will undoubtedly come out on strike. The notices expire to-day (Friday). Over 1,000 hands will be directly affected. The workmen have formed an association called “The Yorkshire Potters' Association,” and have joined the Sheffield Trades Council. The Staffordshire potters are likely to forward assistance to their Yorkshire brethren.

The new mission hall and classrooms in connection with St. Saviour's Church, Battersea Park-road, S.W., were formally opened on the 13th inst. The building, which stands immediately behind the church, comprises a hall 80ft. by 40ft., and three large classrooms. Mr. E. Elton Hawkins, of 19, York-buildings, Adelphi, W.C., was the architect, and Messrs. G. N. Street and Son, of 34, Surrey-lane, S.W., the contractors.



## CHIPS.

The town council of Leeds have received a report from Mr. T. Hewson, their waterworks engineer, stating that of the Blackmoor tunnel 1,490 yards has been bored, and the work is being trimmed by the contractor, Mr. Simpson, of Hunslet, preparatory to being lined with brickwork.

A new refuse destructor at Burslem, erected by Messrs. Manlove, Alliott, and Co., of Nottingham, for the town council, and under the direction of Mr. Sheldon, borough surveyor, was inaugurated last week.

All Saints' Church, Rockwell Green, Wellington, Somerset, was consecrated on Tuesday week by the Bishop of Bath and Wells. The church, the style of which is of the Transition period from the Early English to the Decorated, consists of a nave with clerestory, north and south aisles, chancel, north and south transepts, and a vestry adjoining the north transept. The plans include a tower, but the building of this has not been included in the first contract. The walls are built of red sandstone, lined internally with brick and Hambdon-hill stone dressings. The roofs are covered with Staffordshire tiles. The church is fitted with open benches of pitch-pine. The floors of the passages are paved with tiles, and the floors under the seats are laid with wooden blocks. The architect is Mr. J. Houghton Spencer, of Taunton. The accepted tender for the building was £2,765.

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## TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**BANBURY.**—For the erection and completion of Salvation Army fortress in Banbury, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, E.C., architect and surveyor:—

Orchard and Son, Banbury ...	£975	0	0
Haywood and Son, Bedford ..	863	0	0
Ellwood and Son, Sandy ...	790	0	0
Hipwell, S., Wisbech ...	742	0	0
Jarvis, E., Banbury (accepted) ...	718	0	0

**BAYSWATER.**—For decorating, repairing, and altering 2, Orme-square, Bayswater, W., for Mr. F. H. Lenders. Mr. F. W. K. Tarte, M.S.A.:—

Giles, F., and Co., Kensington ...	£763	0	0
Johnson & Manners, Gt. Pulteney-street, W. ...	684	0	0
Vernall and Griffiths, Albany-street ...	67	0	0
Wells & Son, Red Lion-street, W.C.*	534	0	0

For drainage to the above:—

Beattie, R. P. ...	161	0	0
Dodds, W. ...	159	0	0
Wells and Son ...	134	0	0

For heating to the above:—

Keith, J., Holborn Viaduct ...	145	0	0
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\* Accepted.

**BERMONDSEY.**—For sinking and building new brick pits, &c., at Horney-lane, Bermondsey, for Messrs. E. Ellis and Company:—

Wells, Bermondsey ...	£143	0	0
Ellis, S., Guildford ...	127	0	0

**BLACKFRIARS.**—For fitting up the premises known as the Oriental Restaurant as offices, for General Booth (branch offices of the International Headquarters). Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect:—

Coxhead, F. J., Leytonstone ...	£1,711	0	0
Martin, A., Battersea ...	1,626	0	0
Castle, W. and H., Southwark ...	1,546	0	0

**CAMBORNE.**—For the erection and completion of Salvation Army fort in Camborne, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, E.C., architect and surveyor:—

Skewer, H., Camborne ...	£930	0	0
Julian, J., Truro ...	950	0	0
Walmesley and Eunice ...	929	0	0
Willoughby, Redruth ...	850	0	0

**CAMBSLARG, N.B.**—For the erection of twelve two-story tenements near the railway station, for Mr. A. G. Barnes Gresham:—

Mason and brickwork:—

Aitkenhead, of Coatbridge (accepted).

Joinery:—

Pasley and Rodie, Barnhead (accepted).

**CHATHAM.**—For the erection and completion of fortress, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect:—

Skinner, Chatham ...	£1,175	0	0
Burrows, Maidstone ...	1,005	0	0
Dupont, Colchester ...	989	0	0
Martin and Barclay, Battersea ...	975	0	0
Jarvis, E., Banbury (accepted) ...	895	0	0

**CHISWICK.**—For erecting a house and stables at Sutton Court Park, Chiswick, for Mr. J. Woodger. Messrs. Wylson and Long, architects:—

Wright, W. and F. ...	£1,370	0	0
Green, T. L. ...	3,889	0	0
Lee, H. and E. ...	3,815	0	0
Patman and Fotheringham ...	3,793	0	0
Newcomb ...	3,748	0	0
Kearley, C. F. ...	3,686	0	0
Chappell, J. T. ...	3,678	0	0
Nye, T. ...	3,661	0	0
Saunders ...	3,585	0	0
Hunt, S. ...	3,539	0	0
Leslie and Co. ...	3,537	0	0
Oldrey and Co. ...	3,489	0	0
Adamson and Son ...	3,477	0	0

**CHISWICK.**—For repairs, alterations, and additions to the Church of St. Mary Magdalene, Chiswick. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architect. Quantities by Mr. G. Fleetwood:—

	Church.	School, &c.
Roberts, L. H. & R.	£4,403	0 0
Balaam Bros. ...	4,008	0 0
Goddard & Sons ...	3,896	0 0
Hunt, J. ...	3,807	0 0
Chamberlen Bros.	3,749	0 0
Adamson & Sons...	3,579	0 0
Dorey, J. ...	3,180	0 0
These tenders include allowance for old materials.		

**COVENTRY.**—For the erection of school and class-rooms, and additions, &c., to the Wesley Chapel, Warwick-lane, Coventry. Mr. H. W. Chattaway, Trinity Churchyard, Coventry, architect:—

Haywood, C. ...	£2,859	0	0
Hill, C. G. ...	2,828	0	0
Herbert, H. S., Leicester ...	2,746	10	0
Garlick, C. (accepted) ...	2,704	0	0
Heatherley Bros. ...	2,628	0	0

Rest of Coventry.

**DARLINGTON.**—For the erection of a boys' school, to accommodate 390 pupils, for the Darlington School Board. Mr. T. W. Robson, Paradise-terrace, Darlington, architect. Quantities by Mr. H. T. Neilson, Darlington:—

Brick, stone, and plastering, including cement floors:—	£1,917	7	10
Marshall, G. ...	859	10	0

Carpenter and joiners' work:—

Jameson, W. ...	166	1	3
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Slaters' work:—

Wharton, J. and G. ...	333	0	0
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Plumbing and glazier:—

Smith, E. ...	37	19	0
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Painter:—

Hoskins, W. H., and W. ...	37	19	0
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All of Darlington.

Total, £3,313 18s. 1d.

Architect's estimate, £3,400.

**CHRISTCHURCH, HANTS.**—For the erection of iron fence at the Castle Hill, for the town council:—

Holloway, J. ...	£35	0	0
Howell, E. ...	83	10	0
Bayliss and Co. ...	24	18	0
Street, J. (accepted) ...	23	10	0

**EAST WICKHAM, KENT.**—For alterations and additions to the Forester p.h., Wickham-lane, for Messrs. Mitchell and Beasley, of the North Kent Brewery. Mr. J. O. Cook, of Eleanor-road, Woolwich, architect:—

Battley, Old Kent-road, ...	£581	0	0
Foreman, Plumstead, ...	515	0	0
Richardson, J. O., Peckham* ...	449	0	0

\* Accepted.

**EDINBURGH.**—For executing works of sewerage from the Inglis Green to Coltbridge, for the Water of Leith Purification and Sewerage Commissioners. Messrs. Cooper and Beaton, joint engineers:—

Best, J., Leith (accepted) ...	£20,128	1	6
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**ELTHAM, KENT.**—For the completion of boundary walls and fences at Avery Hill House, for Colonel J. T. North. Messrs. J. O. Cook and T. W. Cutler joint architects:—

Smith and Sons, Norwood, ...	£815	0	0
Chappell, J. T., London (accepted) ...	739	0	0

**ESTON MINES.**—For the erection and completion of Salvation Army fort, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, E.C., architect and surveyor:—

Oliver and Gaudion ...	£695	10	0
Bulmer, T., South Bank ...	509	7	0
Radge, G., Normandy ...	499	5	0
Welsh, J., Stockton-on-Tees* ...	365	0	0
Lond, J., Middlesbrough* ...	354	10	0

\* Accepted.

**FOREST HILL.**—For erecting a Girls' Industrial Home and Laundry at Forest Hill. Mr. T. W. Aldwinckle, 2, East India-avenue, Leadenhall-street, E.C., architect. Quantities supplied:—

Waddington and Co. ...	£4,950	0	0
Roberts ...	4,625	0	0
Holliday and Greenwood ...	4,239	0	0
Todd, G. E. ...	4,149	0	0
Holloway Bros. ...	4,086	0	0
Lorden and Son ...	3,987	0	0
Johnson, W. ...	3,810	0	0

**GOREY, CHANNEL ISLANDS.**—For the erection of a Salvation Army fort, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, E.C., architect and surveyor:—

Le Rosignol, P., and Son, Rouge, Bouillon ...	£458	17	0
Springate and Baker, Gorey ...	394	0	0
Laurens and Le Corum and Son, St. Helier's ...	385	0	0
Viel, A., Jersey ...	369	0	0
Laurens, E. J., St. Helier's ...	362	10	0

**HERNE BAY, KENT.**—For the erection of new premises, William-street, for Mr. R. Moore, grocer. Mr. H. Farley, Richmond-street, Herne Bay, architect:—

Welby, C. ...	£1,520	0	0
Taylor, E. ...	1,363	0	0
Adams, G. ...	1,358	0	0
Farley, G. ...	1,350	0	0
Ingleton, A. J. (accepted) ...	1,347	0	0

All of Herne Bay.

**IDLE, YORKSHIRE.**—For the erection and completion of Salvation Army fortress in Idle, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect:—

Thornton, T., and A., Bromley ...	£792	0	0
Hobson and Son, Idle ...	788	0	0
Padgett, Idle ...	750	0	0
Obank, T., and Sons, Thackley* ...	721	0	0

\* Accepted.

**ISLINGTON.**—For certain alterations and additions to No. 225, Upper-street, Islington, N., for Mr. T. R. Roberts. Mr. J. Kingwell-Cole architect. Quantities by Mr. E. S. Mansergh, 28, Mount-street, Grosvenor-square, W.:—

Patman and Fotheringham ...	£2,150	0	0
Nightingale, B. E. ...	1,990	0	0
Drew and Cadman ...	1,882	0	0
Williams, G. S. S., and Son ...	1,816	0	0
Dove Bros. ...	1,645	0	0
Mowlem, J., and Co. ...	1,594	0	0
Neal, G. ...	1,546	0	0
Puzey and Lumley ...	1,525	0	0
Wall Bros. (accepted) ...	1,494	0	0

**KEMPSTON, GLOUCESTERSHIRE.**—For alterations and additions to the George Inn, Kempston. Mr. W. Drew, M.S.A. Swindon, architect:—

Glossop, T., Kempston (accepted).

**KETTERING.**—For shoe-factory, Kettering, for Messrs. Jessop and Jackson. Mr. H. Norwood, Broadway, Kettering, architect:—

Moulds, G. W. ...	£387	0	0
Wilson and Slow ...	359	10	0
Jessop, G. ...	333	0	0
Coltman, J. ...	321	0	0
Hart, J. W. ...	320	0	0
Jessop, W. H. (accepted) ...	320	0	0

All of Kettering.

**KETTERING.**—For two houses, Regent-street, Kettering, for Mr. S. Buswell. Mr. H. Norwood, Broadway, Kettering, architect:—

Wilson and Slow ...	£390	0	0
Moulds, G. W. ...	388	0	0
Hart, J. W. ...	375	0	0
Coltman, J. (accepted) ...	321	0	0

All of Kettering.

**KINGSBRIDGE.**—For the erection of two cottages, for Mr. W. R. Coles, Kingsbridge. Mr. W. M. Tollit, architect:—

Pearce, Kingsbridge (accepted).

Ten tenders received.

**LONDON.**—For pulling down and rebuilding Nos. 30, 31, and 32, Sandy's-row, Whitechapel, E., for Mr. J. Gabriel. Mr. J. O. Cook, of Eleanor-road, Woolwich, architect:—

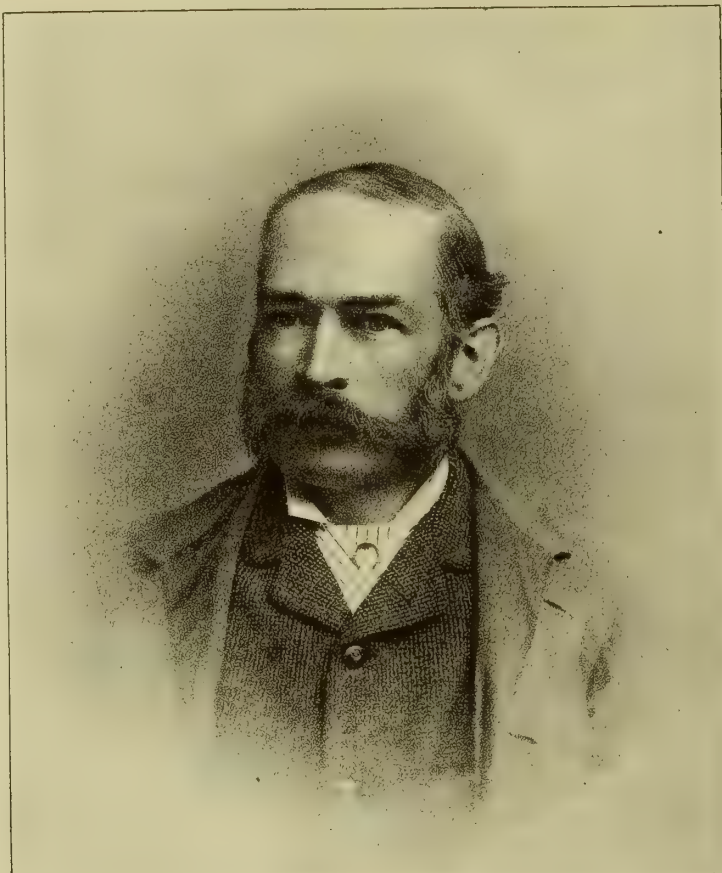
Harris, North Woolwich, ...	£887	0	0
Battley, Old Kent-road, ...	870	0	0
Sharpe, Bow, ...	715	0	0
Richardson, J. O., Peckham* ...	714	0	0

\* Accepted.



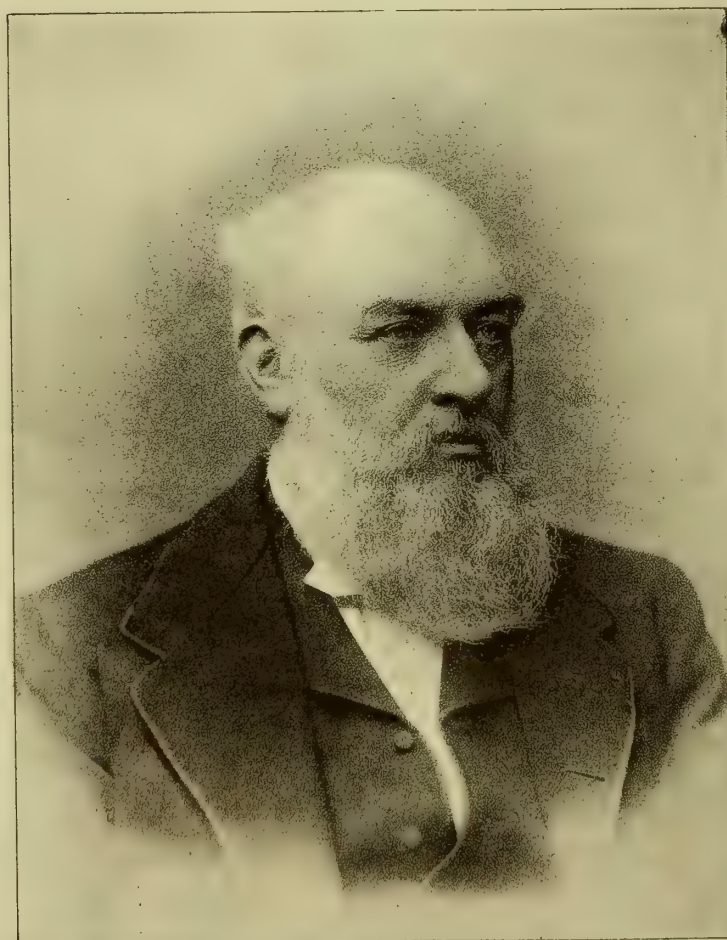






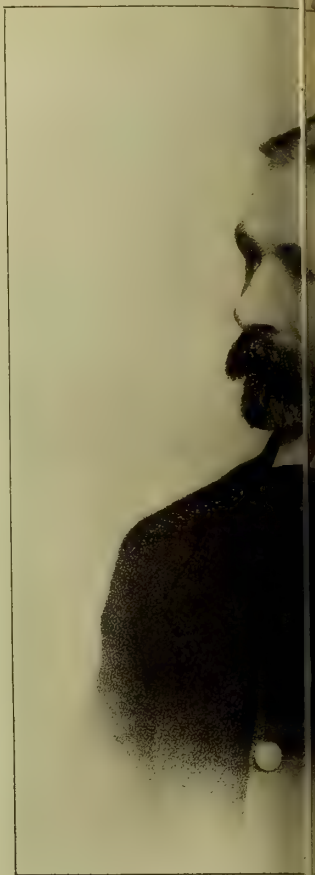
*G.C. Ashlin*

G.C. ASHLIN, R.H.A.  
ARCHITECT OF QUEENSTOWN CATHEDRAL



*Arthur Cates*

ARTHUR CATES, V.P.R.I.B.A.  
SURVEYOR TO H.M. WOODS AND FORESTS



E.J. HAILEY  
PRESIDENT OF THE N.O.



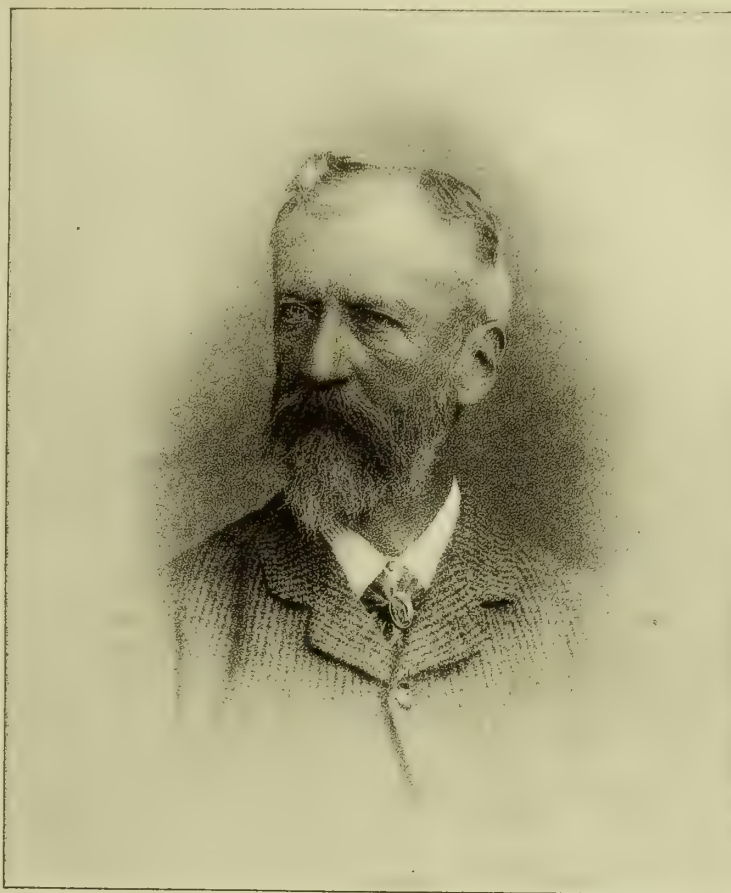
ROBERT CATES  
PRESIDENT OF THE N.O.





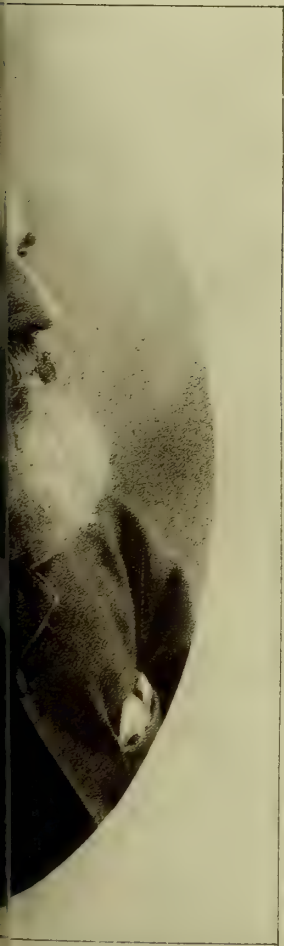
*C. J. Hansome*

FIBA:  
ECTURAL ASSOC<sup>TM</sup>



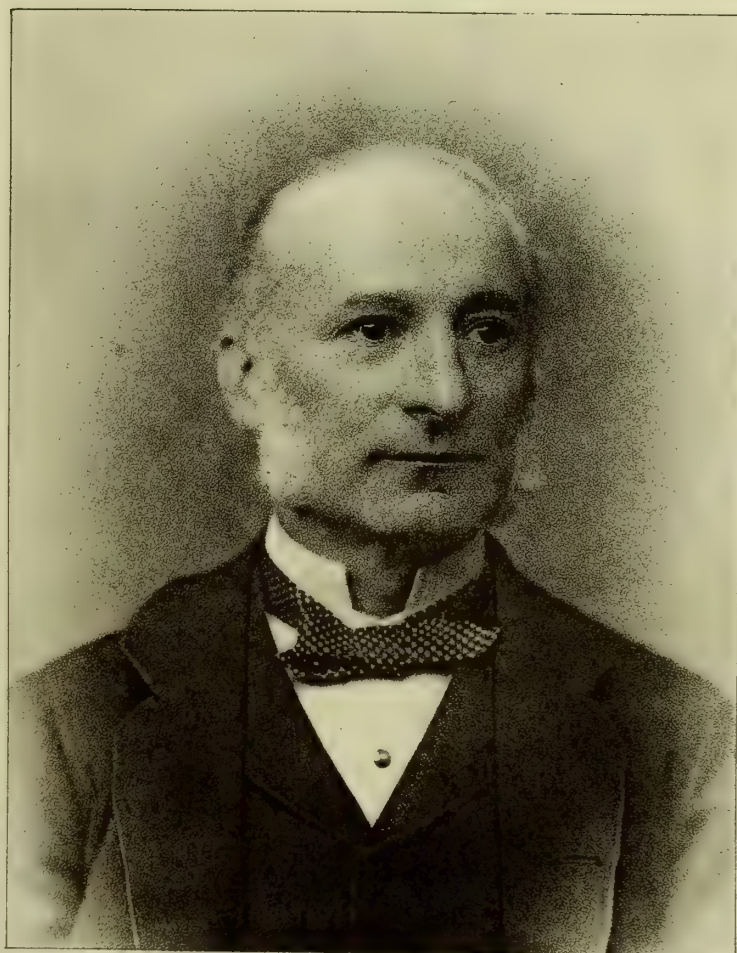
*T. N. Deane*

T. N. DEANE, R.H.A.  
ARCHITECT OF NATIONAL MUSEUM, DUBLIN



*Robert Walker*

LER:  
Y ARCHITECTS



*J. Macvicar Anderson*

J. MACVICAR ANDERSON, F.R.I.B.A.  
VICE PRESIDENT OF THE ROYAL INSTITUTE OF BRIT ARCHITECTS







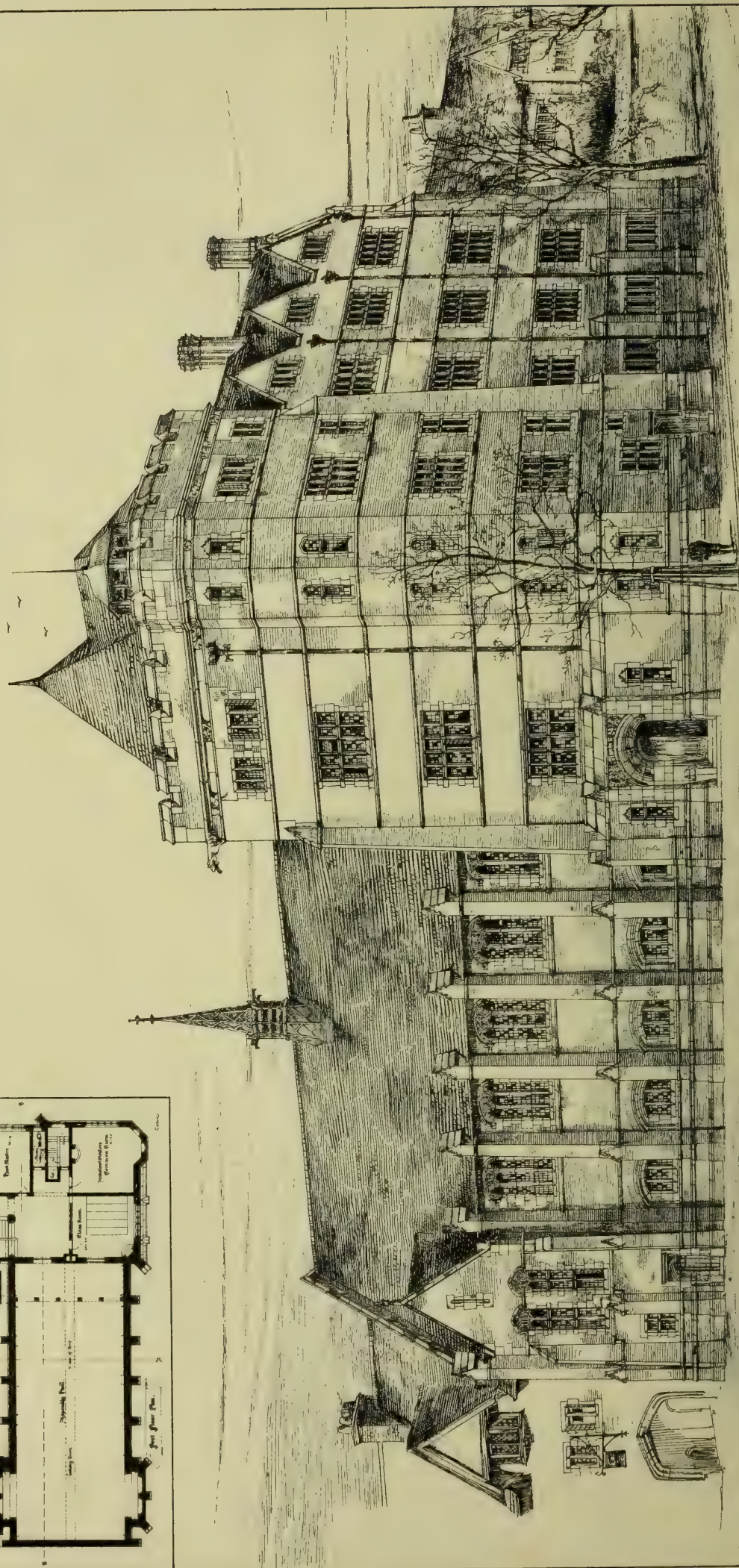
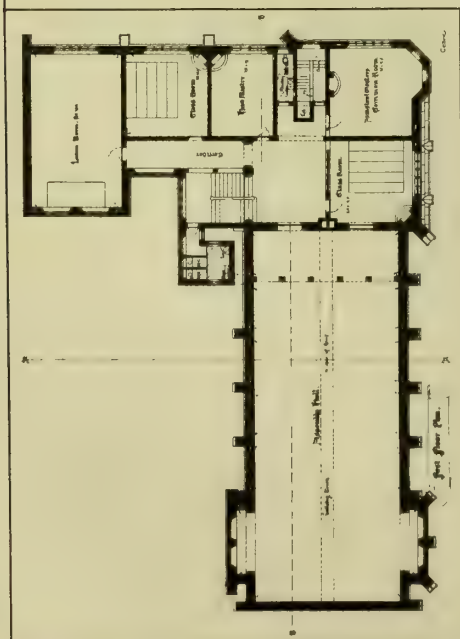




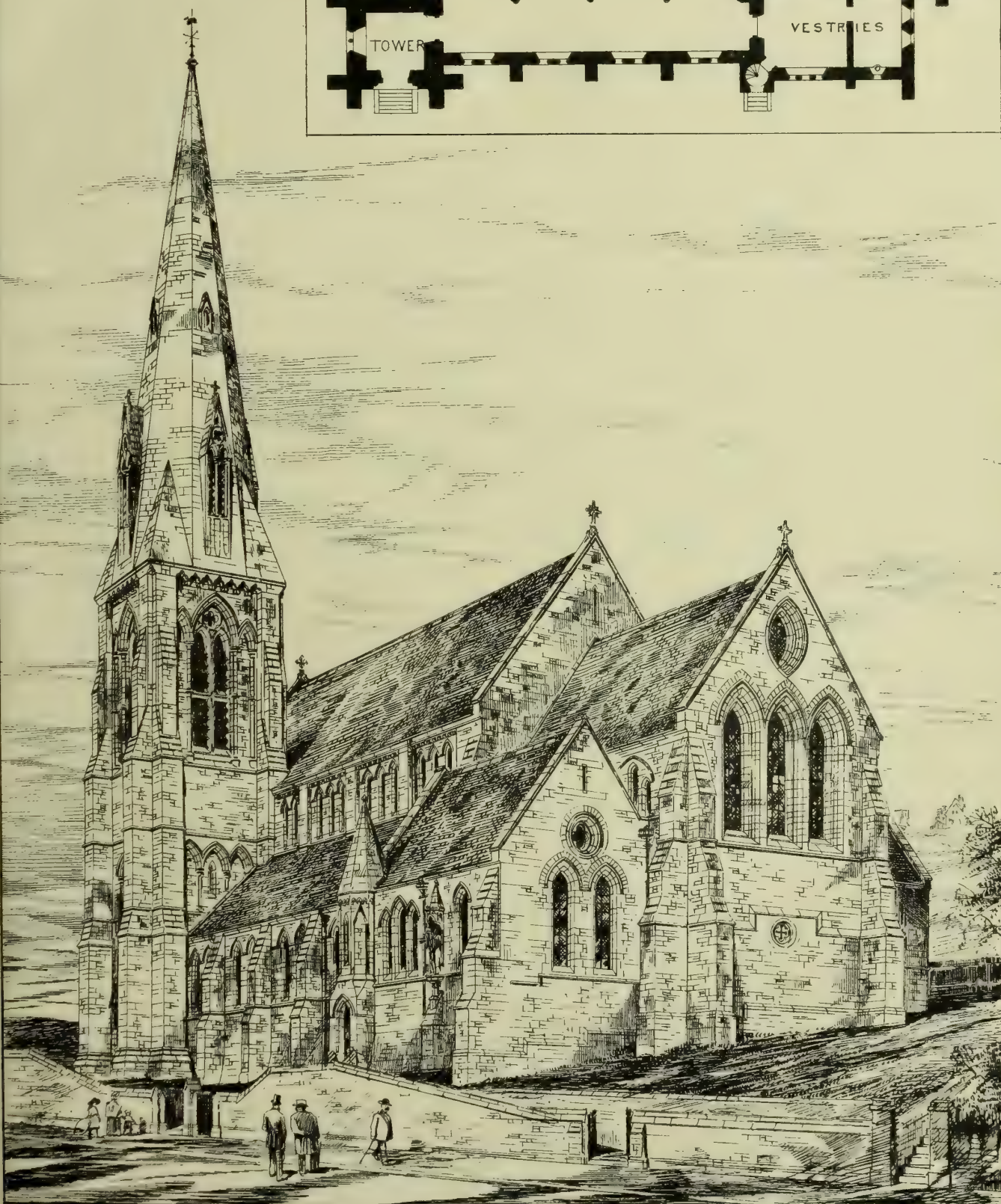
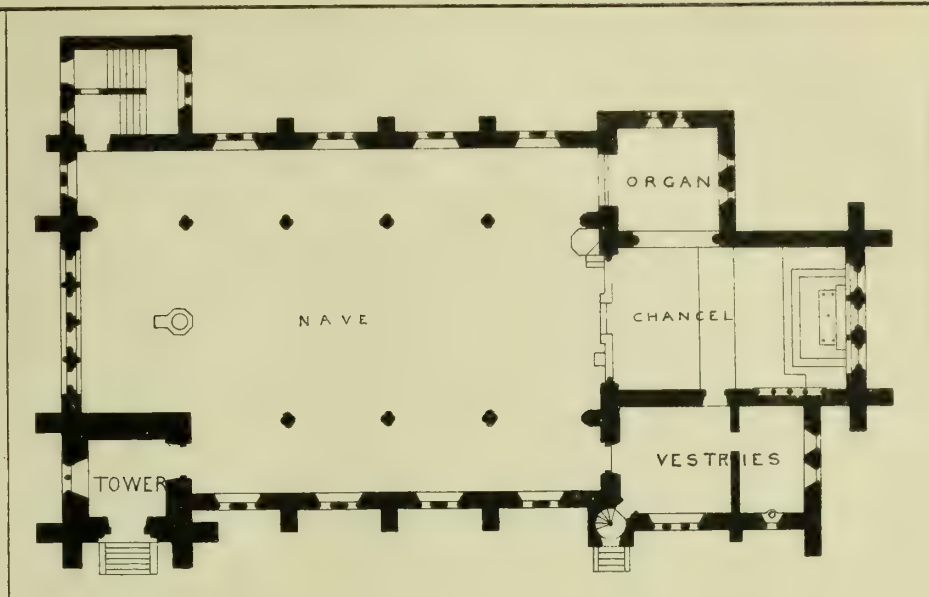
THE BUILDING NEWS, FEB. 28, 1890.

**Soane Medallion Design for a Public Day School for 400 Boys.**

ROYAL INSTITUTE OF BRITISH ARCHITECTS.  
2<sup>ND</sup> MEDAL DESIGN BY CHARLES SPOONER.







CHURCH OF S. ALBAN THE MARTYR.  
VENTNOR . ISLE OF WIGHT

C. R. BAKER, KING, A.R.C.B.A.  
ARCHITECT.  
31, SPRING GARDENS, LONDON



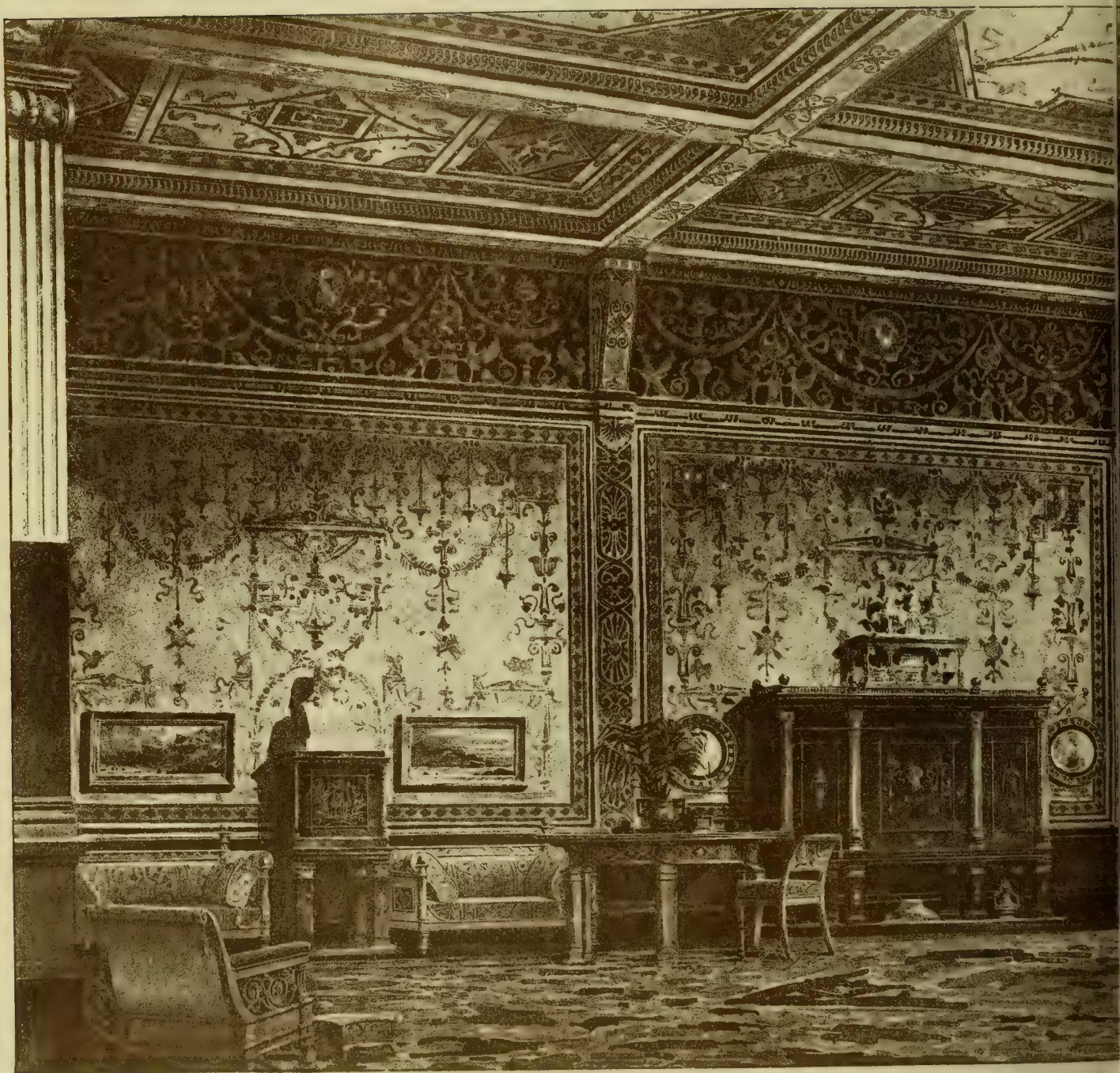








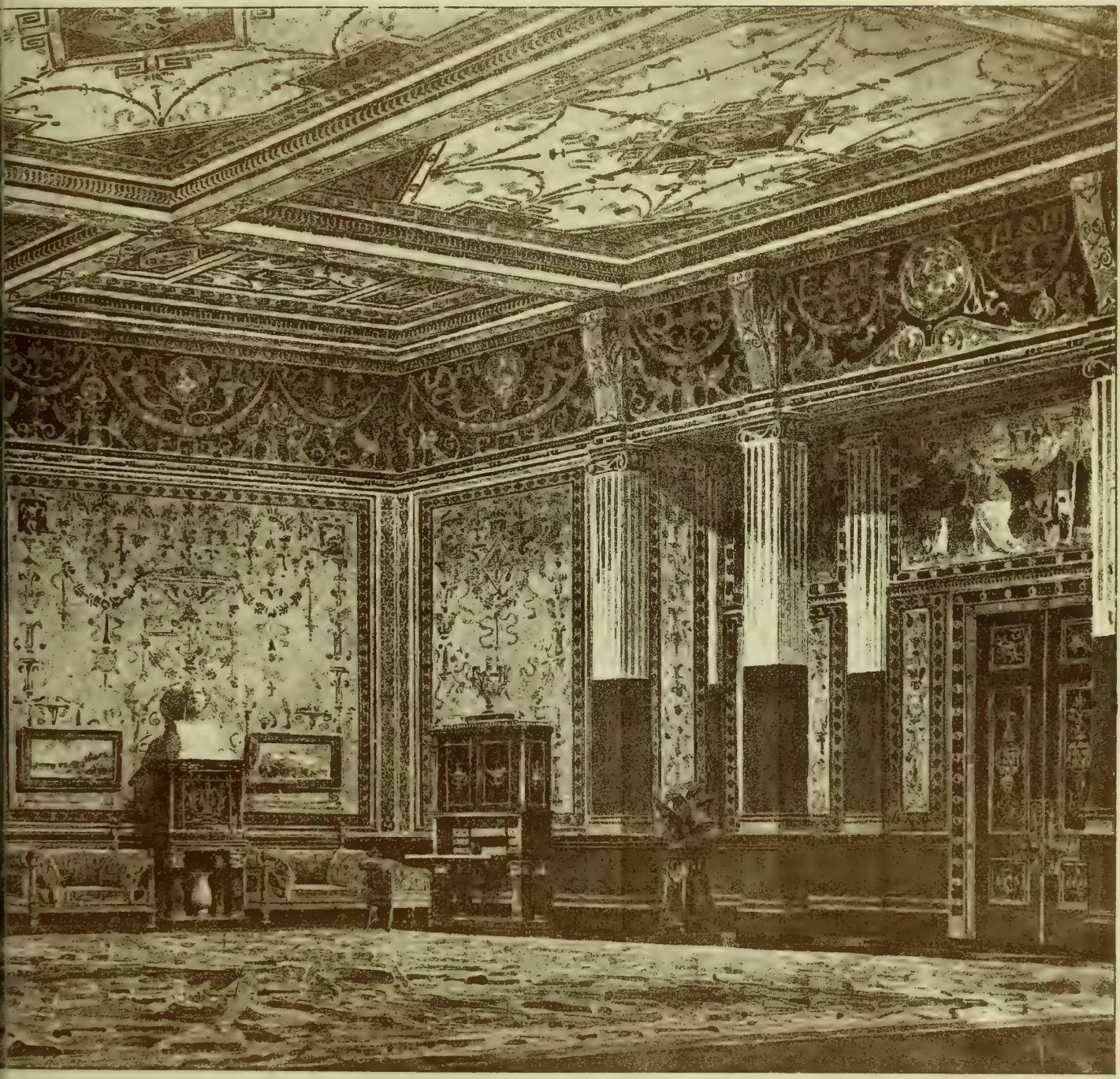
THE BUILDING N



A DRAWING ROOM IN THE  
BY WALTER



FEB. 28, 1890.



"PHOTO-TINT" by James Akerman 7 Queen's Square London W.

STYLE OF THE CONSULATE.  
NMAN, ARCHT





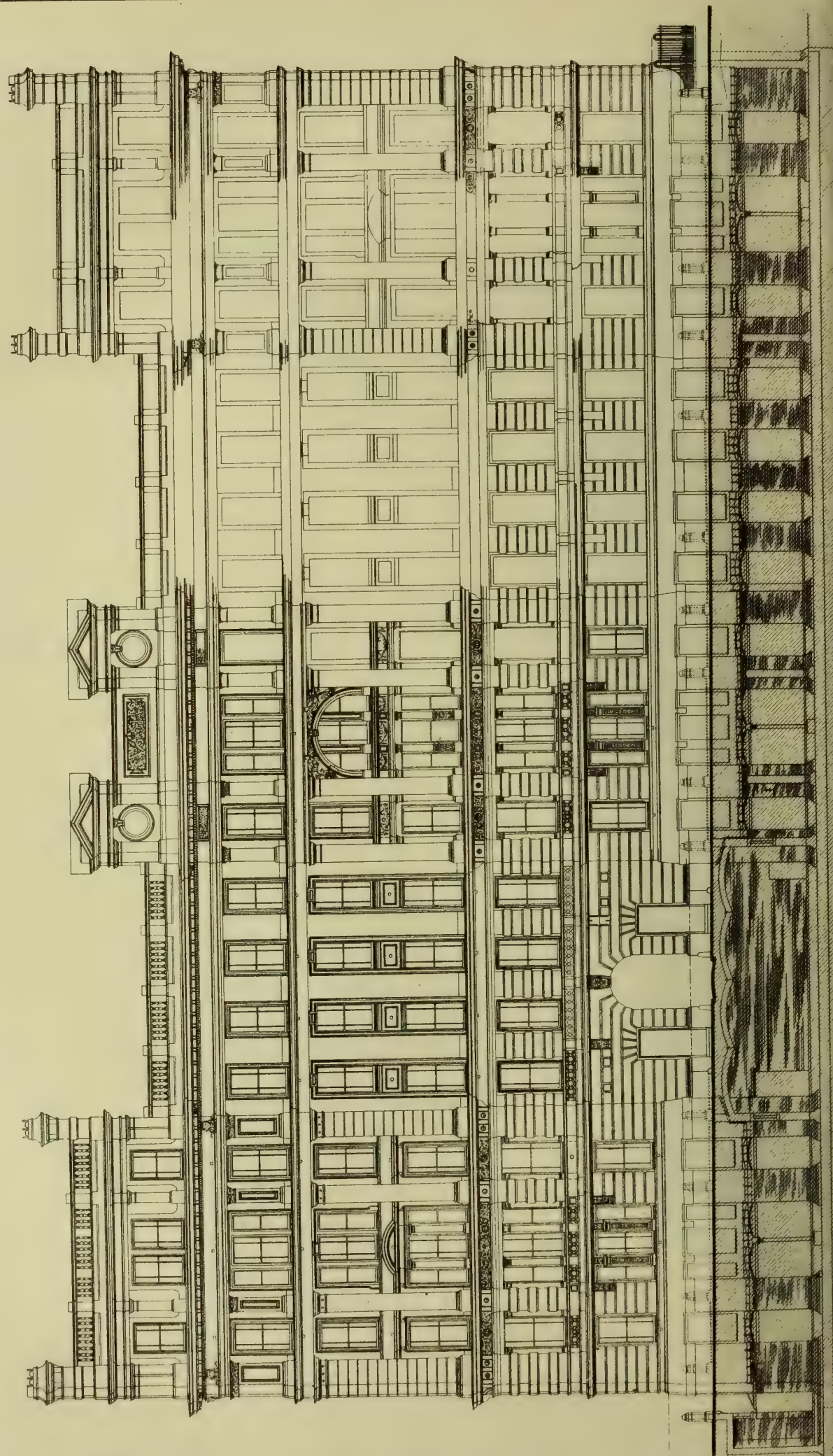






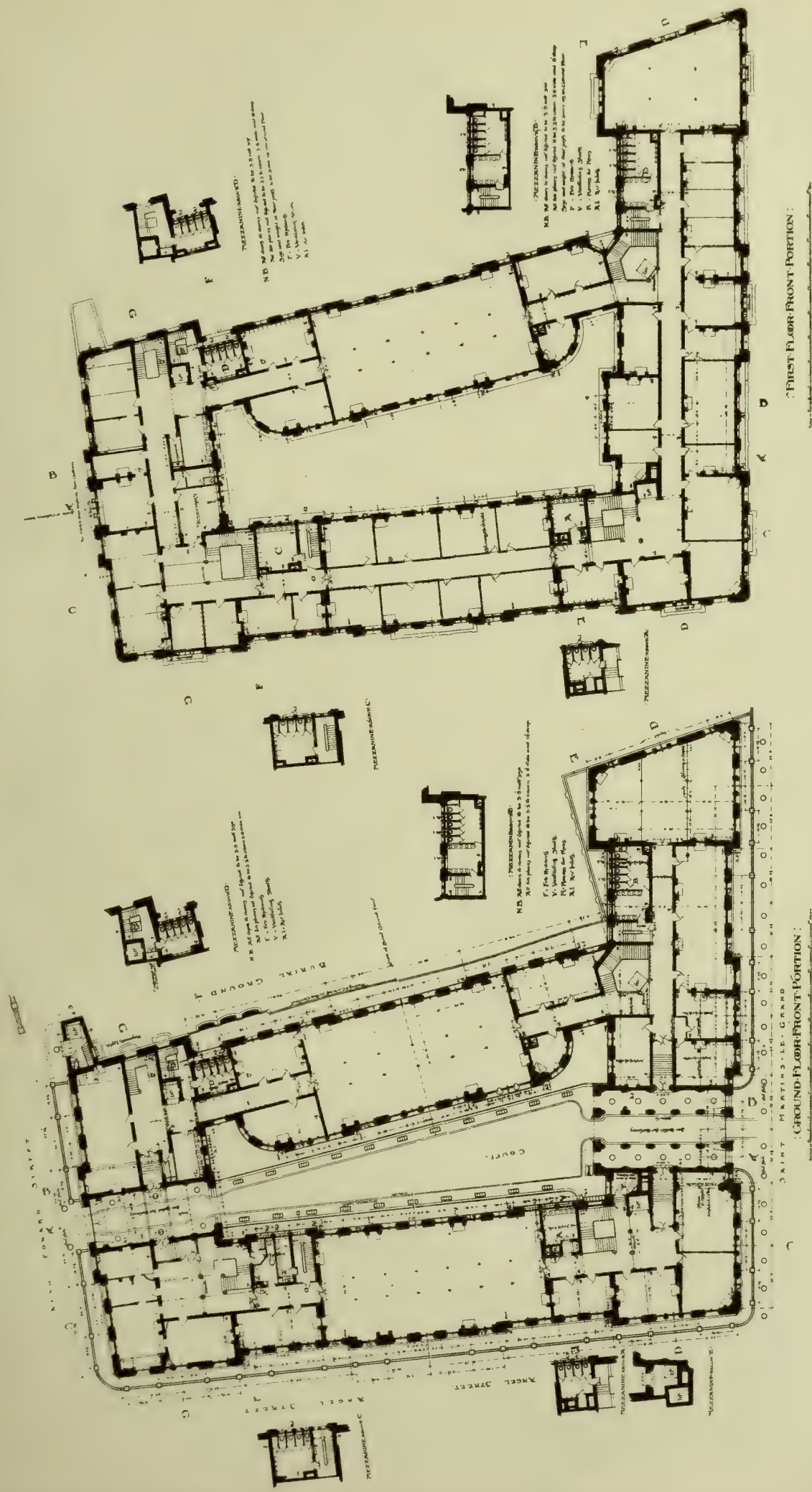
THE BUILDING NEWS, FEB. 28, 1890.

NEW GENERAL POST OFFICE BUILDINGS · ST MARTIN'S · LE GRAND.





SCALE 1/4" = 1' 0"



HENRY TANNER ARCHT. ARCHT.

Photo lithographed & Printed by James Alderman 6 Queen Square W.C.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1835.

FRIDAY, MARCH 7, 1890.

## FOREIGN AND HOME PRODUCTIONS.

ONE general wail amongst manufacturers and builders is the increasing importation of foreign-made goods, the keen competition now existing in the trades connected with building, and the encouragement given to foreign labour. The markets of the world are thrown open to Englishmen without let or hindrance, and the foreigner competes with the English workman on his own ground. That this is discouraging to the manufacturer of high-class goods no one can doubt, and it is equally so to the building contractor who engages English labour. He finds in the continual importation of foreign-made furniture and joinery, the difficulty of persuading the public which is the best workmanship; the foreign-made articles are attractive and "shoppy" looking, it may be bizarre; full of what is called "cant"; but the average Englishman does not trouble himself about design or the technical points of joinery, if he can obtain the same article at a less price. How to convince the customer or employer of the superiority of home-made goods is one of the obstacles in the way of national industry, and should be the main endeavour of both capitalists and workmen. If conviction could be carried into the minds of employers that our English joinery is really better than the foreign imported joinery, the question of price would not be so serious a one, at least to those who can afford to pay for the better article; but it is this knowledge of technical points that is wanted. People now are not sure that a Swedish-made door is less durable and reliable than one made of yellow deal in this country; that a foreign-made piece of furniture is of so much less value than it looks to be. To show proof of the distinction is not so easily done, for it must be confessed a very large quantity of ordinary contractor's joinery done in the shop is not better, while sometimes it is worse, than high-quality American or Swedish work. The appeal is therefore fatal to the claims made for home-made work.

Before we can throw stones at other manufactures, we must prove the superiority of both the materials and labour of our own. The profession are aware that imported joiners' work of a selected quality is above the average joinery of the contracting builder, and they therefore prefer it for buildings of a certain class. Even the builder will sometimes admit that he cannot turn out doors or sashes so truly and well as those he can buy at a merchant or importer's shop. These admissions substantially confirm the opinion of the public that imported goods are equal at least to home-made productions. We cannot be surprised to hear of contractors buying their joinery or masons' work when they can do so at a less cost than they can manufacture the same at their own shops.

The reports of the delegates sent to examine the various branches of industry at the Paris Exhibition of last year are decisive as regards the building trades. To take French case-ments, the design of the joints in the stiles and bottom rails, the stuck mouldings, and the general finish are superior. The staircases display careful design and workmanship, well finished in detail. Belgium, Sweden, and the United States are keen competitors in machine joinery; there is less of the "slop-shop" than in many of the manufactures which come into our market.

One thing the expert notices is the bolder mouldings in foreign joiners' work; the hollows and rounds are large, and there is enough stuff in some of them to make two of our mouldings.

But the public are not the judges in matters of technical art. With all its apparent merits, machine labour has destroyed the characteristics which the architect or craftsman-designer values in the work. By the subdivision of the trades, the design of joiners' work has suffered to a large extent; a want of skill in detail and lack of finish are apparent. The machine is now made to compass all the work; the design must, therefore, be shorn of all those points which add to the labour, especially the hand labour. The mouldings are consequently designed with reference to the machine, the sizes those which can be conveniently worked with a profit. The productions are turned out roughly as they leave the machine, for although there is mechanical precision, there is no precision in finish. The fitting together is done by a separate set of hands, who have no sympathy with the manufactured pieces, and so the result is devoid of interest.

These results will continue so long as architects and operatives render themselves powerless—the first by accepting foreign machine-made labour, the other by shutting their eyes to the advantages that are open to them by trying to improve on machine labour. The workman, instead of endeavouring to check the tendency of machinery to sub-divide labour, is encouraging it by the apathetic indifference with which he regards all aids to supersede his own labour, and to dispense with food for thought. He does not see that it is only to the interest of large speculative contractors and manufacturers to encourage machine labour and sub-division of trade; that the effects of the system are to dwarf the mind of the craftsman. If we look at a piece of American-made furniture—a table, a chair, a pianoforte, or a cabinet, we discover a multiplicity of parts and details which force upon us the conviction that a number of hands have been engaged in its production: the ornament is lathe-produced or machine cut, the general effect fussy and inconsequential. Its very fussiness, however, is taken for ornament, and its beauty, if it has any, is the apparent accuracy with which the pieces have been put together. But it speedily loses its charm: the mind instantly discovers a wearisome repetition, and a want of fitness. It is all notches and chamfers; the ornament is largely composed of turned pieces, halves, and quarters. Of distinctive character and individuality it has none. The cabinet-making trade has suffered immensely since the introduction of machinery. The great impetus given to band and fret-sawing has not been without its effect in these productions. A tawdry class of ornamentation has sprung up; then the improvement made in machinery for veneer cutting has been injurious: veneers of mahogany, walnut, and maple are produced of the thickness of paper—witness the cheaper class of German and American pianofortes and tables. To compete with foreign workmanship of this class is the motive of many manufacturers. An inspector of factories, in reporting the condition of cabinet-making in London, has exposed the evil influences of this cheap labour. One large manufacturer told him that he could not pursue an exclusive trade of making up best goods. As an instance, he showed the inspector painted bedroom suites for shipment which he bought for less than £5 per suite, including a wardrobe, rather than make them, and out of his purchase he made a good profit. Further inquiries elicited the fact that no skilled workmen are engaged in the production of this cheap furniture: boys are employed, who pick up a certain branch of labour and stick to it. These boys are

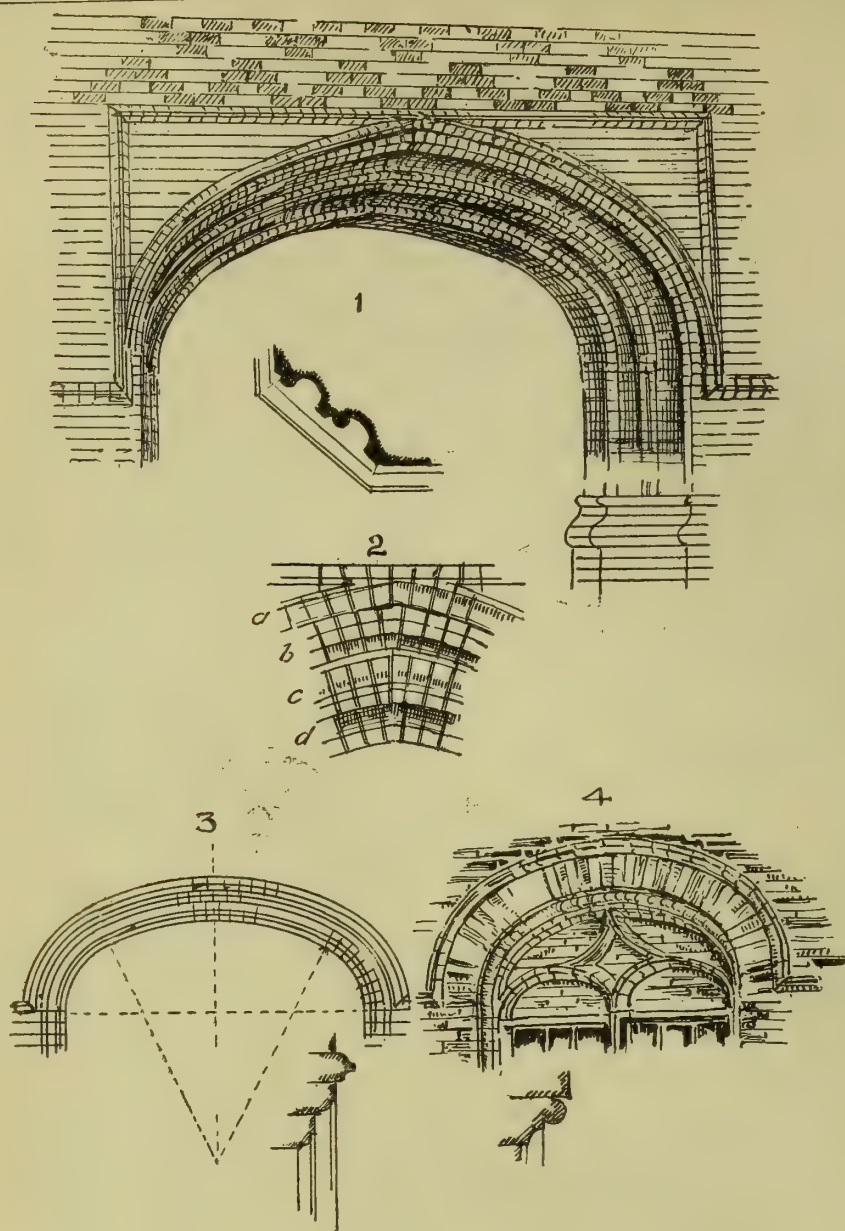
called "slobbers," and will earn sometimes 20s. a week at the shops.

But the effects of foreign labour in design and workmanship have been equally felt in the building trades. Manufactures of ready-made joinery, mouldings, newels and balusters sell largely—American and Swedish goods, which are made on the principle of getting as much out of the material as possible at the cheapest cost for labour. Two essential qualities are inherent in their production: meagreness and want of character. The first is noticed in the scanty mouldings, the want of substance, the little manual labour bestowed on the joints and putting together: the latter is shown in the monotonous sameness, the lack of individuality. The individual expression of the executant is completely lost in the mechanical. We cannot help seeing this lack in the turned balusters, the framing, and doors which are turned out by the hundred from the same machines. Well may one writer call it the "grinding devilry of steam machinery," which has deprived the brain and hand of their skill and labour. The architect and the artisan are, we say, to blame for not making a stand against the increasing employment of machinery for labour which ought to be done by hand. If the architect insisted on designing the joinery and fittings of his buildings, the large importation of foreign machine-made goods would cease; there would be more opportunity for skilled labour in this country, and architecture and art would be again restored to their old prestige. How much also could the craftsman do to turn his brain to account by turning from the mere minding of machines to execute and design!

Machine-made joinery, both foreign and home produced, will necessarily hold its own when large quantities of one size and pattern are required. In workhouses, factories, barracks, and such like buildings, the machine-made doors and windows are acceptable, and the imported goods are cheaper; but we maintain that for a higher class of buildings, the difference between foreign and home manufacture is too slight to be considered. Builders having a good stock of material and skilled hands are found anxious to execute the work on their own premises, so as to employ their men. The actual results are patent to everyone who understands workmanship. The best joinery is undoubtedly that turned out by our good firms, and prepared from the architect's details. We at once know it by the character and style of the staircase balustrading, the panelled dados, the moulded doors and architraves; the expression of the executant craftsman, the personal element of the designer, are manifested in every piece of joinery or fitting in the building. On the other hand, one may see hundreds of houses in the West-end suburbs—having doors, handrails, balusters, and mouldings of exactly the same pattern. One sees at a glance they have been turned out wholesale; that the houses have been built for them, or else made to take them, whether suitable or not for the particular purpose. The speculative builder has the knack of using the imported goods to the best advantage; so he contracts with some bricklayer to erect a row of houses of the same design with certain openings; the importer of foreign joinery supplies the whole of the interior—doors, windows, and fittings—which are the most expensive items in house-building.

The recourse to task work is another of the grievances amongst workmen, especially plasterers. The "labour only" system has encouraged the taskmasters in the building trades without improving the quality of the labour. We cannot wonder, when competition is so rife, that task-work is preferred to day-work. While America, France, Germany, and Holland are competing with the English workman in the marts of the world,





the cheapening of labour must follow as a matter of course. Mutual concessions by masters and workmen, and an earnest endeavour to control machine production, are the only means of preventing hand-labour being entirely subverted, and the craftsman turned into a machinist. No worse consequences could befall art-craftsmanship, for if we value style we must promote the individual and complete executant. Machine labour can be controlled within certain limits; there is a large and rapidly-increasing domain for its exercise without encroaching on the hand-labour of the artisan.

#### ARCHITECTURAL BRICKWORK.—XXX.

##### MOULDED ARCHES.

A MOULDED arch of any depth may be described as a recessed arch with the outer edges of the bricks moulded; and, therefore, in designing an arch of this description the most desirable plan is first to decide upon the number of separate and concentric arch-rings, one within the other, and then to design the mouldings. The thickness of the wall should, of course, be the primary consideration, as upon it will depend the number of recessed rings. Thus in a wall of a brick and a half thick, it is possible to obtain three  $4\frac{1}{2}$ in. rings, the edge of each of which can be moulded, or if only

two rings be used, one of them may have a bolder moulding. In sketch 1 we give a view of the elliptical arch of the main gateway to the courtyard of Layer-Marney Towers, Essex. The arch has three distinct rings, each of them moulded. The plan of jamb, and the elevation of the apex of arch, Fig. 2, a, b, c, d, will show how the separate rings are worked. It will be noticed that two bold hollows give a shadowed background to the mouldings which project, and admirably separate and add value to them. On the outside is a splayed brick, next comes a portion of the hollow, a roll-member and fillet which form the centre projecting member; third, a hollow, and another roll member in the inner or soffit portion of arch. The hollows might have been square re-entering angles, as in ordinary arches of three recessed members, in which case the joint would have been at the angle. As it is, the hollows disguise the joints between the rings. The design of moulding is certainly more suitable to stone than brick; or to terracotta, in which the arch bricks can be moulded to a large size.

##### VAULTED ARCHWAYS.

In vaulted archways, the gauged and rubbed outer arch need not be continued throughout the vault, but be employed to hide the extremities of it. Very often the outer ornamental arch is made a sort of drop arch, lower but concentric with the vault behind it, forming a rebate on the

inside for the gates to close against. The advantage of this arrangement is, that there is no unsightly joint visible between the two arches on the soffit, for the bond is broken on the angle of rebate, and the outer rubbed arch makes a clean stop against the rougher arch of vault. For strength the plain, flat-faced arch is, perhaps, to be preferred to the moulded arch, for, instead of separate rings, the joints are made to radiate to the centre throughout the thickness, and the bond is preserved by breaking the radiating joints by cross-joints, as in English bond.

##### ARCH BOND.

Col. Seddon remarks: "Flemish bond is seldom used, except, perhaps, in arch rings 9in. deep, not being so strong; moreover, the bats which would be required in arch rings, being an uneven number of half-bricks in depth, would be most undesirable." For strengthening deep arches composed of half-brick rings, or to tie the rings together, it is often desirable to use bonding or "lacing" courses at intervals. These lacing courses are inserted at those parts of the arch where the radiating joints of the separate rings coincide, and they act to distribute the pressure on the whole of the rings. For small arches or vaults they are not necessary, however.

##### ORNAMENTAL WINDOW ARCHES.

Sketches 3 and 4 represent forms of elliptical window arches, often met with in brick buildings. The first is from a brick villa near Streatham, and is composed of two rings of moulded bricks, set one within the other, and a label moulding over. We give it as an effective form of arch for a 9in. reveal composed of two ordinary "quarter-round" moulded bricks. With the moulded label the arch has a rich appearance. Fig. 4 represents a brick window arch taken from an old gable at Ypres in Belgium, a city replete with ornamental gables and traceried arches. These have generally labels of stone or brick, as in the sketch, and the window-heads, or tympana, under the outer arch are generally recessed and relieved by brick or stone tracery. We will give other examples of the moulded brick window-head in which there is generally a roll member between hollows or squares.

##### TENEMENT HOUSES.

THE subdivision of buildings into separate dwellings, no less than the throwing open several distinct houses into one business establishment, ought to be placed under the jurisdiction of properly constituted authorities. We are not now referring to the self-contained residential flat. In the Metropolis it is optional with any person to divide his house internally, for although there are certain provisions in the Metropolitan Building Act which deal with buildings tenanted by different persons or are let to separate families, they are practically powerless to interfere with the alterations that are made in dwelling-houses of a small area. The only rules which apply are the following: "That separate sets of chambers tenanted by different persons, if contained in a building exceeding 3,600sq.ft. in area, be deemed to be separate buildings, and be divided vertically by party-walls or horizontally by arches or fireproof floors" (sec. 27); also sec. 22, which says that in every building "containing more than 125,000c.ft. and used as a dwelling house for separate families, the floors of lobbies, corridors, passages, landings, and stairs shall be of stone or other fireproof material." Now, practically, the 3,600sq.ft. of area in sec. 27 excludes by far the larger number of buildings used as dwellings or offices, and only applies to large blocks of offices measuring over 100ft. by 35ft. Again, the 125,000c.ft. excludes all ordinary dwelling-houses of the usual size which are let for separate families. There is, there



fore, nothing to prevent a lessee converting his five or six-storied house into separate tenements for families or dividing it into separate chambers for different persons. A very large proportion of London five-storied houses in Bloomsbury and Kensington are sub-divided and let to different persons and families, which were designed and built for one family only, and these houses, to be estimated by the hundred, are exempt from any interference or restriction. A floor of three bedrooms is let off to one or two families, and every floor is thus occupied, making in very many cases eight or ten families in the house. From a sanitary point of view, the mere crowding together is objectionable enough; but there are more dangers to be apprehended from the structural and sanitary unfitness of the houses so occupied. The risks of fire are increased to a large extent, for there are no fireproof walls and floors between the separate sets of rooms; the floors of the lobbies, landings, and passages are usually of wood; the single staircase, which is the only means of ascent and descent, is of combustible material, so that the sections of the Act we have quoted are set aside in the large majority of buildings. It is clear the framers of these sections had in view only the building of large blocks of chambers and sets of flats, and did not contemplate the conversion of quite half the residential buildings of London into lodging-houses. If we walk through any of the central Metropolitan districts, we shall find in all the older neighbourhoods the houses sub-let; the heavy rents are prohibitive of single-family occupation. What are the consequences of the custom? Their structural adaptation is a secondary consideration with those who take houses for the purpose of eking out a livelihood; no matter if the walls are wooden partitions only, the staircase and passages unequal to the task. Sanitary defects are more apparent: there is only one set of conveniences for the whole of the inmates, and these are located in the centre of the house, perhaps on the first or second-floor landing. Each family on the ground or top story has to come up or go down to the middle floor if he wants to take a bath or wash his hands; the closets are equally inconvenient; the taps, the larder, the kitchen offices are not within reach; each family has to cook on its own floor, or depend on the housekeeper. The appliances of a well-ordered lodging house or set of flats are not found in these houses. Clause 2 of Sect. XXVII., which we first quoted, speaks of division by party-walls and fireproof floors as a separation of rooms tenanted by different persons; but the clause is not very clear. The question occurs, How is a party-wall to be treated when it runs along the side of a corridor or a staircase? In Clause 3 it states: "If any building in one occupation is divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from without, every such tenement shall be deemed to be a separate building." The comment we have to make on this provision is that the Act regards as a separate building a properly-divided set of rooms, having its own entrance and staircase, but does not so regard the separate tenements in houses which have been converted without their sanction or control. The provision, in fact, encourages the evasion of the Act. A house may be crammed with different families or separate lodgers with only one entrance and stairs, without the control of the surveyor; but if a separate entrance be made, each tenement comes under the operation of the Act. Where is the justice of this distinction?

It is unnecessary to say more on the unsatisfactory state of the building regulations of most towns as regards the sub-division of buildings. That there should be some restrictions appears evident from the disclosures now and again made in the public press. Until the building legislation of the

Metropolis steps beyond the older motive of the statute—namely, to prevent the spread of fire—and considers the dwellers and the dwellings in their social and sanitary aspects, we cannot hope for much improvement. The Institute, who are engaged in discussing the amendments in building legislation for the county of London, should exercise some influence in these matters. The considerable conversion of buildings from their original purpose now going on ought to be under the control of the County Council, and regulations be framed to meet every case of alteration.

#### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE six portraits printed herewith to-day will make no less than fifty photographs already given in our pages since the beginning of the year, of architects whose names are more or less familiar to our readers. In accordance with our previous plan, we give some few particulars in each case.

Mr. Henry Louis Florence, F.R.I.B.A., was a pupil of Mr. E. C. Robins, F.S.A. He also passed some years in the offices of the late J. R. Hakewill, F.R.I.B.A., and F. P. Cockerell, many years hon. sec. of the R.I.B.A. He subsequently proceeded to Paris and entered the atelier of the late M. Questel. On his return to England he gained in rapid succession the Tite Prize and the Soane Medallion and Scholarship at the R.I.B.A. He further obtained the Gold Medal for 1869 and the Travelling Studentship for 1870, awarded by the Royal Academy of Arts. After a year's travel in Italy he commenced to practise on his own account in London. His first work of importance was a bank, with the premises adjoining, in Broad-street, Worcester. He was also one of the six selected for the final competition for the Shakespeare Memorial Theatre, Stratford-on-Avon. For many years he had taken an active part in the work of the Architectural Association, and in 1878 he was elected its President. In the previous year he had entered into a partnership with Mr. L. H. Isaacs, M.P., F.R.I.B.A., which terminated in 1887. During that period, in addition to many works of minor importance, the following buildings have been executed from their designs:—The Holborn Town Hall; the new Library for the Honourable Society of Gray's Inn; the Paddington branch of the London Joint Stock Bank; a mansion in St. James's Park and Delahay-street, for Mr. Ed. Lloyd; extensive additions to Wood's Hotel, Farnival's Inn; business premises for Messrs. Farniloe in Rochester-row, for Messrs. Maxwell in Bell-yard, and Messrs. Lamplough in Holborn; the Hotel Victoria, Northumberland-avenue. They also obtained the first premium for the proposed new Town Hall, Bethnal Green. As joint architects they have recently completed a new block of buildings in Northumberland-street, for the Constitutional Club, and are about to commence an extensive block of buildings in Tooley-street, for the South-Eastern Railway Co. The photograph from which our illustration is taken is by Mr. Vandyke of Gloucester-road.

Mr. Campbell Douglas, F.R.I.B.A., of Glasgow, a Member of the Council of the Royal Institute of British Architects, was born in the village of Kilbarchan in Renfrewshire, in 1828, where his father was the parish minister. He served his apprenticeship with the late John T. Rothead, of Glasgow, who was a capital architect and clever man. Afterwards Mr. Douglas spent five or six years in various offices in Belfast, Liverpool, Brighton, and finally with the late Mr. John Dobson, of Newcastle-on-Tyne, one of the best known architects in the North of England. Mr. Douglas began business for himself in 1855. After some years an old college friend, Mr. John J. Stevenson, F.S.A., now of London, was with him in business for some years, and latterly Mr. James Sellars, the architect of the International Exhibition of 1888 in Glasgow, when Mr. Douglas was unwell in South Africa. He returned home in vigorous health in April of that same year. Mr. Sellars died in the following October. The following annexed selection of the more important buildings designed by Mr. Campbell Douglas may be divided into three lists, A, B, and C. The first

of these were personal works, the second series names of buildings erected in conjunction with Mr. Stevenson, and the third those done in partnership with the late Mr. Sellars. A.—Churches: Alloway Church, Ayr; Blackfriars Church, Glasgow; Free S. Enoch's, Glasgow; North Leith Free Church, Edinburgh; St. Andrew's Free Church, Edinburgh; Dysart Free Church, Fife; Cupar Free Church, Fife; Hampstead Presbyterian Church, London; Bournemouth Scotch Church. Country houses: Auchenhiglish, Loch Lomond; Sir William Thomson's, Netherhall, Largs, Ayrshire; Greystane for Mr. D. M. Watson, near Dundee; Hartfield House, Cove, Dumbartonshire; Ralston House, near Paisley; Kiel House, Campbeltown. Public buildings: St. Andrew's Hall, Glasgow; Cupar-Fife Corn Exchange; Scottish Amicable Insurance Offices, Glasgow. B.—Kelvin-side Free Church, Glasgow; Clarendon Wesleyan Church, Glasgow; Townhead Established Church, Glasgow; Westerlea House, Edinburgh, for Mr. Charles Cowan. C.—Finnieston Free Church, Glasgow; Free Anderson Church, Glasgow; Belhaven U.P. Church, Glasgow; Ayr Town Hall; Dysart Buildings, Fife; Victoria Infirmary, Glasgow (now in course of building); Wyke and Lockhead's Warehouse, Glasgow; Glasgow Herald Buildings; New Club, Glasgow; Kelvin-side Academy, Glasgow; Spier's School, Beith, Ayrshire; and Anderson's College Medical School. It may be interesting to note that the designer of the BUILDING NEWS headpiece was an old pupil of Mr. Campbell Douglas—viz., the late Mr. Bruce Talbert. The portrait given herewith is by Messrs. T. and R. Annan, of Glasgow.

Mr. John Holden, F.R.I.B.A., represents Manchester on the Council of the Royal Institute of British Architects. He was elected Fellow in 1877, and a Fellow of the Surveyors' Institute in 1874. He is a Past-President of the Manchester Society of Architects. His practice, which has included several churches and Nonconformist chapels, besides numerous mills, factories, and warehouses, may be described as one of general character. His position as Arbitrator in questions of building disputes and of light and air is well known. His photograph was taken by Messrs. Mudd and Son, of Manchester.

Mr. John Dando Sedding, F.R.I.B.A., of London, was for some time in the office of the late Mr. Geo. Edmund Street, R.A., and commenced practice at Bristol. His connection with the Art Workers' Guild and the Arts and Crafts Exhibition is familiar to our readers, and many of his designs both for buildings and decorations have been illustrated in our pages. He is the Diocesan Architect for Bath and Wells, which post he obtained on the death of the late Benjamin Ferrey, F.S.A. In Cornwall and the West of England Mr. Sedding has restored many churches, and the following is a list of the chief works which he has done:—Netley Castle, Hants; Holy Trinity Church, Chelsea; St. Clement's Church, Bournemouth; country houses for Col. Wynch, Knole, Dunster; Mr. Charles Rowcliffe, Halsway, Somerset; the Rev. H. Griffith, Glasbury, Herefordshire; and Mr. Edmund Christie, Bournemouth. He built the Children's Hospital, Finsbury, adjoining the Convent of St. Mary at the Cross. He has built new churches at Falmouth, Hayle, Netley, St. Augustine's, Highgate; the Church of the Holy Redeemer, Clerkenwell; and another at Wincanton. The restoration of the great screen, Winchester Cathedral, was commenced by Mr. Sedding; and he has erected numerous parsonages and small houses in various places. A new church at Ealing is proposed to be built from his plans. He has been associated with the annual excursions of the London Architectural Association, and has lectured on art subjects before that body. The photograph given to-day is by Mr. Mendelssohn, of Kensington.

Mr. John L. Robinson, A.R.H.A., member of the Council of the Royal Institute of Architects of Ireland, has for many years acted as hon. photographer to the London Architectural Association annual excursions. He is chairman of the Kingstown Commissioners and a member of the town council of the city of Dublin. The Dublin Sketching Club owes much to his energy and interest in its work and meetings. The excursion to Ireland a year or two ago by architects from London was to some considerable extent organised by Mr. Robinson.



He now is actively engaged on behalf of the city authorities with a scheme for the lighting of Dublin by electric light, and he has given evidence before Select Committees of the House of Commons on the question of house property and rating in County Dublin. The following is a list of a few of his works: Kingstown Town Hall; St. Michael's Hospital, Kingstown; St. Saviour's Dominican Priory, Dublin; completion of Mater Misericordiae Hospital, Dublin; St. Patrick's Training College, Drumcondra; the Female Training College, Baginbun-street, Dublin; Convents of Mercy at Kingstown, Brickfield-lane, Dublin, and Newport; Industrial Schools at Booterstown and Goldenbridge; schools at Dundrum, Rathnew, Dolphin's Barn; Houses at Glengageary, Dublin, &c. His photograph was taken by Messrs. Chancellor, of Dublin.

Mr. George Ashdown Audsley, F.R.I.B.A., of London, whose portrait concludes the selection comprised on our sheet to-day, was a pupil of Messrs. A. and W. Reid, of Elgin, where he was born in 1838. He was for many years in practice with his brother in Liverpool, during which time the following buildings were erected from their designs:—Church of St. Margaret, Belmont-road, Liverpool; Christ Church, Kensington, Liverpool; Church of St. Mary, and the Mausoleum of the Preston family, Ellet Grange, Lancashire; the Welsh Church, Princes-road, Liverpool; the Welsh Church, Chester; the Welsh Church, Garston, Lancashire; and the Welsh Church at Wrexham. They also built the Jewish Synagogue, Princes-road, Liverpool, a building which was richly decorated throughout by the architect. Some years later the Jewish Synagogue, St. Petersburg-place, Bayswater, W., was designed by Mr. Audsley, in conjunction with Mr. S. N. Joseph, of London, who superintended the carrying out of the work. The Racquet Club-house and Courts in Parliament-street, Liverpool, one of the most complete establishments of the kind in England, was Mr. Audsley's work. He restored the following churches:—Babington Parish Church, Cheshire; Huyton Parish Church, Lancashire; Prescott Parish Church, in the same county. He designed Streatham Tower, Prince's-road, Liverpool; The Towers, Sefton Park, Liverpool; and numerous other important houses in the neighbourhood of Liverpool. The Picture Gallery of the Liverpool Art Club is his latest most noticeable work, and another is the Layton Art Gallery, Milwaukee, U.S.A., a building of importance designed in the Neo-Grec style, severely treated. We illustrated the design a few years ago. Mr. Audsley's publications are numerous, and some of them are of world-wide reputation for their artistic value and beauty of execution. His illuminated works include "The Sermon on the Mount," large folio; "The Prisoner of Chillon," 8vo.; "Guide to the Art of Illuminating and Missal Painting." His architectural works are: "Cottage Lodge and Villa Architecture," folio; "Popular Dictionary of Architecture and the Allied Arts," not yet finished. These were followed by a remarkable series of art books, viz.: "Polychromatic Decoration as applied to Buildings in the Mediaeval Styles," folio; "Outlines of Ornament," folio; "Handbook of Christian Symbolism"; "Christmas and Easter Decoration of Churches"; "Taste v. the Fashionable Colours"; "The Ceramic Art of Japan," 2 vols., folio. In this work Mr. G. A. Audsley was assisted by Mr. James L. Bowes, the well-known collector. "The Ornamental Arts of Japan," 2 vols., folio. This work, probably one of the finest art books ever published in England, was subscribed by the American publishers at three and four times the English price, the artist's proofs being sold at £82 per copy. (The English price was £21.) His works now in hand are: "The Practical Ornamentist," a work of everyday use for the practical decorator, 100 plates in gold and colours, folio; "Handbook of the Organ," a comprehensive treatise on the art of organ building. In addition to the above, Mr. Audsley has written several Descriptive Catalogues of art collections and exhibitions. He has delivered several public lectures on musical and art subjects, and read many papers before learned societies in England and America. He is now engaged in writing a series of articles for "The Building News" on "The Symbolism and Iconography of Early and Mediaeval Art," and a series of articles for "The English Mechanic," entitled "Acoustics: A Review of the Old and

New Theories of Sound." Mr. Audsley has given much attention to all matters connected with the art of organ building, and recently contributed to "The English Mechanic" a complete series of articles on "The Church Organ, the Concert-room Organ, and the Chamber Organ," and last year delivered a lecture before the London Musical Association on "Matters, chiefly Architectural, relating to the Accommodation of the Organ in Churches and other Buildings." His portrait, reproduced to-day, was taken in New York, by the "Bonnadtype Company."

## MASONRY AND STONE-CUTTING.\*

By LAWRENCE HARVEY.

[TWENTY-EIGHTH LESSON.]

CORBEL ARCH ON THE PROJECTING ANGLE OF A BUILDING.

TWO walls (Fig. 183) meet at an angle, A C B, which in our figure we have taken to be a right angle. Now, as an easement to the footway, the angle A C B is to be removed on the ground floor of the building, but yet left in the floors above. This can be done by a conical corbel-arch, the apex of the conical soffit being placed at the meeting of the vertical planes A S and B S taken parallel to the outside walls, and at an equal distance from the angle C. The surface on plan A C B S covered by the corbel-arch will then be a square, and the directing curve or base of the cone a semicircle of diameter A B, thus giving a cone of revolution for the soffit of the arch.

The base is divided in an odd number of symmetrical parts, diminishing from the springing to the crown, in order to obtain a more equal division in the joints of the face-arches. The bed-joints will then be planes passing through these division-points and the centre line S O of the cone. The joint-lines on the soffit will be the generators (S' d') (S' e', S' f'), which, prolonged to the vertical plane A C of the wall, will give us the points D E . . . D' E' . . . of the face-arch. The face-arch, being the section of a cone by a plane parallel to one of its generators, is, of course, an arc of a parabola. To obtain the point C' of the face-arch, turn down the generator to S A on the plan, turn down also the angle of the wall at right angles with the centre line S C, then C' where it cuts the generator has only to be lifted up to its position in C' on the elevation by describing a circle round S'. The same construction might be used for finding the other points of the face-arch; E would come to E<sub>2</sub>, and D to D<sub>2</sub> on the turned-down generators.

To draw the mould (Fig. 185) of the face-arch, we turn the plane of the wall round a vertical axis in Z (Fig. 183); every point (E, E') will remain at the same level in E"; the joint line E' F' will naturally, when prolonged, pass through the point γ below the angle of the wall on the level of the springing.

Please note that the lines are drawn full on the plan (Fig. 183) as if seen from below, and that the elevation (Fig. 184) is merely explanatory, but useless in practice, the master mason requiring only the mould (Fig. 185), which he can draw direct from the plan (Fig. 184) by cutting each vertical e E' (Fig. 185) by an arc of a circle of radius γ E' equal to C E<sub>2</sub> (Fig. 183).

The eye will begin with the vertical circle (a b, a' b' m' b'), and the joint, being formed of a series of normals to the conical soffit, will be a zone of a cone with apex in w. This joint will be limited in a β by another circle, and the rest of the eye will be a cylinder as shown in Fig. 186.

To cut the eye, produce a cylinder (Fig. 186) of base a<sub>2</sub> z<sub>2</sub> β<sub>2</sub>; on the plane of the base draw circle a l m b; on the cylinder draw line a λ μ β; divide both the circles in an equal number of parts and join corresponding points by chisel-drafts: this will give the conical joint. To cut out the soffit, draw triangle a S b on the lower plane of the eye, and join all the points of front circle with the point S.

**Bed-joint Mould of Arch Stone.**—Turn down the plane of the joint E' S O round the centre line S O of the cone; the point (E E') will come to E<sub>2</sub>, and the arris on the face wall will take the direction C E<sub>2</sub> F<sub>2</sub>; the length E<sub>2</sub> F<sub>2</sub> is equal to E' F' (Fig. 185). The normal m μ, when turned down, comes upon a a, and the mould is then f<sub>2</sub> F<sub>2</sub> F<sub>2</sub> a a P. The other bed moulds are drawn in the same way.

**Soffit Operation Planes** (Fig. 187).—These are the faces of the pyramid inscribed to the cone and having the joint lines as its arrises. To draw it produce an arc of a circle with radius S<sub>2</sub> A<sub>2</sub> equal S A (Fig. 183); carry thereon chords A<sub>2</sub> i', i' d', d' e' . . . equal to chords on the base of the cone (Fig. 184); draw corresponding radii and prolong them until S<sub>2</sub> I<sub>2</sub>, S<sub>2</sub> D<sub>2</sub>, S<sub>2</sub> E<sub>2</sub>, . . . be equal to the corresponding lines on the bed moulds. Join the extremities by straight lines A<sub>2</sub> I<sub>2</sub>, I<sub>2</sub> D<sub>2</sub>, D<sub>2</sub> E<sub>2</sub>, . . . Then cut off from the arris-lines the length S<sub>2</sub> a<sub>2</sub> equal to S a. For the key-stone there will be a triangle beyond E<sub>2</sub> E<sub>2</sub>, the sides of which are of length E<sub>2</sub> γ<sub>2</sub>. To find this length, draw (Fig. 183) S R, the trace of the operation-plane for the soffit of the key-stone; turning R to R' on Fig. 185, E' R' is the trace of the operation-plane on the face-mould, and E' γ' is the length required.

To complete the operation plane, the curve l<sub>2</sub> φ<sub>2</sub> m<sub>2</sub> intersection of that plane with the conical eye-joint is required. Take point d' on chord d e' (Fig. 184), and through this point take a plane S' d' O cutting the operation plane and the eye-joint. The section of operation-plane turned down round centre line gives S δ; the section of the eye-joint turns down on a a, and thus φ is on the intersection of these two lines. Carry length S φ on S<sub>2</sub> φ<sub>2</sub> (Fig. 187), and draw the curve.

To work the stone from the soffit operation-plane a bevel must be used equal to the solid angle comprised between the operation-plane and the wall face. The shortest way of finding this angle is as follows: The intersection of the two planes is projected on R A C (Fig. 183), and shown in E' D' V' (Fig. 185). If a plane be taken through line A S, and perpendicular to the above intersection, this plane will cut the wall-face along the line A' T' (Fig. 185), which is turned down on the plan in A T (Fig. 183) when the plane revolves round A S. But T S is then the position of the section made by that plane in the soffit operation plane, and the angle of the bevel required is R T S (Fig. 183).

The working of the arch-stone is done as in the former corbel-arch studied (Fig. 188).

The construction given is that used during the Renaissance, with some variations as to form of soffit. Sometimes the soffit is spherical; sometimes it is a cylinder, with springing line coinciding with the bevel of the angle. In all these cases the principle of the construction is essentially the same: it consists in an arch, the bed-joints of which radiate from the line which bisects the angle on plan. Now, it is evident, that the thrust of such an arch must tend to throw over the walls at the angle. If it do not so in practice, it is because these arches are only used on a small scale. There is another result also to be feared when such corbel arches are used on a large scale. The weight of the wall overhanging the corner will act as a lever, with the line A B as its fulcrum, and tend to fall out into the street, and is only prevented from doing so by being tied by mortar, cement, or iron clamps to the remainder of the wall on both sides. On the other hand, by the use of twisted bed-joints, I believe corbel arches of any size might be constructed to support the angle of a building, provided that the keystone be firmly tied to the body of the wall by iron, or, better, by bronze, chains. But as I have never seen any such construction, nor produced one myself, I shall for the present abstain from giving a more detailed description of my idea.

These corbel arches have been often used for carrying the landings at the angles of rectangular staircases in connection with raking vaults which carry the steps as in Fig. 189. Such staircases are most noble in appearance, and have the practical advantage that the steps may be replaced when worn out without interfering with the structure of the walls. In constructing such vaults, begin by the corbel arch; then take the parabola of its section by planes A C and B C, and use these parabolas as the guiding lines to the cylindrical vaults supporting the steps. To prevent the uppermost course of stones from slipping down it should be jointed as a flat arch, or a rebate a in L may be made. The corners of such stairs are sometimes treated as groins (Fig. 190); but they do not look so well as when finished with a corbel arch.

A plan and report by Mr. J. F. Trew, of Gloucester, for the sewerage of Dursley, has been adopted by the rural sanitary authority. The estimated outlay on the scheme is £3,750.

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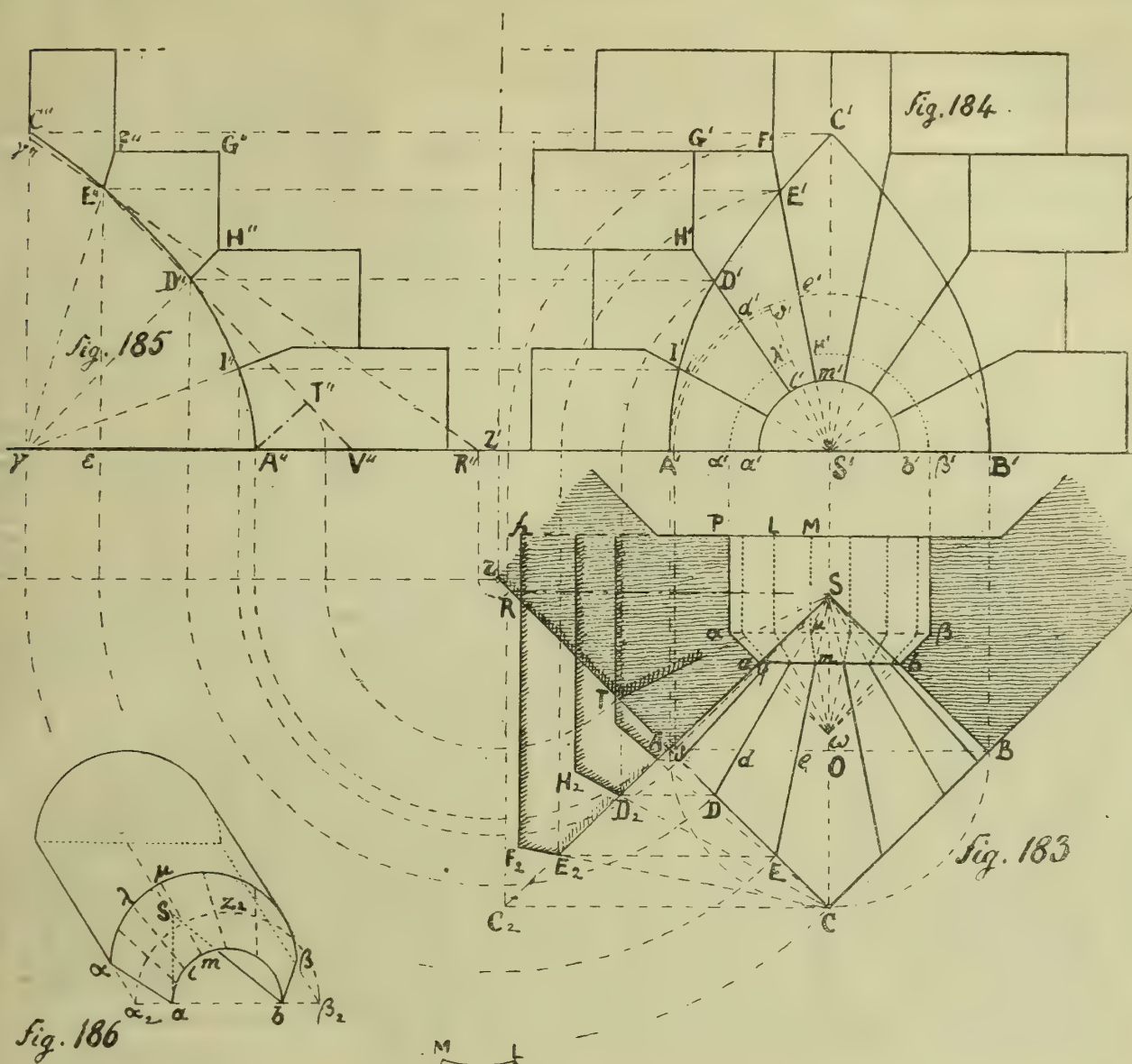
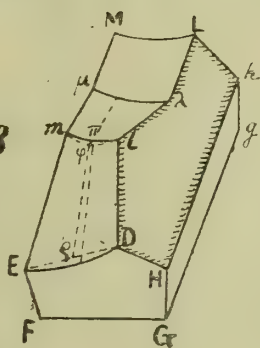


Fig. 186

Fig. 188



Landing supported by Corbel-Arch

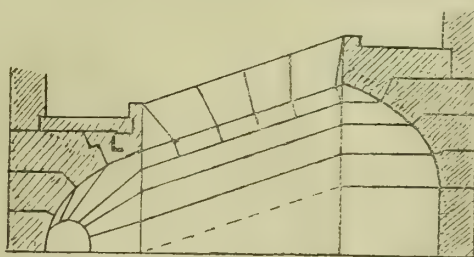


Fig. 189

Fig. 190

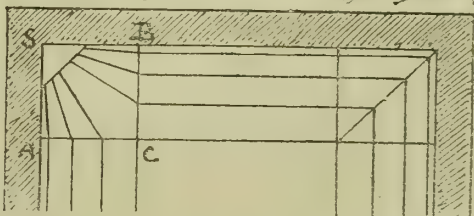
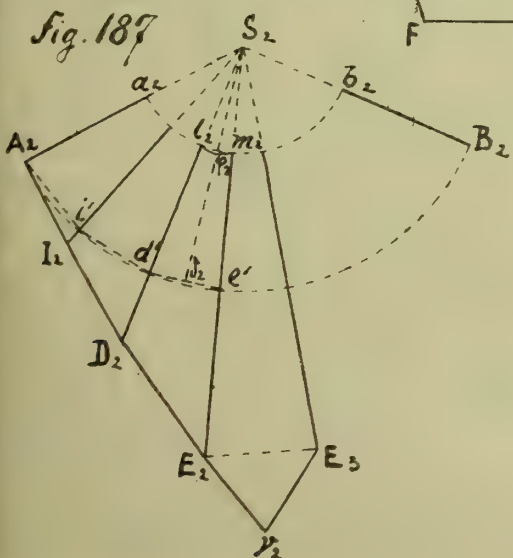


Fig. 187





## ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, occupying the chair. The following new members were elected:—W. G. Legg, S. H. Gordon, G. H. Gill, H. B. Cresswell, H. S. Morris, J. Robinson, and H. T. Bromley.

## ARCHITECTURE IN OXFORDSHIRE.

A paper on this subject, written by Mr. W. A. PIRIE, and illustrated by numerous plans and sketches, was read by Mr. HOOPER for the author, who was absent owing to indisposition. Mr. Pite found in Oxfordshire an abundant field for study and sketching, and during a four months' tour he was only able to deal with four of the principal parts of the county—Bloxham, King's Sutton, Witney, and Burford. The author urged the importance of systematic and patient analogy as the only means to acquire a thorough knowledge of a building and to understand the architectural dialect and idiom of the district examined. When an architect had village districts to study, it was important and necessary to have some system to work on, but not rigidly for conformity. Without question, the best course was to see everything first inside and out the building to be examined. Mr. Pite added: Without exception, make a plan to a small scale; this you may easily do by pacing and sketching in the detail. This may seem rough, but you will find it afterwards to be of the utmost importance. The late Mr. James Parker, the well-known antiquary of Oxford, showed me a wonderful collection of plans which, with his sketches, were kept in a strong room; he adopted a useful method of tinting the walls to indicate the several dates. This should be supplemented by a brief description of the church, with illustrated notes. Then if the nave arcade calls for illustration, measure one bay, plotting to  $\frac{1}{4}$  in. scale, on the spot, mouldings  $\frac{1}{2}$  or  $\frac{1}{4}$  real size, with the jointing and sculpture carefully noted. Much of the history of a church centres around the nave arcades, and both are constantly found to be dissimilar in dimension, date, and design. Chancel arches, sedilia, and pulpits have their several claims; while screens, rood-lofts, and benching may be best secured, full size, by rubbing the fillets on stout straw paper with heel-ball, and filling in the details, sculpture, and mouldings full size. Then there are porches, generally of remarkable beauty; the sweetest part of all to work in. Then the enchantments and mysteries of ancient roofs, perhaps their slightly inaccessible position gives us an increased desire to penetrate the secrets of their scantlings. But, whatever you do, give a loyal preference to the rational and practical measured detail, than to an irresponsible and too often questionable freehand sketch. Give the best of your time and strength to good figured work, and at its close the zest of anticipation and change of occupation will enable you to produce spirited, and, in more probability, accurate, sketches of any portion of the edifice you may wish to secure. Mr. Pite proceeded to describe in detail the principal churches sketched during his tour. In the northern part of the county were three important churches—one, certainly, in Northants, but separated only by a canal; but the three within sight, a few miles south of Banbury, each being celebrated for a spire of singular beauty. A local rhyme discriminated between their merits in the following doggerel: "Bloxham for length, Adderbury for strength, King's Sutton for beauty." These churches were a study in themselves, in their influence on one another. They were visited by the A.A. excursion in 1884. At Bloxham the most interesting features were the admirably arranged tower and spire; the delicate Norman carving in the chancel, quite equal to the Romanesque work to be seen at Bamberg and elsewhere in Germany; the painted chancel screen and two-storied porch. At Adderbury the rich detail of the chancel—a fine specimen of William of Wykeham's work—demanded careful study, with the brasses, rood-loft and screens, and magnificent cusped 14th-century roof of open timber. In the neighbouring church of King's Sutton, the same hands seemed to have been at work; the wondrous symmetry and simplicity of the famous spire were enchanting. The great church of St. Mary, at Witney, was described in detail; it contained much work of the 11th, 13th, 14th, and 15th centuries. The last church described was that of Burford, restored by the late G. E. Street, which for concentrated interest excelled all

others in the county, while it was also grandest in scale.

At the close votes of thanks were accorded to the author and reader of the paper, on the motion of Mr. H. D. Appleton, seconded by Mr. L. A. Shuffrey, and supported by Messrs. F. R. Farrow and C. H. Brodie.

## BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE twenty-third annual general meeting of the donors and subscribers took place on Tuesday, at 21, New Bridge-street, E.C. Mr. H. H. Bartlett (president elect), occupied the chair, supported by Mr. E. Brooks (treasurer), Messrs. E. C. Roe, H. W. Parker, C. K. Turpin, J. Robson, T. H. Winny, E. B. Gammon, A. A. Stanger, W. D. Gilbert, and others. Mr. Wheatley, the secretary, read the report, which stated that during the past year the income had been well maintained, the amount received being £288 12s. annual subscriptions, £317 19s. donations, and £98 7s. 5d. dividends, total, £704 18s. 5d. The expenditure was £472 11s. 7d., of which amount £377 18s. 4d. was for pensions and temporary relief. Two elections had been held, the result being that Mrs. Charlotte Tucker and Mrs. Susan H. Fisher had been added to the pension list. One pensioner, Mr. J. T. B. Miles, had died during the year, leaving a present total of nineteen pensioners now on the books, and three children at the Orphan Working School, per presentation of the institution. The eleventh annual dinner took place at the Holborn Restaurant on the 2nd April, 1889, Mr. John Aird, M.P., presiding, when subscriptions and donations were announced amounting to £350. A further purchase of stock had been made during the year, bringing up the total of invested funds to £3,650. The committee announced with great regret the death of Mr. Chas. Richardson, one of the trustees, and also a vice-president of the institution. Mr. Richardson had been a regular and liberal supporter of the funds from the foundation to the period of his lamented decease. The report concluded by thanking the master builders, architects, and merchants connected with the building trade for their past help, and expressing the hope that the usefulness of the institution might be well maintained. The chairman, in moving the adoption of the report, expressed the pleasure it gave him to find the institution in such a flourishing condition. Much had been done during the past year in assisting widows and those who needed relief. Additional funds had been invested, and the balance at the bank was satisfactory. He moved: "That the report and balance-sheets, as read, be adopted and printed, together with a list of subscribers and rules of the Institution." Mr. E. B. Gammon seconded the resolution, which was carried. Mr. E. C. Roe, in proposing a vote of thanks to the ex-president and other retiring officers, remarked that Mr. Aird's Parliamentary and other duties had prevented his attendance at the ordinary committee meetings; but he had done the institution good service in having acted as president. As to the future, there was one thing to consider, having reference to the increasing number of pensioners; and that was the importance of increasing the invested funds, so that a steady income might arise from this source, and that those whom they took an interest in as pensioners might not have to depend so much on the general income, which was more or less subject to fluctuation. He concluded by expressing the hope that they might have the pleasure of seeing Mr. Bartlett at some of the meetings, as he would no doubt be interested in seeing for himself how the business of the Institution was carried on. Mr. Stanger seconded the resolution, which was carried. Mr. C. Brown replying on behalf of Mr. Aird and the other retiring officers. Officers for the present year were then elected, and in reference to which the treasurer (Mr. Brooks) spoke in complimentary terms of Mr. Bartlett, who headed the list, and also referred to the valuable services rendered by some of the members who had already served and whose names were included amongst those re-elected.

## LOW SIDE WINDOWS IN CHURCHES.

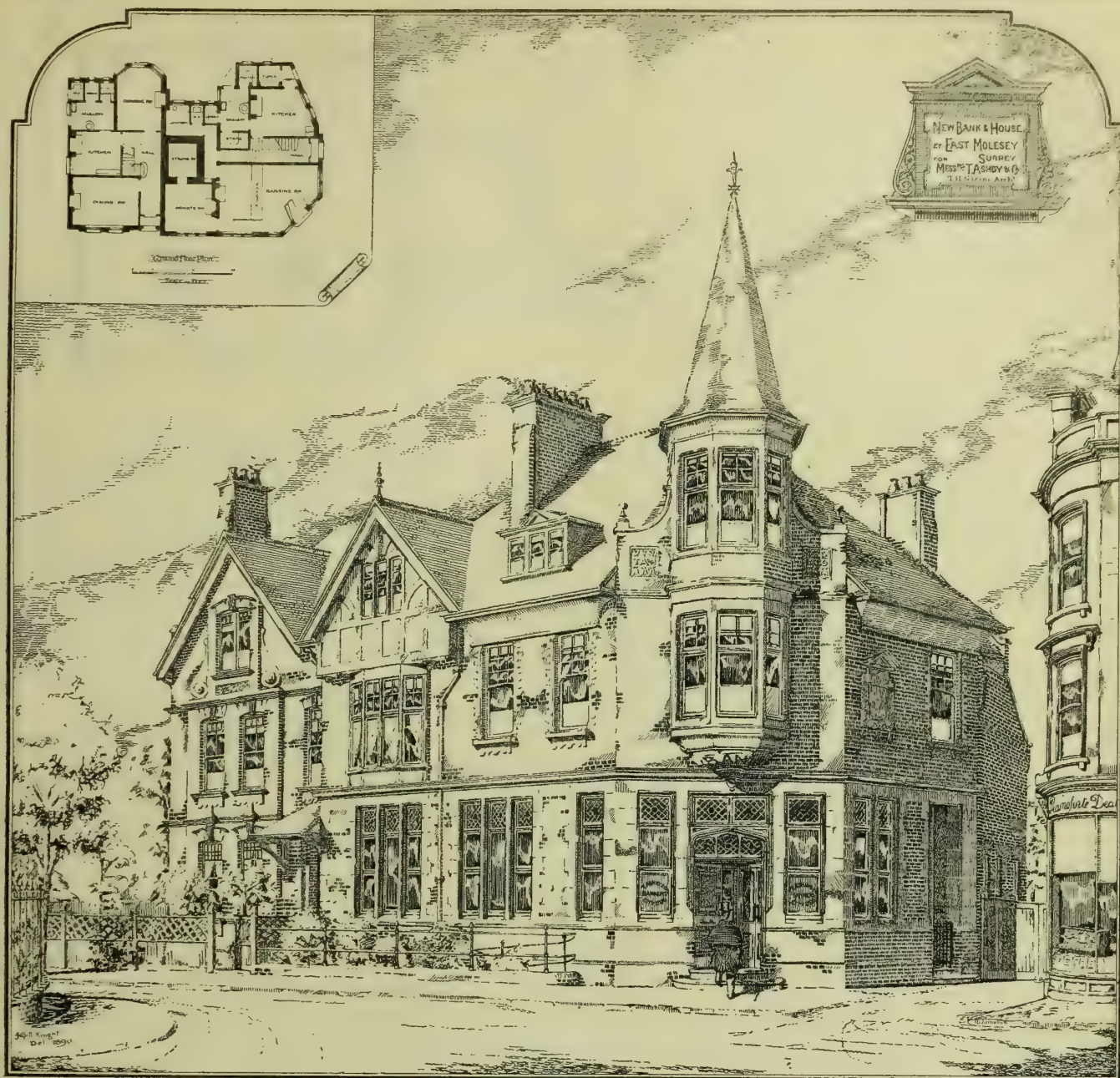
THE original use of low side windows in churches, one of the most widely controverted points in ecclesiology, forms the subject of a "Conference" in the *Antiquary* for

March, in which several architects and antiquarianstake part. Their opinions differ greatly, as might be expected. Mr. C. E. Ponting, F.S.A., of Marlborough, disbelieves in the theory that these windows were made to allow the priest to communicate with lepers; but thinks that the principal object was for the sacristan standing inside to ring the bell at Mass at the open window. His reasons are that the low side windows never exist together with an outside bellcote, and that where a village or group of houses exists on one side only of a church, the low window is always placed on that side. This hypothesis also accounts for the use of so many so-called "squints," which do not command a view of the high altar from side chapels or transepts. Where these side windows are found, as at Stanford-le-Hope, St. Mary's, Guildford, and Bishops Cannings, in the west wall of the nave or aisles, they may have been for confession, or for worship outside the church. Mr. J. Lewis André contends that they were used for confessional purposes, and points out that while some, like that at Sherringham, have a coeval stone seat provided inside, all the examples of these windows are prior to the introduction, in the Decorated period, of the shriving pew. The Rev. C. R. Manning, F.S.A., admits that scarcely any documentary evidence exists as to their use, and considers, from the diversity of their position, that they served more than one purpose. He makes an amusing confession that in the *Gentleman's Magazine* for 1865 he described an example in the north aisle of Weybread Church, Suffolk, which, he was afterwards informed by the late Mr. R. M. Phipson, of Norwich, was a feature entirely of that architect's own production! The Rev. Dr. J. Charles Cox, F.S.A., says he has been compelled by further study of the leper question in England to abandon the theory he formerly held that these are "leper windows"; he now considers that the Sanctus-bell theory is the only one that will afford satisfactory explanation of over 90 per cent. of known examples. Mr. Temple Moore, of Hampstead, describes a 15th-century example recently uncovered by him at Winestead Church, Yorks; and Mr. J. F. Fowler, F.S.A., of Durham, gives a list of fourteen examples examined by himself. Mr. Charles Lynam, of Stoke-on-Trent, suggests that a complete list of all known examples should be put on record, and, as a beginning, describes in full detail the one at Church Eaton, Staffs. Like Mr. Fowler, he propounds no theory on the subject.

## BOOKS RECEIVED.

*Electrical Engineering for Artisans and Students*, by W. SLINGO, Principal of the Telegraphists' School of Science, and A. BROOKER, instructor in electrical engineering at the Telegraphists' School of Science (London: Longmans, Green, and Co.), is a very comprehensive manual, covering the whole field of electric lighting, and well adapted for students. The work embraces the branches prescribed in the syllabus of the City and Guilds Technical Institute. The authors have met the requirements in an apparently satisfactory manner, and have given particular attention to the practical part of the subject of lighting, and the wants of those engaged as engineers on various services. To this end the theory of the science has been slightly dealt with, but sufficiently for the requirements of the practical engineer. The authors have distinguished between the three kinds of electrical phenomena, the static, or frictional, the dynamic, and magnetic, and have shown that magnetism is the consequence of dynamic electricity, rather than a distinct law, or series of laws. Particular attention is given to the units, the measurement of current strength and resistance, and various types of dynamo-electric machines, these being all illustrated by carefully prepared wood engravings, also to the "lines of force" which cannot be too clearly or strongly impressed on the mind of the practical electrician. The various kinds of apparatus used in electric lighting and in an installation equipment, and the various arc and incandescent lamps, are described and illustrated. The book is a capital introduction for the young engineer.—*Spon's Architects' and Builders' Price Book*, 1890, edited by W. YOUNG, architect (London: E. and F. N. Spon, Strand). This well printed and neatly got up work has reached the 17th edition, and its publishers have added many useful memoranda, and made it a pocket as well





as a price book. The alphabetical arrangement of the memoranda, which precede the builders' prices, is a decided merit of this compilation, as it enables the architect or builder to turn to information at once. Amongst the subjects treated are ancient lights, and tables of angular width and height, approximate cost per cubic foot of building; arches, their thickness and abutment, thickness of walls for churches required by the Incorporated Society, seats, columns, girders, drains, surveying, valuation of property, and various formulæ and tables of general interest. We cordially recommend it to the profession.

#### FRESCO CEMENT.

ON Wednesday, March 5th, Mr. Edwin Lucas read a paper before the Civil and Mechanical Engineers' Society (Mr. H. Adams in the chair) on a new medium for fresco painting, called "Fresco Cement."

The composition, invented by Mr. Kremeyer, consists largely of tufa, together with Portland cement and lime, and the patentee claims for it that, being hydraulic, unabsorptive, and acid proof, it is absolutely unaffected by the severest climate. The author gave a highly interesting résumé of the history of the art of fresco painting, and of the various methods employed by great Italian masters, by the modern German school, and by artists in this country, dwelling on the great difficulties with which votaries of the art had to contend, on the elaborate nature of the process required, and on the want of permanence in the

complete work. In illustration of the last defect, especially in our climate, he pointed to the fact that English artists had from the 12th century devoted great attention to works of this nature, and asked, "Where are those works now?" He then proceeded to quote a favourable report from Mr. H. Faija, M.I.C.E., who, moreover, tested the strength of specimens which had been immersed in water for 23 days. The average tensile strength of five specimens was found to be 312lb. per square inch. The paper concluded with a practical demonstration of the extreme simplicity of the process, by means of the portable fresco panels, which form a striking feature of the new invention.

#### NEW BANK AND HOUSE, EAST MOLESEY.

THIS view illustrates new banking premises, with house adjoining, at East Molesey, Surrey, for Messrs. T. Ashley and Co., bankers. It is built of red bricks, which were obtained from Canterbury. The stone used throughout the fronts is red Newbigging, of fine texture, the roofs being covered with red Broseley tiles. The buildings have been carried out under the superintendence of Mr. T. H. Nixon, architect, by Messrs. Wheatley and Son, of East Molesey, at a cost of £2,370, exclusive of bank fittings, which are of best Honduras mahogany.

The new museum at Hanley will be opened by the Princess Louise in May or June next.

#### COMPETITIONS.

LIVERPOOL.—Designs for the Plymouth-grove chapel have been submitted in limited competition, and the plans sent in by Mr. Robert Curwen, of London, have been chosen. The plan adopted is said to be very similar to the Ashbrook-road chapel, Sunderland, by the same architect. A nave-and-aisle arrangement is the leading feature of the design. Four plans were submitted, and no professional referee was engaged.

TONG.—The committee of the Tong Liberal Club have accepted the plans submitted in a limited competition by Messrs. Empsall and Clarkson, of Bradford, and the works are to be commenced without delay. In the basement are public slipper baths, heating chamber, store cellars, &c. The reading, committee, and club-rooms, and the curator's living apartments, are placed on the ground floor, the first floor being occupied by large billiard-room, card-room, lavatory, &c. The elevations are in the Queen Anne style, of simple design.

A travelling studentship of £50 is offered by the Painters' Company for the encouragement of the study of decorative painting. The studentship is open to competition by students between the age of 20 and 35 in any recognised school of art or other institution devoted to the study of applied art in any form, and situate within the limit of the larger Metropolitan postal area. The rules for the competition can be obtained from the clerk of the Painters' Company, Painters'-hall Little Trinity-lane, London, E.C.



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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS — MANSIONS IN HAARLEM-ROAD, BROOK GREEN—ST. HILDA'S CHURCH, SUNDERLAND—INTERIOR OF THE "NEW TOMB" AT THEBES, B.C. 1700—DESIGN FOR A PUBLIC DAY SCHOOL FOR 400 BOYS.—PLYMOUTH ASYLUM.—HOUSES IN FRANKWELL, SHREWSBURY.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 326.)

DORDRECHT AND UTRECHT MANSIONS, HAARLEM-ROAD, BROOK-GREEN, W.

THESE and other blocks of residential flats have recently been erected in this road. Each flat contains two sitting-rooms, two or three bedrooms, kitchen, bath, and w.c., and a coal-cellar in the basement. A provision lift communicates from the tradesmen's entrance to each kitchen, and an asphalt tennis-court for the use of the tenants is provided at the back of the buildings. The rentals are from £40 to £70 a year for each flat, so it will be seen that, from a monetary standpoint, they compare favourably with eligible villas of an ordinary suburban type. The fronts are faced with red bricks, with Douling stone bands, Portland stone landings, and the roofs are tiled. The builders are Messrs. Leslie and Co., of Kensington, who have satisfactorily carried out the work, and the architects are Messrs. Lewen-Sharp and Arpin, of 3, Duke-street, Adelphi, W.C. These drawings were in last year's Royal Academy Exhibition. At an early day we shall give a view of Mechlin Mansion, with a plan.

ST. HILDA'S CHURCH, MILLFIELD, SUNDERLAND.

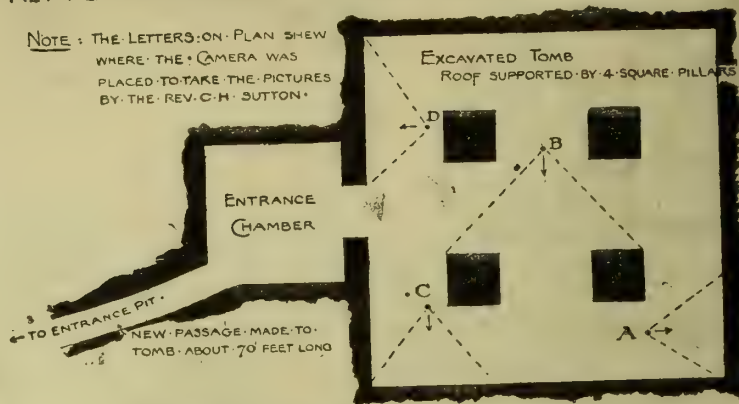
THE plan and interior view of St. Hilda's Church, Millfield, Sunderland, which we give, is that sent in competition in 1888, under the rebus device of a "Mill in a Field," by Hicks and Charlewood, of Newcastle-upon-Tyne, and finally accepted by the committee for adoption. The cost was then ascertained by a tender, and builders undertaking at about £3,000, the accommodation being calculated at 500 sittings. Some important changes have taken place in the district since that time, and it is now decided to build the church as a memorial to the late Bishop of Durham. If funds are forthcoming the church will be treated rather more handsomely, and a tower and spire will be added if possible. A change will be made in the interior design by substituting a chancel arch or some other internal break between the nave and chancel, in place of wood beam and cross shown in the sketch.

REPRESENTATIONS OF THE INTERIOR OF THE "NEW TOMB" AT THEBES, UPPER EGYPT.

THESE photo.-tints are from photographs taken by the Rev. C. H. Sutton, English Chaplain at Luxor, during last winter. They have been taken on Monckoven's dry plates by means of magnesium ribbon light. The tomb was one not generally shown previously to last winter to visitors to Thebes, the entrance being somewhat rough. It was shown to Mr. Sutton by an Arab, and the entrance he describes thus:—I was taken by my Arab to an opening in the ground, a well-like pit sunk some 15ft., and was told to

## KEY-PLAN TO ILLUSTRATION OF THE NEW TOMB AT THEBES.

NOTE: THE LETTERS ON PLAN SHOW WHERE THE CAMERA WAS PLACED TO TAKE THE PICTURES BY THE REV. C. H. SUTTON.



jump or drop down. At the bottom of the pit we found a tunnel about 3½ft. high running downwards into the hill above us. We had to crawl on hands and knees with our candles till we arrived in a small chamber half-filled with rubbish (probably about 8ft. square), from which was an entrance by a doorway some 4ft. high into the above-represented tomb. This second room was a much larger chamber, probably 20ft. square, with four square pillars left to support the roof when this chamber was excavated. The walls had all been coated with plaster about 2in. deep, to give a smooth surface; had then been toned with a light yellow colour, to form the ground for the paintings, the colours of which are chiefly blue, green, a chocolate-brown, and black. Seeing that the tomb was in excellent preservation, the paintings being as fresh in colour as when first put on, I ordered my guides to have the entrance improved, and decided to photograph it. This tomb last year became quickly a favourite one to visit, and it having no number, and not being mentioned in "Murray's Guide Book," it became known amongst the visitors and guides as the "New Tomb." The tomb is that of a private individual—a gentleman of some wealth and importance, living at Thebes in the XVIIIth dynasty, who seems to have belonged to the priestly caste, and to have been connected with the royal family of that date. In the right-hand top corner picture B we have a view taken across the tomb, and looking between the columns, see on the other wall a large part of the "Ritual of the Dead," with representation of the mummies, disembodied souls (a bird with human head), and figures representing the Resurrection. In order to get the painting on the roof on the same plate, it was necessary to throw the picture on the plate out of perspective. In the side aisles the roof has not been smoothed, but left with projections of 18in., and painted with vines and lotus flowers, giving these the appearance of hanging from the roof. These are shown in the top left-hand picture A; also the favourite pastime of this gentleman—i.e., to sit in a boat with his wife, under an awning, with a slave burning perfumes before them, while they are towed by another boat rowed by their slaves. The black patch is where at some time the plaster has been knocked off, and an attempt has been made to make another tunnel to find other tombs—perhaps in 1842, when this tomb seems to have been first opened. In the bottom right-hand picture D, which have the man, his wife, and a priest—possibly this is the marriage festival, the priest in the leopard skin ejecting water of life over them in two streams, from a sacred jar. In the lower left-hand picture C we have again the man and his wife, first sitting, then the wife standing and following her husband, to make a sacrifice to the gods. The paint is water-colour and easily damaged by water, which at times entered the tomb and washed out much of the painting of the chapter of the "Ritual of the Dead." A complete set of photographs of this and other tombs can be obtained from Messrs. Spooner and Co., in the Strand. We give a block plan showing the position of the camera when these photos were taken.

SOANE MEDALLION, 1890. FIRST MEDAL DESIGN. —A PUBLIC DAY-SCHOOL.

THE following were the conditions given: The school was to accommodate 400 boys on a corner site with a frontage to an important thoroughfare

of 140ft. and 100ft. to a side street. The main front was to face due west and no right of light on the north side. In scheming the plan the endeavour was to keep the classrooms as far as possible from the noise of the main street by placing them near the eastern boundary, to obtain left-hand light from the east or north in all cases to the classrooms, and to place the playground so as to get all the sun possible. The principal rooms are placed on the first and second floors; the ground floor being devoted to the school kitchen and offices, the caretaker's residence, the covered playground—which is placed under the classrooms—and to the gymnasium, a one-storied building, to the north, entered from the playground. This building has a wooden roof and ceiling to which the climbing ropes and poles could be fixed; it is lighted by windows placed high up in the wall, so as to give as much wall space as possible, and by skylights running the whole length of the room. The gymnasium has also a door connecting it immediately with one of the staircases, so that it can be reached from all floors in wet weather without going into the playground. The principal entrance is in the south-east corner of the playground, from which one ascends the main staircase to the first-floor. On arriving on this floor, immediately opposite the staircase is the assembly hall, which, if desired, can be divided into two classrooms by a revolving shutter. On the left is a corridor which gives access to six classrooms, and at the end of this corridor is a secondary staircase, which would be used on dismissing the school, and for exit to playground. At this end, and also by the principal staircase, are placed the lavatories, the masters' lavatories being placed on mezzanine floors, entered from the staircase. On the second floor is a dining room, connected with the kitchen on the ground floor by a lift, a master's room, school library, two classrooms, a drawing classroom, lighted from the top, a lecture room, and a chemical laboratory, with a chemical store above. The classrooms are arranged to be heated by Boyd's ventilating school grates, and the ventilation is by means of extract flues, which run between the ceiling and floor over the corridors, with branches to gratings in the ceilings, the fresh air being admitted through openings under the windows. In the elevations of the building, contrast of colour was intended to be obtained by using red bricks for the lower portion of the building, with rough cast, tinted a warm ochre above, and a red-tiled roof. The window frames to be painted white or cream colour, and the external shutters green. No stone was to be used in the elevations, all mouldings, &c., being in brick or cement. The upper part of gymnasium has a deep frieze, divided into panels by pilasters, in which are carved subjects representing the English athletic games. The clock face is also carved in brick, the subject being "Father Time delivering an old man to Justice and Death." We shall give a detail of this design at an early date. Its author is Mr. Francis W. Bedford. The second medal design was illustrated last week.

The Sheffield school board have intrusted Mr. C. J. Innocent, of that town, to prepare plans for a school to be erected in Gleadless-road, Heeley, for 1,200 children, the total cost not to exceed 6 per cent. beyond £8 per head. At the same meeting Messrs. Wightman, also of Sheffield, were instructed to prepare plans for a school to accommodate 1,200 children at Woodburn, at a like limitation of cost per head.



## WAYSIDE NOTES.

THE cantilever, albeit that that impressively-named aid to construction is none other than the humble bracket "writ large," has this week been exalted to the skies. Its apotheosis took place with the ceremony on the 4th inst., when the magnificent bridge that spans the Firth of Forth was "opened" by the Prince of Wales. "Wonderful things, these cantilevers," thinks John Bull; "marvellous to a degree!"—and the good man regrets that he didn't know of the cantilever and its ways long before A.D. 1890. Perhaps he would turn a deaf ear to the suggestion that he daily hangs his hat and coat on a cantilever. It might be a shock to him thus to learn how humble and simple, though, for that reason, how grand and noble, is the principle upon which his new bridge is constructed. To know that the central girders of the Forth Bridge depend from the extremities of the huge diamond-shaped structures of open steelwork as a coat hangs from a peg behind the door, may be, with some persons, to destroy much of the sentiment connected with the bridge, and induced largely by the employment of the term *cantilever*. Yet to those fitted to appreciate true grandeur and impressiveness, the very simplicity of the bracket principle constitutes the most noble feature in the Forth Bridge, and one that lies at the root of its imposing appearance. For all things are impressive in an inverse ratio to the amount of complication evidenced in their design and construction.

Still, persons have got it in their heads that the Forth Bridge is on the cantilever principle, and if they proudly proclaim to us the fact, and we strive to point out that the cantilever has nothing to do with the integral calculus, but is twin brother to the aforementioned hat-peg behind the door, they smile blandly, as though to say, "We know all about that." This is exasperating to a degree. But it is a state of things that may be expected to continue for some time in spite of sentences such as that in Tuesday's *Times*, explaining that "in architecture the cantilever is merely a bracket," and all the information which the engineers of the bridge have been at some pains to convey to the popular mind through the medium of magazines, &c. A cantilever bridge it is, and a cantilever bridge it will remain, and there is no reason why things should be not known by their right names; but it seems a pity that ignorance should be so rife as to the meaning of a simple word, and that a principle as old as the hills should be believed by the public to be some new patent automatic, compound, double-acting, triple-expanding system of construction.

As for the Forth Bridge itself, the world should be pretty familiar with its general appearance. It is evidently a structure that will give no small pleasure to the engineer and architect to behold. For my own part, I am anxious to see it in the flesh—or rather the steel—believing it to be the most creditable piece of engineering of its kind ever brought to a successful issue. That it will greatly influence the future of bridge-building there can be no doubt. It will probably lead to a still further abandonment of close web iron construction in favour of open steel-work. Irrespective of the employment of the cantilever principle, which will be a factor to influence future bridge-designing, the Forth Bridge should induce engineers to still further throw off the bonds of traditionary construction and make further progress in a knowledge of the true principles to be observed in the use of steel and iron for constructive purposes.

Passing over the Trent at Newark, by the Great Northern Railway, a month or so ago, I noticed a new bridge in course of construction, over the river, for railway purposes, which, though having nothing to do with the principle of the Forth Bridge, yet appeared to me to have been designed, in respect to the method of ties and struts, with a full knowledge of what had been done on the Forth. It will be a bold, handsome bridge, judging by what I could see from the train, the designer having, if I remember correctly, broken away from the commonplace type of bridge of this class. With an exhibition of a desire for economy in metal, with superior evidence of knowledge of the laws of strains, and the lessons of past experience, engineering iron and steel construction improve in appearance. It has been said of Southwark

Bridge that there is so much metal employed in its construction, that it would pay a contractor to take it down and rebuild it. Since the time when this unlovely structure was erected weight of metal has decreased and scientific construction improved, and the result has been, in structures like bridges, a vast improvement in appearance. And I think now we are beginning to see that the evidence of suitability to end in view goes far to produce comeliness in the works of an engineer, either mechanical or civil. Directly the engineer begins to stick on cornices, mouldings, and the like for their own sake he goes wrong, and produces abortions. This appears most markedly in machinery. To me a fine locomotive is a "thing of beauty and a joy for ever," and I have invariably found the most pleasing to the eye are those that have been designed in a straightforward, honest manner, with regard only to suitability to a peculiar purpose, without striving for effect other than that naturally produced by necessary features, and without added "ornament" other than rows of rivets, clusters of bolt-heads, and the sheen of bright, polished metal.

Is Registration desirable? Well, not if the pig-sticking class of "architects" can be persuaded to confine their attention to competitions such as that hailing from the Governors of the Ashton-in-Makerfield Grammar School, who invite plans and specifications, with sections and elevations, and offer a premium of ten pounds, the said glorious premium to buy the plans outright, and to be pocketed by the muchly successful architect with feelings of gratefulness towards the Ashton-in-Makerfield Grammar School Governors. This is a tall order. I wish the governors would not receive a single plan. They, of course, won't receive anything worth having, not even for ten pounds; but the advertisement, as it appeared prominently in your columns last week, is one of the most barefaced pieces of impudence that it has been my pleasure to notice in recent years.

It is not so much the ten pounds; ten pounds is often now offered for a premium for a considerable piece of designing. Indeed, one feels some surprise at the liberality of the sum. Will the governors award the £10 all at once? It would be safer, I think, for them to let the fortunate architect have the money by instalments. Or, as they doubtless are aware of the responsibility they incur by placing a whole £10 note in one architect's hands all of a sudden, they would do well to invest it for him in some good local industrial concern, and let him have the interest. The reader knows that I have always taken great interest in the welfare of competition inaugurators. My sympathies are now with the governors of the Ashton-in-Makerfield Grammar School, and I do not wish them to do themselves harm by incautious dealings with a £10 note. They should remember, as I have said, the responsibility that attaches to the awarding of this premium in one lump sum to the architect who will be indebted to their kindness for the prize. They must take care that, if sent by cheque, the cheque is properly crossed, and, if I might advise, it would be as well to register the letter. In addition to the architect's formal receipt, I would also advise the governors to get the accompanying letter stamped with a sixpenny stamp at Somerset House, though, as they do say that "sixpence saved is sixpence earned," perhaps the governors may deem it an undesirable expense. If no reply from architect by return of post to that by which cheque was forwarded, the governors should wire up at once, and continue wiring up steadily till reply comes. If no reply to wires, it may be safely concluded that excitement on the part of the architect on receiving the premium has had fatal results. It is in view of this contingency that I have advised the governors to seriously think of the advisability of sending up the £10 by instalments. Say £1 per week, and don't forget to cross the postal orders "and Co.," also see that the letters are duly registered.

GOTH.

In order that a record of the number of visitors ascending the Monument may be kept, the City Architect (Mr. Alexander Peebles) has instructed Messrs. Le Grand and Sutcliffe, of London, to erect a set of Norton's turnstiles for this purpose. The alterations in the entrance way are being proceeded with.

## PLYMOUTH ASYLUM.

THE asylum here illustrated is for the county borough of Plymouth, and is for 200 patients, but in anticipation of future extension the administrative portion of the building is adapted for a larger number. It is being erected on a commanding site in the parish of Ugborough, on the borders of Dartmoor. Excellent stone for the building is quarried on the estate, and the masonry dressings are of limestone, brick, Portland and Bath stone. The chapel is in the Early English style. Messrs. Hine and Odgers, Plymouth, are the architects, and Messrs. Pethick Brothers, of that town, the contractors, the amount of the contract being £34,544. Mr. W. Smith is clerk of the works. The Mayor, Alderman Waring, Chairman of the Plymouth Justices, laid the foundation stone in 1888, and it is expected the building will be ready for occupation in the spring of next year.

## OLD HOUSES, FRANKWELL, SHREWSBURY.

THE accompanying illustration represents a block of four houses, sketched during a visit to Salop last year. The houses lie in one of the lowest thoroughfares of Shrewsbury, and are approached from the old "Welsh Bridge." They are rather mutilated specimens of the old domestic work so characteristic of Shropshire. The whole of the ground-floor windows and doors are modern abortions, as also the bay windows and cornice under, in right-hand block. Owing to the ruthless ambition of one or two enterprising local tradesmen, several excellent specimens of this period have been replaced by "Victorian" examples. G. P. BANKART.

## CHIPS.

The town council of Romsey have appointed Mr. John Crook, at present sanitary inspector, as borough surveyor.

St. Stephen's School Church, Ryecroft, Walsall, was opened on Thursday afternoon, Feb. 27th. The building is situate at the corner of Proffitt-street, and is Gothic in style, comprising a nave, 38ft. by 25ft., with chancel 13ft. by 10ft., a schoolroom 20ft. by 35ft., vestry, and kitchen, and the whole is surmounted by a bell-turret. The materials used externally are red brick with stone arches and dressings, and tiles for the roof; and the internal fittings are of pitch pine, varnished. The building was carried out by Messrs. Dorset and Sons, of Cradley Heath, from designs by Mr. H. E. Laverder, of Walsall, and the cost, inclusive of fittings, will be about £700.

A new pier has been commenced this week at Falmouth, for the purpose of a submarine mining establishment for the War Office authorities. The site is near the old Manor House at Arwenack, and Mr. Hill, of Westminster, has taken the contract for construction.

Mr. William Thompson, architect and quarry owner, of Grantham, died at his residence, Grove House, Avenue-road, in that town, on Friday, aged 75 years.

The Wesleyan chapel at Sevenoaks was reopened on Wednesday week after alteration and improvement carried out by Mr. W. Wiltshire from plans by Mr. T. Potter.

The St. Helen's and Haydock lines of tramways were officially inspected last week by General Hutchinson on behalf of the Board of Trade, who was accompanied by the engineer, Mr. J. Waugh, C.E. The lines will be worked by steam power.

The bust of Lord Farnborough, better known as Sir Erskine May, was unveiled in the library of the House of Commons by the Speaker yesterday (Thursday).

The 47th annual congress of the British Archaeological Association will be opened at Oxford on Monday, the 7th July, by an inaugural address by the president, the Earl of Carnarvon.

The chancel of the parish church of Newport, Salop, is about to be restored and a new vestry added, from plans prepared by Mr. Morton.

The chancel of St. Mary's Church, Stamford, is being restored and decorated. Mr. J. D. Sedding is the architect, and Messrs. Charles Trask and Son, of Norton-sub-Hamdon, Somerset, are the contractors.

The death of Ernest Chesneau, the French art critic, took place on the 21st ult. In this country he was known as the author of "The English School of Painting," the preface to which was written by Mr. Ruskin, and also for his work on the Dutch school of painting.

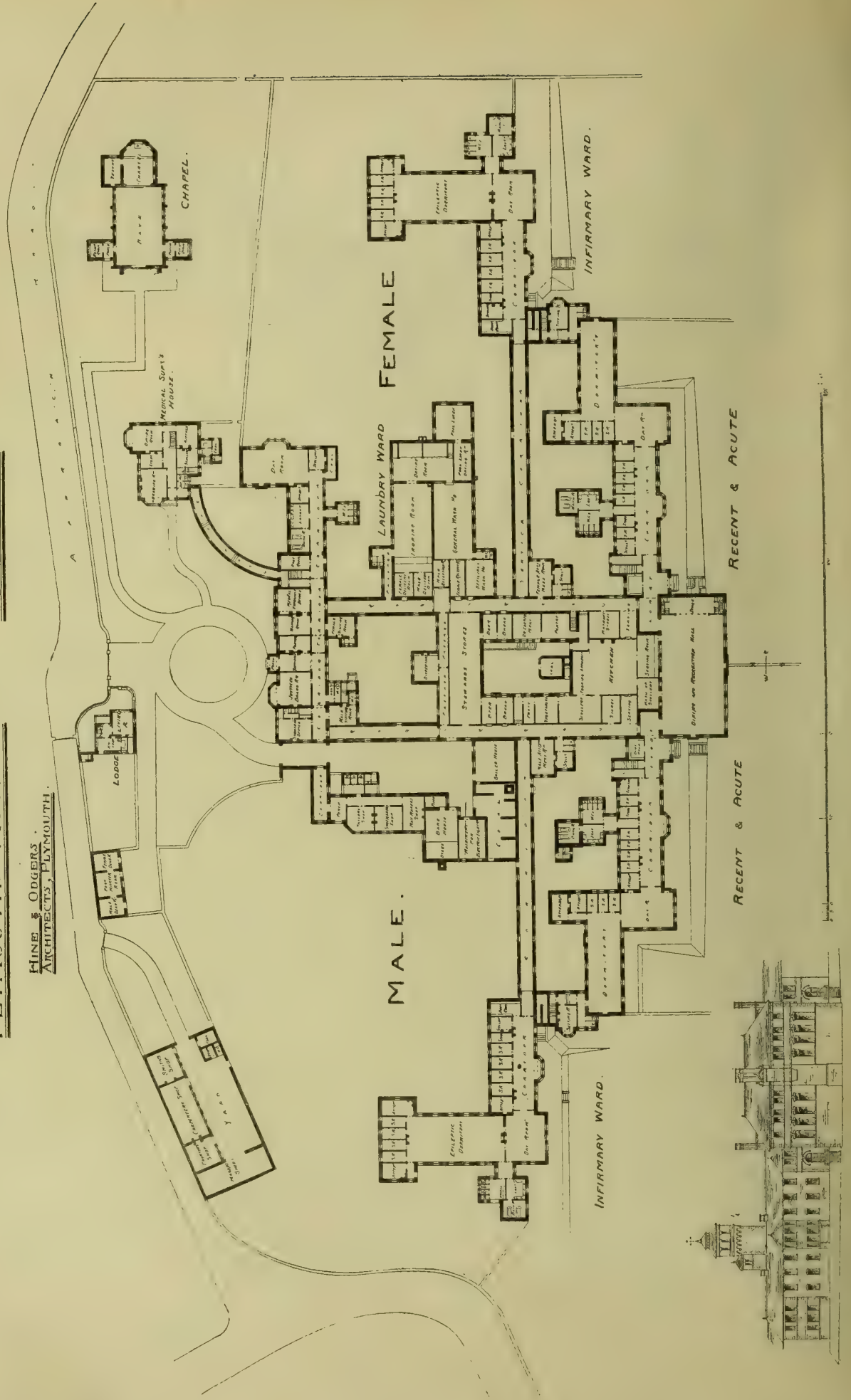


THE BUILDING NEWS, MARCH 7, 1890.

PLYMOUTH ASYLUM.

GROUND PLAN.

HINE & ODGERS,  
ARCHITECTS, PLYMOUTH.





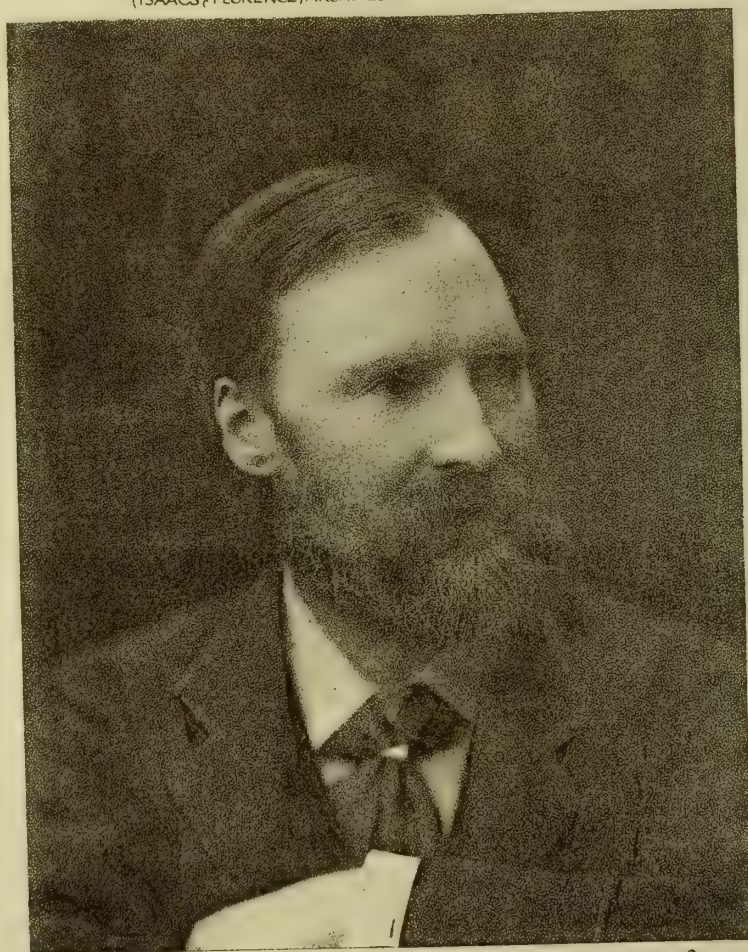






*Henry L. Florence*

H. L. FLORENCE FRIBA  
(ISAACS & FLORENCE) ARCHITECT TO THE HOTEL VICTORIA



*J. D. Sedding*

J. D. SEDDING FRIBA  
ARCHITECT TO HOLY TRINITY CHURCH CHelsea



CAMPBELL  
ARCHITECT OF STAN



JOHN L.  
HON PHOTOGRAPH





*Campbell Douglas.*

GLAS-FRIBA  
GLASGOW-N.B.



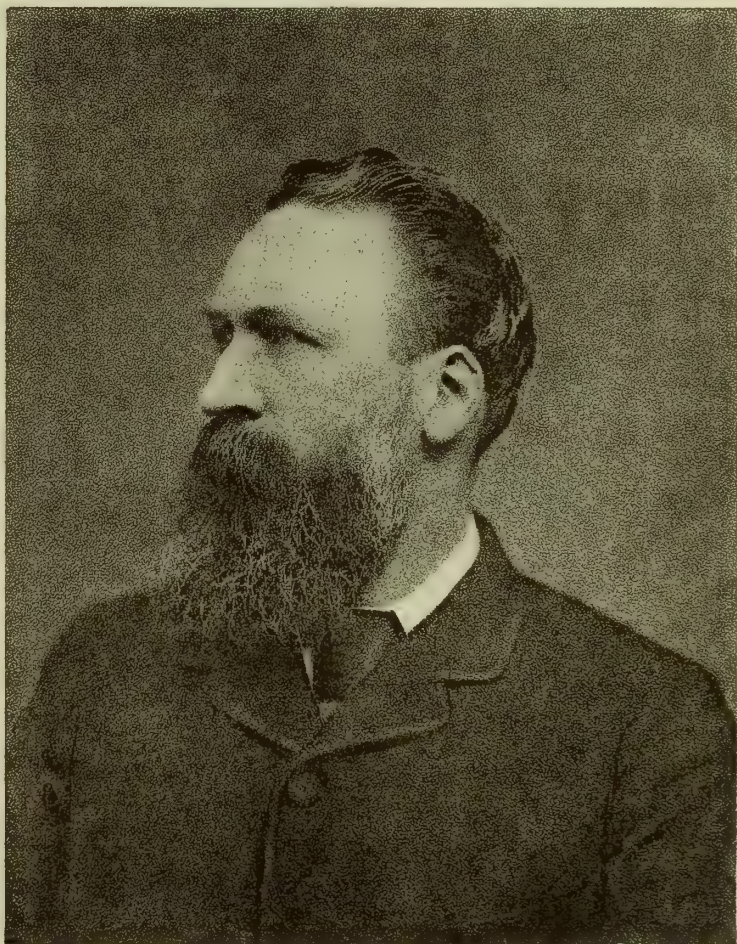
*John L. Stevenson*

JOHN L. STEVENSON  
ARCHITECTURAL ASSOCIATES



*John Holden Friba*

JOHN HOLDEN FRIBA  
PAST-PRESIDENT OF MANCHESTER SOCIETY OF ARCHITECTS



*George Ashdown Audsley Friba*

GEORGE ASHDOWN AUDSLEY FRIBA  
AUTHOR OF THE "KERAMIC ART OF JAPAN"

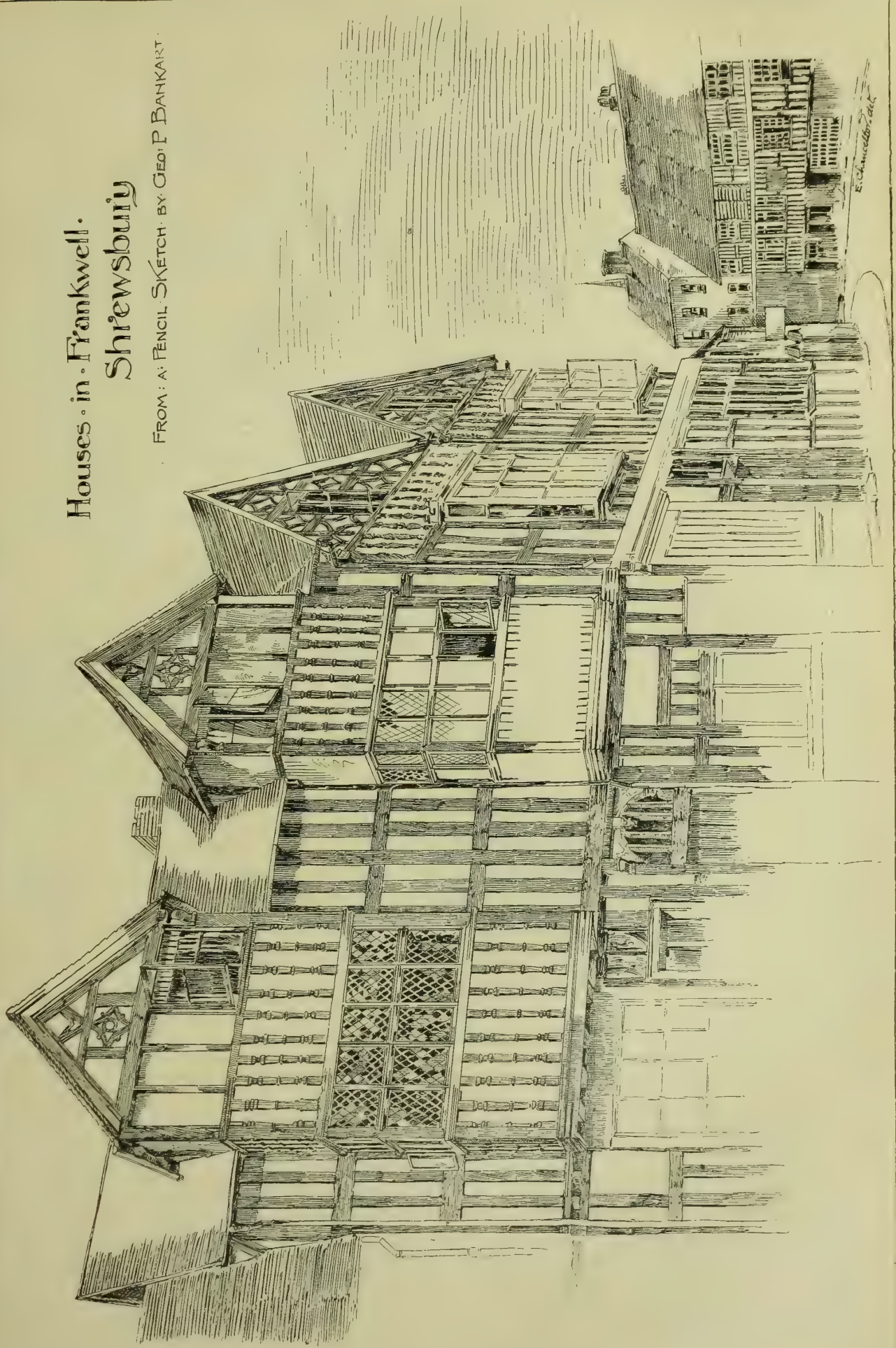






Houses in Frankwell.  
Shrewsbury

FROM A PENCIL SKETCH BY GEDD P. BANKART





## Building Intelligence.

**BOTCHERBY, NEAR CARLISLE.**—A mission church is now in course of erection to provide for the inhabitants of the village of Botcherby, near Carlisle. Local red bricks are being used for the walls, and the roofs will be covered with Welsh slates, except the roofs of porch and turret, which will be covered with local red tiles. The carpenter's work will be of Baltic white wood, and the joiner's work of pitch-pine. The walls internally and the ceilings will be plastered. The roof principals, which are to be dressed and moulded, will show below the ceiling of church. Accommodation will be provided for 173 adults. The cost, exclusive of pewing and the boundary walling, will be about £500. The principal contractors are Mr. James Metcalfe, builder, and Mr. J. Reed, joiner. The architect is Mr. H. Higginson, M.S.A., Carlisle.

**BRADFORD.**—The new Midland Station, in Forster-square, was opened on Monday. The buildings, which have a façade of 300ft., are in style Italian Renaissance. The hotel, which is five stories in height, is situated at the Cheapside end, and extends for some 150ft. along that thoroughfare; its main frontage is in Kirkgate. A striking and pleasing feature of the Kirkgate front is a tower, octagonal in form, and surmounted by a dome and finial. This tower rises from a square porch, with fluted and carved pillars, forming the main entrance, and leading up into the grand hall, about 33ft. square, from which access is obtained to the corridors and staircases. The exterior walls of the building are of local ashlar, with brick backing. The lower portion of the masonry is rusticated, but above it is polished. The roof is of Mansard form, and has a covering of Westmoreland slate. The outer walls of the station buildings is in harmony with the masonry of the hotel. Its treatment is generally plain, but the façade is broken by pilasters, circular-headed window spaces, and eleven entrances, all fitted with gates of wrought iron, comparatively light in structure, and ornately treated, and supplied by Messrs. Hart, Son, and Peard, of London and Birmingham. The three waiting and booking halls are each 45ft. by 26ft. They are tiled to the ceiling in tones of brown and buff. The first-class refreshment-room has a tiled dado, the remaining space to the top being similarly treated in a lighter shade. In the third-class refreshment-room the dado is of wood, the remaining wall space being papered. The floors are of random mosaic work. The internal width of the station is 174ft., and the inclosing walls are spanned by a glass roof, formed of a series of bays which take the shape of an inverted V. The space is inclosed by two spans, the central weight being borne by cast-iron columns, placed at intervals of 60ft. The bays rest upon wrought-iron Warren girders, which cross the station from wall to wall, the upper part being concealed by the glass work of the roof. The length of the glass roof is 450ft., and as School-street Bridge crosses the line at one end of the roof, the remainder of the platforms are protected by awnings supported on columns at a lower elevation. The length of the central platform is 752ft. The buildings have been constructed under the personal supervision of the architect, Mr. C. Trubshaw, of Derby, assisted by the resident clerks of works, Mr. Austin and Mr. Hardy. The main contractors are Messrs. Brown and Sons, of Salford; but Messrs. Butler and Co., of Stanningley, have done the larger part of the station roof and the platform awnings. As sub-contractor, the mason-work has been done by Mr. C. Murgatroyd, of Idle, including the flagging of platforms; the painting and decorating by Mr. Higginbottom, of Idle. Messrs. Cordingley and Son, of Bradford, have done the plastering and concreting. The stone carving has been executed by Mr. H. Frith, of Gloucester. The large clock over the booking-hall is by Messrs. Potts and Son, of Leeds.

**CROMER.**—A new hotel is about to be erected here. The hotel will contain a large dining-hall and drawing-room, also reading, writing, smoking, and billiard rooms on the ground floor, all on the sea front, besides eight private sitting-rooms and upwards of 60 bedrooms, the greater part having a sea view. A passenger lift will be provided to all the floors. There will be the usual kitchen office and other accommodation. A tennis lawn will be laid out, and good stabling provided in

the hotel grounds. Building operations commence at once by Messrs. J. Youngs and Son, contractors, of Norwich. The plans were prepared by Mr. George J. Skipper, F.R.I.B.A., architect, of Norwich, under whose superintendence the whole of the works will be carried out. The hotel will be finished in the spring of next year, ready for the season.

**PAIGNTON.**—The Cottage Hospital has just been completed in Church-street at the cost of the Messrs. Singer. Plans were invited, for which a dozen architects competed, and of these three were selected for final consideration. Of these the first received 13 votes, the second 12, and the third 11. Nos. 1 and 3 turned out to be those of Mr. G. Soudon Bridgman, whose design has been carried out by Mr. Henry Webber, builder, of Paignton, his tender being accepted at £1,825 10s. The building has been planned on the ward system, and is entirely contained on one floor. The entrance lobby leads into an operating room, and there is a special accident ward adjoining. On the other side of the corridor are two wards, one for male and one for females, each containing four beds and one cot. Between them are a nurse's room and a bathroom. The sanitary arrangements are in separate wings. The dispensary department has a separate entrance, and consists of waiting-room, consulting-room, dispensary, and offices for the surgeon. At the rear of the building is the administrative wing, containing kitchens and scullery, and over these a sitting-room and three bedrooms for matron and others. No drains enter the building. The external treatment is that of a cottage in the Domestic Gothic style. The whole of the walling is rock-work, jointed with red cement. The main coigns, strings, and arches are composed of Berkshire red bricks; a few of the dressings of the labels are of Ham Hill stone. The roofing and tile-hanging is also of Berkshire red tiles. The ceilings of the wards are waggon-headed, the timber of the principals and purlins showing. All the floors are laid with pitch-pine block flooring, laid in a herring-bone pattern, and the corridors and verandahs are laid with encaustic tiles.

**SOUTH KYME.**—The parish church was reopened on the 17th ult. by the Bishop of Lincoln. During the restoration, many points of interest were brought to light. Drawings were taken for future reference. The church was originally dedicated to All Saints, the monastic portion, the site of the foundations of which can easily be traced on the north of the church, being still called "Abbey Yard," were erected by Philip de Kyme in 1170, being enlarged by his son Simon. The church was re-erected in the 14th century, in the Flowing Decorated style, retaining the doorway of the Norman church. It was formerly a large cruciform building, divided into nave and south aisle by an arcade of cloistered columns, of which the western one remains. The tower was in the centre. The chancel used by the monks was destroyed, as well as the tower and transepts, in the 16th century. In 1805, the nave and aisle being decayed, the north side and the arches were taken down. Fourteen feet have now been added to the length of the church, making it as long as it was before the changes in 1805. The north wall has been taken down and rebuilt, and two traceried windows, each of two lights, inserted. The east wall was also taken down, rebuilt, and a five-light tracery window built, with blank tracery beneath. On the S.E. portion a new window has been opened out. The east window and the centre one on the south side are to be filled with stained glass. A new chancel screen has been erected 14ft. high, surmounted by a cross 8ft. high. Side screens have been built in the chancel, forming a sacristy on one side and an organ chamber on the other. A choir vestry has also been formed at the west end. The whole of the church has been re-seated, and among the new features are roof to chancel, oak lectern, and heating apparatus. The entire cost of the restorations and improvements is £1,600. The architect was Mr. C. H. Fowler, F.S.A., of Durham, the contractor being Mr. Bowman, of Stamford.

The students attending the Honours and Ordinaries Grade, Carpentry and Joinery Class, at the Heriot-Watt College, Edinburgh, to the number of eighty, visited Messrs. Brown Brothers' art furniture works in Caledonian-crescent, in that city, on Saturday afternoon, and were shown over the departments by Mr. Pendreich, the manager.

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**ASSOCIATION OF SANITARY INSPECTORS.**—At a meeting of this association, held on Saturday at Carpenters' Hall, the council report on the status of sanitary inspectors was adopted. The report states that the conditions under which sanitary inspectors are appointed and discharge their duties are inimical to the interests of the public health, and that those conditions are due to the defective state of sanitary law. The council recommend that the influence of the association should be directed to secure the following amendments in sanitary law:—That every candidate for the position of sanitary inspector shall have a general knowledge of the building trades, and, in addition, shall possess a certificate in sanitary science; that sanitary inspectors shall be elected to a permanent tenure of office, and shall also be dismissible for misconduct or proved incompetence, with right of appeal to the Local Government Board; that it shall be the duty of sanitary inspectors to periodically inspect the dwellings of the district to which they are appointed, and to receive complaints of nuisances, and to serve notices forthwith requiring all necessary works to be done for the abatement of the nuisances, such notices to be as valid, if confirmed by the local authority, as if served by the authority's order; that in all appointments requiring the officer's whole time to be given to the duties of his office an adequate minimum salary shall be prescribed; and that the officers now variously named sanitary inspectors and inspectors of nuisances be designated sanitary inspectors.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—At the meeting of this society held on Monday night, Mr. T. Mellard Reade in the chair, a paper was read by Mr. James M. Hay on the subject of the much-discussed panels by Mr. Stirling Lee in St. George's Hall. He pointed out that the only two panels executed were adversely criticised by the society as soon as they were fixed. In summing up, Mr. Hay said: The style of these panels is bad and out of keeping with the architecture. The conception and execution of the work are both defective. The nudity of the two figures is forced and unnatural, and in place of enhancing, diminishes the force of artistic expression. It betrays the influence of the realistic school that is doing so much in France to degrade both her literature and her art. The having the sculpture done on panels of white marble inlay, in place of on the stone impost, is bad architecturally, and an improper interference with the intention of Elmes, the architect who designed the edifice. We consider that it is an injustice to one of the finest buildings in this city that those panels should remain a patch and disfigurement on the face of it; that it is an injustice to the memory and fair fame of Elmes, and that it is an injustice to the people of Liverpool and an outrage on public decency, and we would respectfully ask the City Council to take immediate steps to have the offending panels removed and the stone imposts restored, before any further arrangement is entered into with any sculptor. Mr. J. A. Berrington seconded the motion, and Mr. J. L. Cook and others opposed it. After some discussion, it was decided not to take a vote, but leave the matter to the decision of the city council, who, as will be seen from a paragraph on p. 364, column 2, have accepted Mr. Rathbone's offer.

## SCHOOLS OF ART.

**METROPOLITAN DRAWING CLASSES.**—The Queen's prizes and certificates gained by the students attending the Metropolitan Drawing Classes were delivered to them at Carpenters' Hall, London-wall, on Tuesday week, by Sir John Lubbock, M.P. Mr. Banister Fletcher, the Master of the Carpenters' Company, presided. Before the distribution Mr. W. Busbridge, director and instructor of the classes, read his annual report. During the 24 years of the existence of the classes there has been a steady growth in numbers and success, and the present report spoke with undiminished satisfaction both with regard to the work (now carried on in 22 centres), the attendance of the students, and the satisfactory results of their labours, as tested by the Government examination. Since the opening of the classes no fewer than 14,000 students had passed through their course of instruction.



## TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

## TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 6d. (or 6dols. 90c. gold). To France or Belgium, £1 6s. 6d. (or 33fr. 90c.) To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 6d.

## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. and Co., Ltd.—J. F.—G. N. Ry. Co.—H. and Co.—G. W. and Co.—W. and Co.—E. S.

J. H. M. (Too long; a shorter letter might have found room.)

## "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Cleopatra," "Mac," "Parenchyma," "Pepper Arden," "Horseshoe," "I Try," "A. G." in a circle, "Finem Respite," "Nox," "Attempt," "Mercury," "Grafton," "West Anglian," "Menelaus," "White Star," "Niger," "Renaissance," "Lycidas," "Streona," "So and So," "Tyne" (no address nor name; send it), "Glancus," "Reference," and "White Wings," which has neither name nor address, and is too late.

## Correspondence.

## "THE ARCHITECTS' REGISTRATION BILL AGAIN."

To the Editor of the BUILDING NEWS.

SIR,—Such is the heading of a small notice in R.I.B.A. Journal No. 9. Very little comment thereon, except, I am glad to see, whoever wrote the article, that it is said the Council of R.I.B.A.—not members generally—object to the Bill. May I, who have not before written, I think, to the professional journals, say a few words on this important subject of Registration?

Mr. H. R. Gough, in your last, says 350 members of the Institute signed the petitions in favour of the Bill. I believe I am one of that number, and though I am very proud of the honour of being an A.R.I.B.A. by examination, and would uphold the Council of the Institute to the best of my little power in most matters, yet in the course they take with reference to this case I think they are making a mistake. I do certainly think that some of our worthy Fellows have not, to say the least of it, treated the supporters of the Bill in a very charitable manner. Why do those whom we Associates ought to look up to try to snub any effort that we think we may make for the general welfare of the profession? If they do not agree with us, their only course is to oppose; but I think they might do so in a more friendly way, and not try to sit upon us simply because we have a different opinion

from them. Let us at least agree to differ while each strives to do his duty. It may be that even the Council of the Institute are making a mistake, as the supporters of the Bill may be also; but, for my own part, as a provincial practitioner, I feel sure Registration is sorely needed.

I am sure our friends at Conduit-street cannot understand (not the general body of them, at least) what a provincial practice is like, and what a boon the protection of Registration would be both to the public at large and also the profession. Let them, therefore, allow that we may have some good reason for pressing this Bill, though I, as many others, most earnestly wish that the Institute had set the Bill going.

Now, I would suggest that all the Fellows and Associates who uphold the Bill should sign a distinct petition in its favour, the names of the petitioners being only members of the Institute; then these names, which I venture to think would be a good proportion of the whole members, would show to Parliament that the petition against the Bill submitted by the Council was far from being the unanimous voice of the Institute; and add to this the great number of other petitions submitted in favour, signed by other architects who are not members of the Institute, and I feel sure the door which has seemed so firmly locked and bolted will have a terrible blow, and, if not quite blown open by the first gust, we may next time add more names to our lists, and after patience the door may creak and then burst open, to the general benefit of the community and also of our own profession. Would not some influential member take the matter up? I should be most happy to do my part, and get any members' signatures I could. Apologising for taking up so much of your valuable space,—I am, &c., JOSEPH LAVENDER, A.R.I.B.A.

Wolverhampton, March 4.

SIR,—A few days ago there appeared in the *Construction Moderne* an article by Monsieur Planat discussing the diploma, and also the registration of architects, subjects that are drawing very much attention in France, as in England, at the moment amongst architectural circles. As it might be interesting to your readers to know what is thought of the subject here, may I trespass on your valuable space, and give a few freely translated extracts from the above-mentioned discussion? Naturally a certain amount of what Monsieur Planat says does not apply to the case in England, where the system of architectural training is so different from that recognised in France. In this country the system of apprenticeship to an architect is very little known. When a young man decides to enter the profession, he enters a special school, follows the courses of lectures, and works at drawing and designing in one of the "ateliers," or studios, in connection with the school, and endowed likewise by the State. If he lives in the provinces, he finds it best, and, indeed, almost a necessity, to go to the central "Ecole des Beaux Arts" at Paris, and there pass four or five years in learning his profession. Here, if his parents are not rich, he lives the more or less vagabond life and participates the joys and sorrows of a student. Before entering the "school" he has to pass a moderately difficult entrance examination, for which he has generally prepared himself at an elementary school. This examination exacts a certain skill in drawing from the cast, modelling in clay, and a sufficient knowledge of the Five Orders to make a perfectly correct Classical design with details to scale. If he satisfies in these, he is allowed to proceed with the more difficult examination of mathematics, geometry, descriptive and plane, &c., and also the general history of architecture. If he manages to get through this, he is admitted to a place in the school as a "nouveau," or freshman. He enters the school atelier or studio of his preference, and occupies his time in designing and colouring from programmes given out from time to time, of classical studies of the Orders and details. To help him, he may obtain any information he desires amongst the books of a large, well-stocked library belonging to the school. He has the best professors, and some of the ablest architects come round the studios two or three times a week in order to correct and advise. When he is proficient in the orders, and has gained a certain number of values or marks in the monthly "concours," he has a remove to the second class. There he competes with his fellow students, designing from simple programmes given out once a month. By a certain day each month the students have to give up their

drawings, correctly drawn and coloured, and mounted on stretchers provided by the studio. In the intervals of his atelier work he follows lectures given by able professors on construction, geometry, chemistry, perspective, &c. When he has obtained a certain number of values in all these subjects, and a certain number of mentions for his drawings, the student is allowed to enter the first class. Here the programmes given are more complicated, and the drawings, "rendus" or coloured, are often the most artistic. The student now follows the courses of lectures on construction, &c., more carefully. If he is a hard worker, he finds a place in an architect's office, where he works in the intervals of studio study, and is enabled to follow more efficiently the practical side of his profession, at the same time earning something; the payment in the offices is generally by the hour for Beaux Arts students, and varies from one franc to two francs fifty per hour. If by his drawings in the studio he shows himself possessed of a certain amount of talent, he is allowed to enter in competition for the "Grand Prix de Rome," the winner of which obtains a "bourse" for three years' study at Rome. Those who do not compete for this prize study closely their construction, and prepare to pass the examination for the diploma. In this test they are allowed to choose their own design for a large building, and have to furnish well-studied drawings, as well as constructional details; a *viva voce* examination on construction, &c., of the design has to be gone through. Those who satisfy the examiners are granted Government diplomas, and may now make a start in their profession. Naturally the studio training develops very highly the artistic ability and fertility of design in the student. As far as practical work goes, he can only form his ideas from the lectures on the subject, unless he is hard worker enough to follow for part of his time the practical work at an architect's office. To "faire la place," as work at an office is called, and also follow his work at the school is difficult, the student often working all night as the day for the giving up of his designs draws near. The constant mingling in the studio with others who are following up the same programmes, and with painters and sculptors in the school, develops most artistic men, who can produce the most artistically designed and coloured drawings. This artistic training the English student, unfortunately, often lacks, generally having to occupy himself in an office only with details, &c., specialists often being employed when any artistic drawings for a competition is required. Certainly he has the advantage in practical knowledge often lacking in the young French student, the latter, however, taking the palm in artistic designing and colouring.

Apropos of the diploma, Monsieur Planat says: "I fancy that it would be well to ask ourselves first what is a diploma and what is its end, what is its value, and whence comes its authority if it has any. There exist two kinds of diploma; some a veritable privilege, conferring an exclusive monopoly in the exercise of a profession; others are only a grade, a certificate of studies made and of knowledge acquired, putting before the public the superiority of the person diplomaed. The results are very different in the two cases; but one will notice directly that in the one case as in the other, monopoly, or simple certificate, the diploma is always granted by the State. This is because a diploma is only valuable when it is a guarantee or acknowledgment of competence on the part of the diplomaed, and up to the present time the State only offers this guarantee in a sufficient degree. If one looks for the most complete example of an exclusive professional diploma, it is in the medical profession that it is found. Generally, apprenticeship to a profession exacts a course of studies carefully followed; the acquisition of technical knowledge as a result of these studies; and, lastly, a certain practical experience." These facts, then, the grade or diploma try to guarantee. In the case of the medical profession this guarantee is complete; partial examinations during the course of the studies, definitive examinations questioning the profit the candidate has made of his studies, and for practical experience—that which other schools rarely give, and have hardly the right to exact—the "internat and externat." The teaching is here followed to the end, complete; complete likewise is the guarantee in the shape of a diploma. Coming to architecture, the first question to ask oneself will be this, Can the profession be limited, can it and ought it to



remain open to all? This is one of the most important questions, one of those that more than one would like to see answered in the negative sense, for it would be advantageous to him to exclude the greatest possible number of competitors.

Is this possible? At the first sight analogies seem to indicate the contrary. Does it come to anybody's thoughts to reduce the number of painters, sculptors, and literary men, or to impose examinations or competitions on the *début* of their career? In fact, every profession which is at the service of the public is free, and lawfully free. On what article of the State code would one rest to interdict a citizen the exercise of a profession which suits him?

"But what about the doctors?" you will say.

Without doubt there we find an exception probably unique; but an exception made on very powerful reasons. Medicine in the hands of an incompetent man is one of the most dangerous professions; a wrong prescription might result in death. The State has only sought to defend the interest of the public, and not that of the doctors, by forbidding a free exercise of medicine.

Touching the same exclusion for architecture, I see very well the interest on the architect's side, but not the general interest of the public (*sic*), and consequently the legitimate intervention of the State. Can anyone say that the free exercise of architecture is equally a public danger? This would truly be exaggerated; a badly planned building or badly studied façade does not necessarily occasion anyone's death. There may be a certain inconvenience in employing an unskilful architect, but rarely a grave danger. In every case this is not a diploma given with the innumerable guarantees surrounding the medical profession—with its several examinations, its practice organised and pursued during a number of years—this is not a diploma which would put one on guard against the danger. The State prescribes its code of architect's responsibility, recalling—that which he may sometimes forget—that the contractor is not the only constructor of the work, and this is all the State has the right to do.

If we were to start in this manner, how far would we have to go? where would one stop? The diplomaed and patentees only could be railway machinists, miners, theatre directors, contractors, carpenters, even journalists, so many professions where a lack of skill or inexperience could produce grave consequences. Can we imagine the State interposing its veto on the entrance of each of these careers?

Thus monopoly seems to me impossible to establish; it is, then, useless to discuss the advantages or the inconveniences. But what we can do is to create grades, honourable distinctions, in order to separate the *élite* from the *négligé*.

Let us see what exists at present. The complete official teaching is given by the State in an establishment nearly unique. Formerly the only guarantee of studies was the "Prix de Rome"; since, there has been created a diploma given on special examinations, and a series of rewards or values obtained during the course of the studies. There exists at Lyon and at Lille a school of architecture, but Paris only awards the diploma.

The "Prix de Rome" guaranteed especially the artistic ability of the "laureat," and his artistic sentiments a certain idea of classical arrangement somewhat conventional, and his skill as a draughtsman; the diploma, when it is quite what it ought to be, guarantees his technical knowledge. All this can be ascertained by means of examinations, and this is what makes the special value of the diploma. As to practical skill, we cannot exact this from the School of Beaux Arts any more than from any other school, an examination controlling that which it cannot teach. The "school" is, without doubt, the most favourable centre for artistic education, lessons by distinguished masters, the constant life at the atelier or studio, the contact with painters and sculptors, the mutual exchange of ideas, comparisons, and reflections, are the right conditions necessary to form that which is called taste, at the same time developing the fertility of artistic design. Thus the studies made at the "Ecole" are, say what we may, a recommendation in favour of the artistic talent of an architect. It may be no more, but it is no less.

The young diplomaed—and they are still young—have ambition and the future before them. They have acquired a title, and they wish to use it. One can easily guess that the end pursued

by them is to become polytechnicians in architecture. I understand that they wish to induce the State to reserve its works for the architects instructed by itself, examined, and recompensed by it, as it does for engineers come from its special schools. It is not difficult to foresee that in the order of things this end will be obtained some day or other. Monsieur Planat proceeds to say, that the State should look to see if a single "school" at Paris awarding the diploma suffices for all needs, and if the necessity of living in the capital for several years is not of itself a natural obstacle to the free access to the profession, and if it is not necessary to create new departmental schools. Then he asks if in the case of departmental schools or societies enabled to grant a diploma to those who have not studied at the "Ecole" at Paris the difficulties and inconveniences are not great. In the case of a provincial architect, having passed the student phase and well entered on his career, would he not feel a certain constraint in having to come before his fellow architects and ask them to give him the baptism of the diploma? It would be absurd for him to have to come before them and give on the blackboard a *résumé* of the Five Orders; or, as this system is not convenient, let us judge the competence of the candidate according to the buildings he has erected. Let us look at the consequences: when an architect may have shown proof of his skill by some important building, and so acquired authority and renown, he will be allowed to present himself, and the diploma will be given him. What! to establish what the world already knows, that the candidate is an architect worthy of the name? To what end would the certificate serve? It is not generally at the end of one's career that a certificate of capacity is necessary. It is at the *début* that it is desired.

Now, if a *débutant* presents himself, it is naturally he who would claim the diploma rather than a man who has made his mark, and who has furnished his proofs, and has no longer need of a vignette parchment to put in a frame; he would not have behind him any examples to show. To decide as to his competence, to put a light on the extent of his knowledge, to what would we have then recourse? To the inevitable blackboard in the presence of two or three *confrères*, more or less benevolent to the new-comer. I believe that it is not necessary to insist any longer on these strange contradictions; a diploma is needed and is granted on leaving the "Ecole," later it is too late.

This, then, is the state of affairs and general opinion in regard to the diploma and registration of the architectural profession in France; how far it applies to the system of training in England, I leave to others for the present to judge.—I am, &c., ARTHUR J. VYE PARMINTER.

73, Rue Nationale, Lille, March 1.

SIR,—Kindly allow me to correct an error which appears in my letter in last week's issue. In the fourth line from the top of p. 328 are the words, "if the three hundred architects who gave their written approval of the principles involved." This should read, "if the *thirteen hundred* architects," &c.; or, to be more precise, I believe the exact number was 1,287; and of members of the Institute, "three hundred and fifty" should read 343.—I am, &c., HUGH ROUMIEU GOUGH.

Carlton Chambers, 12, Regent-street, London, S.W., March 3.

#### A MARKET COMPETITION (!) AT BILSTON, STAFFS.—AN EXPOSE.

SIR,—I am compelled, in justice to myself and to the architectural profession generally, to draw the attention of the readers of your valuable paper to the most unsatisfactory way in which the above competition (?) has been arranged. I had hoped the matter would have been made known before this by the Press; but as the worthy representatives of the Fourth Estate were carefully excluded from the meetings of the Commissioners of Bilston, the affair might have passed into the realms of oblivion had it not been for the existence of your humble servant.

I will explain the particulars of the case as briefly as possible.

A few weeks ago an advertisement was inserted in the Bilston paper, asking for plans, specifications, and tenders for a covered market for the Commissioners of that town, and stating that these plans, &c., must be sent to the clerk *not later* than the 17th of February; the total cost not to

exceed £3,000. Believing that I should receive fair-play (alas! what has become of it lately?), I submitted plans, &c., and also a tender from a responsible builder, for the carrying out of the work for the price mentioned.

Now comes the revelation: At the committee meeting on the evening following that on which the plans were to be received the time was *extended* a week to one competitor, who expressed his inability to have his plans in at the time stipulated in the advertisement.

The meeting, therefore, stood adjourned until the following week, no notification of an extension being sent to the other competitors. The meeting took place, the plans sent in a week after the appointed time were approved, although to carry them into execution would take a sum of money far in excess of that named by the commissioners!

Now, Sir, I venture to believe, and I am sure you will agree with the belief, that the extension of the time to one competitor was a gross injustice to the others, giving him a manifestly unfair advantage.

I maintain that the commissioners, having stated certain conditions in their advertisement, were morally bound to keep to them, and by doing so would have avoided even the semblance of unfairness and partiality.

Is not this a case for inquiry for the R.I.B.A. or the S.A.? I think it should be.—I am, &c., S. HENRY EACHUS.

Bank Buildings, Lichfield-street,  
Wolverhampton, March 5.

#### ZINC CEILINGS, &c.

SIR,—Referring to your article in last week's issue, there is a splendid ornamental zinc ceiling at the Theatre Royal, Malta. It was made in London, and, I believe, Holden and Co., of Westminster, did it. If so, perhaps they will give us some information on the subject, as well as about any others they may have executed.—I am, &c., INQUISITIVE.

#### ERRATA—TENDERS.

SIR,—I will thank you to correct a serious error in amount of my tender on Friday last.

For stable additions, &c., at Walton-on-Thames, E. J. Ingram should be £683, and not £863.—I am, &c., E. J. INGRAM.

Hersham-road, Walton-on-Thames, March 5.

#### CHIPS.

The new Kendray Fever Hospital, at Barnsley, presented by Mrs. Lambert, of London, was opened on Friday. It is situated on the top of Measborough-hill, a short distance from the town, and consists of three separate blocks, administrative block, the isolation block, and the smallpox block. There is accommodation for about 20 patients. The hospital was erected from plans of Messrs. Morley and Woodhouse, of Barnsley, at a cost of £5,000, the site being provided by the Corporation at a cost of £2,300.

The Council of the Sanitary Institute of Great Britain have accepted an invitation from the town council of Brighton to hold the autumn congress and health exhibition in that town in September next.

The Falvey Memorial Committee met at Southampton last week and decided, as part of the memento, to commission Mr. J. Milo Griffiths, R.C.A., to execute a bust in marble to be placed in the Free Library of Southampton.

The Norfolk County Council have decided to divide the western division of the county into five sections, and to appoint a surveyor for each, at a salary of £100, each individual selected to provide his own horse and cart or other means for travelling over his district. For the five offices there were over 160 applicants from all parts of the kingdom. The following were the successful candidates:—Mr. E. Johnson, Brighton; Mr. J. E. Haynes, Southampton; Mr. J. W. Shaw, West Baildon, Newcastle-on-Tyne; Mr. A. H. Carrell, Havant; and Mr. James Kennedy, Alhwick.

The members of the Scottish Liberal Club have taken possession this week of their new premises, 109 and 110, Princes-street, Edinburgh. Formerly the Palace Hotel, the building, acquired last May, has been since that time in the hands of tradesmen, carrying out alterations designed by Messrs. Kinnear and Peddie to fit it for the requirements of the club. Alterations have been made upon the appearance of the street frontage by the introduction of large windows on the ground floor, and by the construction in front of these of a low balustrade, behind which light is obtained from a basement floor. The cost of the alterations has been £6,000.



# Intercommunication.

## QUESTIONS.

[10240.]—**Iron Gate for Shop.**—Will some reader kindly suggest a light iron gate for shop? Entrance doorway 4ft. 6in. wide. Is a "folding" gate to be recommended, and is it expensive?—MAIDEN CITY.

[10241.]—**Sundial.**—I have a sundial to fix in Mid-Cheshire. Will someone kindly tell me what "deviation of the compass" I must allow for in fixing the dial?—J. HOLLAND.

[10242.]—**Polygon.**—Would someone kindly inform me of the method of drawing a polygon whose sides shall be in a given ratio to each other?—for instance, a pentagon whose sides shall be in the ratio as 2, 4, 7, 9, and 12.—DARBY.

[10243.]—**Water-Mains.**—Will some kind reader give information relative to water-mains for town supply as to the following particulars? Would it be injudicious to lay water-mains in a marsh, or through river beds where spring tides flow over them? Is "bank casting" on slope inferior to "vertical casting" for water-mains? I am of opinion the former would be less liable to air-bubbles or the "spluttering" which might occur in the vertical casting—instance the filling of a bottle held vertically and on an incline.—WATER RATE.

[10244.]—**Are "Urinals" Water Closets?**—Are urinal basins flushed with a ½in. pipe "water-closets"? Could they be possibly construed as such? Our local magistrates say so.—C. Wakefield.

[10245.]—**Brass-Foundry.**—Would any reader who has had experience in planning of brass-foundry buildings kindly give advice as to the best kind of paving with which they should be floored? Would fireclay tiling 12in. by 12in. by 2in., laid in sand and grouted with cement, be efficient and durable?—BRASS.

[10246.]—**Mortuary.**—I am about to erect a town mortuary with post-mortem room adjoining, and shall be glad to have experienced opinion as to the suitability of a cement floor for such rooms, or if asphalt is advised. Glazed bricks are being used for walling throughout. Any hints on the subject from practical experience will be acceptable.—A.

## REPLIES.

[10233.]—**Who is Responsible?**—The clue use in the instructions in which it is stated that "it would be well for competitors to visit the church and satisfy themselves on all points" partially throws the responsibility on the competitors. Morally the committee who supplied the lithographed sheet of drawings showing the height of existing piers are at fault, especially as the piers were figured a certain height; but the successful architect is legally held responsible for not taking his own dimensions before his drawings were submitted to the builders. The committee invited a competition for plans for finishing the church, and the responsibility fell upon the successful architect. He undertook, in fact, to prepare drawings for the purpose of contract.—G. H. G.

[10238.]—**Boiler.**—It was contracted to "examine, clean out, and put in proper working order the large boiler" that was fitted in the cellar. This implies that the boiler, although dirty, was supposed to be serviceable, and that after being cleaned out the metal would be substantial enough for use. It will be observed that the word "repair" does not occur in above quotation. After being cleaned out it was found upon testing that the boiler was so worn out as to be "perfectly useless," and it was necessary to order a new boiler. Now, in these circumstances it was not the contractor's fault that the metal of the boiler was so worn out as to make the boiler "perfectly useless." If after being cleaned out it was so useless as that a new boiler had to be got, it seems to me that the owner of the old boiler is the party entitled to pay for the new boiler, and also for its fitting in. Supposing this large boiler was one with pipes attached to it, the words "put in proper working order" would mean that the contractor must see that the water came into the boiler properly, and it or the steam had free access out, so that after being cleaned the boiler would serve its purpose; but all this meant or implied that the old boiler was good enough for the purpose if cleaned. In my opinion the contractor is not liable to pay either for the new boiler or its fitting in, so far as we can judge from what is said on page 329.—W. P. BUCHAN.

[10234.]—**Radius of Arch.**—Let S = span, R = rise.

$$\frac{\left(\frac{1}{2}S^2 + R\right)}{2} \quad \text{J. C. H. S.}$$

[10237.]—**Moment of Inertia.**—Inertia is that inherent property in matter by which it tends to preserve a state of rest when at rest, and of uniform rectilinear motion when moving. "The moment of inertia," Rankine says, "of an independently small body or 'physical point' relatively to a given axis is the product of the mass of the body, or of some quantity proportional to the mass, such as weight, into the square of its perpendicular distance from the axis." By extension the term is applied to the product of any quantity, such as a volume or an area, into the square of the distance of the point to which that quantity relates from a given axis. A loaded beam resists fracture by the strength of its fibres. These are not all strained alike in each portion of the cross section; some are in compression, others in tension, the line separating the two classes being called the neutral axis, which for all practical purposes may be assumed to pass through the centre of gravity of the section. Those farthest from the neutral axis undergo the greatest strain. The resistance offered by the fibres is usually assumed to be in proportion to their area, amount of extension, and distance from the neutral axis; or, as the amount of extension is also in proportion to the distance from the neutral axis, the resistance of the fibres will be in proportion simply to their areas multiplied by the squares of their respective distances from the neutral axis. The sum of these results calculated for the whole section is the moment of

inertia of that section usually denoted by I. The strength of a beam to resist cross breaking is usually determined by the relation of the moment of the load to the moment of resistance. Let us assume a 6in. by 6in. by 1in. T iron beam supported at the ends, and loaded in the middle with a span of 10ft. Then the moment of the load is  $= \frac{W \times L}{4}$ , where W = the load, and L = the span.

The moment of resistance is  $\frac{MI}{N}$ , where M = the modulus of rupture or 6 K, the latter being a coefficient of fracture = 68 cwt. for wrought iron, I = moment of inertia, N = height of neutral axis from the farthest edge of the section. N and I may be found from the formula—

$$N = \frac{\Sigma B \Delta (H^2)}{2A} \quad I = \frac{\Sigma B \Delta (H^3)}{3} - AN^2$$

Where H = height of particles above lower edge of section (in this case they may be taken as 5in. and 6in. respectively), B = breadth of section at any height H (in this case 1in. and 6in. respectively).  $\Sigma$  and  $\Delta$ , of course, mean sum and difference.

$$A = \Sigma B \Delta H = 11$$

$$\therefore N = \frac{91}{22} = 4.136$$

$$I = \frac{671}{3} - 11 \times 4.136^2$$

$$I = 35.46$$

The moment of resistance is then  $\frac{6 \times 68 \times 35.46}{4.136}$ ; equating

this with the moment of the load, we have—

$$\frac{6 \times 68 \times 35.46}{4.136} = \frac{W \times 10 \times 12}{4}$$

$$W = \frac{4 \times 6 \times 68 \times 35.46}{4.136 \times 10 \times 12}$$

$$W = 116.6 \text{ cwt.}$$

If the load had been distributed instead of concentrated in the centre, W would have been twice the above. The factor of safety for a dead load in a girder such as above should be taken at  $\frac{W}{5}$ .—F. E. GAY, Bath.

## CHIPS.

The Maldon Union Rural Sanitary Authority have written to Major Rasche, M.P., and to the County Councilors for the district, requesting them to give the strongest opposition to the proposal to carry the sewage of London by means of a canal through Essex, and to discharge it into the North Sea.

The Senate of Edinburgh University have unanimously resolved to offer the honorary degree of Doctor of Laws to Sir John Fowler and Sir Benjamin Baker, the engineers of the Forth Bridge.

The Derbyshire County Council have decided to take into their own hands the maintenance and repair of all the main roads in the rural districts of Derbyshire, and have sanctioned the division of the county into six districts, authorising the highway committee to appoint a surveyor for each. Over 200 applications were sent in, and the appointments have been made as follows:—Ashbourne division, Mr. J. Millington, of Wirksworth; Chapel-en-le-Frith division, Mr. L. Starkey, of Leeds; Derby division, Mr. W. F. Perry, of Ashby-de-la-Zouch; Chesterfield division, Mr. H. Silcock, of Holmesfield; Belper division, Mr. R. C. Cordon, of Newark; Bakewell division, Mr. D. Roberts, of Bakewell. The salary is £130 per annum for each district except Chesterfield, which, being much larger than the others, carries with it a salary of £150.

At the half-yearly meeting of the Glasgow Barony Parochial Board it was decided to carry out a scheme of asylum extension at Woodlee, at a cost of £32,100. The scheme provides accommodation for 495 beds in the main building, 120 of which will be for hospital cases, and 286 in new chronic blocks, which, with 66 beds already provided, makes a total of 850.

The nineteenth annual soirée and concert of the Edinburgh joiners took place on Friday night in the Masonic Hall in that city, under the presidency of Bailie Walcot.

On Tuesday, the 24th ulto., Mr. J. T. Harrison, M.Inst.C.E., an inspector of the Local Government Board, held an inquiry at the Castle in Leicester with respect to the application of the Billesdon Union Rural Sanitary Authority to borrow £6,203, for works of street improvement and storm drains. The money intended to be spent in making the storm drains is £1,266; and for street improvements, £4,937. Mr. J. B. Everard, M.Inst.C.E., of Leicester, produced plans and explained the former, and Mr. William F. Ault, assistant surveyor to the board, produced plans and gave evidence as to street improvements. There was no opposition.

The United Asbestos Company, Limited, have removed from Queen Victoria-street to more commodious premises at Dock House, Billiter-street, London, E.C., lately in the occupation of the East and West India Dock Company.

The Coventry school board have adopted plans by Messrs. G. and I. Steine, of that city, for new schools at Earlsdon.

## LEGAL INTELLIGENCE.

IN RE W. H. GIBBS.—(Sittings in Bankruptcy, Feb. 28, before Mr. Registrar Brougham.)—This was an application for an order of discharge by William Henry Gibbs, formerly carrying on business as a builder at West Kensington-terrace. The failure occurred in July last, the liabilities being returned in the statement of affairs at £13,941, with an estimated surplus in assets subject to realisation. The bankrupt commenced business in the year 1872 as an engineer, and in 1876 started as a builder on the Cedars Estate, West Kensington, in partnership with another. That business was carried on successfully until 1882, when the partnership expired. The capital of the firm at that time consisted of plant, stock, house property, and building estates amounting to about £100,000, and the bankrupt and his partner converted two-thirds of their business into a limited company, which ultimately went into liquidation. The bankrupt attributed his failure to losses and liabilities arising out of the insolvency of the company, and particularly to liabilities under personal covenants in mortgages; also to his inability to realise his properties in time to satisfy pressing creditors. The only matter reported on by the official receiver as an offence was the insufficiency of the books. On this point the bankrupt was examined by his counsel, and gave some details with reference to the books used in the business, and the documents which he had preserved. He also stated that he had employed an accountant to keep his books. His Honour granted the discharge, subject to a nominal suspension of three weeks.

IN RE C. KILLINGBACK.—A petition for a receiving order has been presented on behalf of Charles Killingback, contractor, of St. James's-street and elsewhere, Camden Town, and of Lee, Kent. The debts, secured and unsecured, are returned at £18,600, and assets between £2,000 and £3,000. Mr. Registrar Linklater made the usual receiving order. The debtor has a contract under the London County Council for the construction of sewers at Lee. Adjudication of bankruptcy was also consented to.

LIABILITY FOR REBUILDING PARTY-WALL.—WILLIAMS v. BULL.—In the Queen's Bench Division, last week, an action of trespass for interfering with the external wall of the plaintiff's house was tried. The trespass consisted in cutting into the plaintiff's wall and building a house against and upon it. The facts of the case raised an interesting question under the Metropolitan Building Act, 18 and 19 Vict. c. 122. In 1884, the plaintiff served on the defendant a notice under the Metropolitan Building Act that he intended to pull down and rebuild the party-wall then existing between the houses of the plaintiff and defendant, and in pursuance of that notice he pulled down the wall. The plaintiff then rebuilt the wall, partly on his own and partly on the defendant's land, to a greater height than the defendant's house. In February, 1885, the defendant served on the plaintiff a party-wall notice, and in pursuance of that notice he pulled down his own house, erected a new house, raising it to a greater height, and for that purpose cut into and used the external wall which had been previously raised by the plaintiff. The wall was built for half its thickness upon land of the defendant's, and it was therefore contended on his behalf that it was a party-wall. The plaintiff, on the other hand, contended that it was an external wall, and the defendant was not entitled to make use of it without paying for the portion of the wall so cut into and used by him.—Mr. Burn, for the plaintiff, argued that the wall in question, so far as it did not separate buildings, was an external wall and not a party-wall; that the provisions of part 3 of the Metropolitan Building Act did not apply in the absence of a notice by the defendant under the Act specifying the wall the defendant cut into; that a wall might be a party wall for some of its height, and above that the property of the adjoining owner ("Weston v. Arnold," L. R. 8. Ch. App. 1084; "Knight v. Pursell," 11, Ch. D. 412). The defendant had no further rights than were given by the Metropolitan Building Act, the effect of which was to limit the right of owners in the interests of the public ("Standard Bank v. Stokes," 9, Ch. D., 68). Whether the wall was half on the land of the defendant was immaterial, for the external wall was by statute for the purposes of the present case the property of the plaintiff (14 Geo. IV. c. 78, section 41; 7 and 8 Vict. c. 84, section 33). Mr. Morton Smith, for the defendant, argued that the case was covered by sections 84 and 93 of the Metropolitan Building Act (18 and 19 Vict. c. 122). The adjoining owner is only liable for expenses incurred by the building owner upon his requisition. When a party wall, which is not defective, is pulled down and heightened, the building owner must incur all the expense. Mr. Justice Mathew, in giving judgment for the defendant, said he could not find any grounds of the liability for which the plaintiff had contended. The sections of the earlier statutes referred to had been repealed, and were not incorporated in the Metropolitan Building Act. Under



the Building Act the whole measure of liability was that where any building owner had incurred any expenses on the requisition of the adjoining owner, the adjoining owner making such requisition should be liable for all such expenses. To say that the expenses were not to be borne by the building owner seemed to be supplying in the Building Act what was not there. Judgment for defendant with costs.

### STAINED GLASS.

**DEWSBURY TOWN HALL.**—A stained-glass window has just been placed in the vestibule in commemoration of certain public works, &c., in which Mr. John Tweedale, who was mayor of Dewsbury in 1865, was interested, more especially in respect to the Dewsbury and Heckmondwike Waterworks, of which he was the originator. The upper portion of the window contains a female figure as representative of Science, and in the base is a picture of Dunford Bridge Reservoir. The work is from the studio of Messrs. Powell Bros., of Park-square, Leeds.

**ROCHESTER.**—On Monday, the 17th ult., water was tapped at the well of the Mid-Kent Water Company at Lower Halling, near Rochester. The well was started last July, and was only dug 50ft. to chalk water level, then bored for 315ft., making a total depth from surface of 365ft. The geological formations passed through were, from the top 140ft. of chalk, a thin layer of rock, 220ft. of gault, a layer of rock 26in. thick, into the lower greensand, when water rose up the lining tubes immediately to within 3ft. of the surface, standing 13ft. in the dug well. It is estimated that the yield is about 25,000gals. per hour at present. The bore-hole is lined with 15in. diameter wrought iron lap welded lining tubes, screwed together in wrought-iron sockets. Mr. Richard Batchelor, of Chatham, was the contractor. The engineers are Messrs. W. Russ and A. F. Bowker.

### CHIPS.

Various additions of carved furniture have recently been made to several of the churches in Folkestone, the cost being borne by the late Miss Phillips, of Leamington, and the work carried out by Mr. H. Bowen, of Tavistock-street, Leamington. These have included the erection in St. Peter's Church of a carved oak pulpit, choir stalls and sedilia, designed by Mr. S. Slingby Stallwood, of Reading, formerly of Folkestone, and oak panelling with canopies around the chancel; a pulpit, in teak, carved and full of tracery, designed by the late Mr. W. W. Cundall, of Leamington, at Trinity Church; three elaborately-carved and traceried screens, now in course of construction, for the parish church; a carved oak rood beam and screen for St. Michael's Church, Folkestone, from designs by Messrs. Bodley and Garner; and a priest's reading-desk, in oak, for the new chapel at St. Andrew's Home, designed by Mr. Ewan Christian.

At a meeting of the Architectural Section of the Glasgow Philosophical Society, held on Tuesday evening, Mr. J. Thomson, president, in the chair, Mr. W. Leiper read a paper on the subject, "Notes on some Italian Towns," with lantern illustrations.

The town council of Leicester have decided to erect a refuse destructor with chimney shaft 160ft. high, in Upper Charnwood and Needham-streets, in accordance with plans prepared by the borough surveyor, Mr. Edward G. Mawbey.

A group of police-station buildings is to be built at Newhaven, at a cost of £1,500, from plans by Mr. Henry Card, of Lewes, county surveyor of Sussex. Mr. G. Chapman, of Newhaven, is the contractor.

A new assembly hall has been erected at Capland-street, N.W., and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Boyle's self-acting air-pump ventilator.

The city council of Birmingham have adopted a report by a committee, recommending that an external corridor, carried on iron brackets, and 98ft. in length, be made from the council chamber to the Art Gallery, and that a cloak-room be provided to the same building, in accordance with plans prepared by the city surveyor, at a total estimated cost of £2,500.

The work of repaving the town of East Dereham has just been completed by the contractor, Mr. W. D. Hubbard, of East Dereham, the material used being Imperial stone paving. In addition to this, granite channelling has been laid to the principal streets, the total cost being about £1,900. The works were carried out under the directions of the surveyor, Mr. F. W. Skipper, of East Dereham, and Opie-street, Norwich.

It is proposed to erect a church at Gateshead as a memorial of the late Bishop Lightfoot. A competition of local architects has been arranged.

## Our Office Table.

THE architects of Scotland are by no means satisfied with the reply given by the Council of the Royal Scottish Academy to their memorial to the Queen against the granting of a supplementary charter to that body. At the meeting on Monday of the Edinburgh Town Council a letter by Mr. Robert Strathern, W.S., who is acting for the architects, was read, in which he said:—"On behalf of my constituents, I hope that the Council will not assume that the architects admit the conclusions of the memorial of the Royal Scottish Academy, lodged by way of answer to the architects' petition. The architects have a most complete answer to the memorial, which will be presented at the proper time and in the proper place. In the meantime, all I need further say is that the memorial contains many statements which are not consistent with fact." The letter was sent without comment to the Lord Provost's Committee.

MESSRS. SPON have just issued Macfarlane's "Facilegraph," a sketch-book composed of thin paper sheets, through which ruled lines drawn on a card may be seen by the draughtsman, so that curves, circles, and right angles may be used as a guide in freehand delineation somewhat after the method already familiar in the use of ruled scale paper, but avoiding the objection of the lines being actually set out on the paper itself. The aim of the "Facilegraph" is to enable the artist to secure a mechanical accuracy without the aid of drawing instruments, and for technical students advantages are claimed for it by the publishers as an exercise book for the engineering, mathematical, and kindred classes, while it may be advantageously used for the making of synopses, tables, &c., and even for the writing of arithmetical exercises, in which the use of it has, the author thinks, a considerable educative value in training the student's faculties to ideas of order and symmetrical arrangement. Leading-strings of this character, however, are little calculated to educate the eye or enable the user to master a sense of proportion and value of scale.

At the meeting of the Liverpool County Council yesterday, the finance committee recommended the acceptance of the offer made by Mr. P. H. Rathbone, to complete, at his own cost, the bas-reliefs of the four remaining panels on the south front of St. George's Hall, in accordance with the designs of Mr. Stirling Lee, sculptor, on condition that the whole series of six panels should remain in position for at least five years, the council being at liberty to remove them after that time. An animated discussion took place, but an amendment declaring that the acceptance of the offer would be highly inconsistent, was rejected by 15 to 28, and Mr. Rathbone's offer was accepted.

An approximate return has just been submitted to the members of the London County Council by their engineering staff showing the comparative cost of providing access to the proposed Blackwall tunnel (1) by means of inclined approaches and (2) by means of hydraulic lifts with an approach road. The estimate is for the Middlesex side of the river and for one tunnel 22ft inside diameter. The first cost of an inclined approach is estimated at £250,000, and 36 years' maintenance and lighting at £39,000, making a total of £289,000. The alternative estimate, for approach road, with six lifts for vehicles and four for pedestrians, is £250,000, making, with £309,600 for 36 years' maintenance, a total of £559,600. A lower estimate is given for a similar arrangement, with only four lifts for vehicles, the first cost being £170,000, and the maintenance £216,000—total, £386,000. In view of the proposal to substitute a ferry for the suggested tunnel, a return on the working of the free ferry at Woolwich has been prepared by direction of the London County Council. The total cost of the ferry was £128,451; the cost of maintenance and working for the six months to December 31 last £5,177; the approximate number of passengers, &c., for that period giving an average of 8,865 passengers and 382 vehicles a day.

"METHOD IN ART" was the subject of an address given to the Edinburgh Art Students' Association on Saturday night by Mr. D. W. Stevenson, R.S.A., in the Scottish National Portrait Gallery. Mr. Allan Stewart presided.

Mr. Stevenson urged upon his hearers the necessity of a more methodical manner of commencing, proceeding with, and finishing their work. Sir Joshua Reynolds said "rules are fetters only to men of no genius," and he feared that this truth was not sufficiently valued. Too little attention to method characterised the works of young artists of to-day. No work should be attempted until the artist was inspired by an idea. The happy results of a work begun haphazard by a master seemed to have a vague and subtle charm for the young, and thus led them to underrate the value of method. In all the other arts a strict attention to method was necessary. So in painting and sculpture, the despoiler of method must inevitably be defeated. Students had too great an aversion to any assistance in their art which was mechanical, and this, with the want of a clear idea and fixed purpose, seemed to him to constitute the greatest of the faults of the works of young artists. Some might say that labouring out a work necessitated a cold-blooded result and the evaporation of all fire and energy; but this puerile idea was quite untenable when we considered the labour bestowed on their works by masters not in painting and sculpture alone, but in music and literature.

THE British Consul in Rome, in a recent report, refers to the building crisis in that city, and endeavours to answer two questions—first, whether the crisis has reached its climax; and, second, what its immediate consequences will be. Official statistics show that £11,000,000 sterling of private capital was invested in building in Rome in the six years ending with March, 1888. The larger part of this amount was supplied by mortgage banks on the security of the land and houses. The crisis came in 1887; large stocks of building materials remained on hand, the sale of building land was suddenly checked, and in the less favourably situated quarters underwent an enormous depreciation. Between 1882 and 1887, when the building fever was at its height, rents increased enormously, and even now are much higher than in any other Italian city, except Naples. Owing, however, to the crisis, the market value of house property is low. The population of the city on June 30 last year was 407,936, excluding a considerable floating population.

THE twenty-fifth annual report of the trustees of the Peabody Donation Fund states that the net gain of the year, from rents and interest, has been £29,607 12s. The sum given and bequeathed by Mr. Peabody was, in all, £500,000; to which has been added money received for rent and interest, £494,789 19s. 9d., making the total fund on the 31st December last £994,789 19s. 9d. Of the £390,000 borrowed of the Public Works Loan Commissioners and others, the trustees have paid off £148,666 13s. 4d., leaving a balance unpaid of £241,333 6s. 8d. Within the past year the trustees have expended on land and buildings £1,561 17s. 9d., making the total expenditure to the end of 1889 £1,233,845 17s. 8d. Up to the end of the year, the trustees have provided for the artisan and labouring poor of London 11,275 rooms, besides bath-rooms, laundries, and wash-houses, occupied by 20,374 persons. The rooms comprise 5,071 separate dwellings, say 76 of four rooms, 1,790 of three rooms, 2,396 of two rooms, and 809 of one room.

After opening the Forth Bridge on Tuesday, the Prince of Wales announced that the Queen had conferred baronetcies upon Mr. M. W. Thompson, the Chairman of the Midland Railway and of the Forth Bridge Railway, and Sir John Fowler, K.C.M.G., the principal engineer of the bridge; and knight-hoods upon Mr. Benjamin Baker, the joint-engineer, and Mr. William Arrol, the contractor. Sir Benjamin Baker, K.C.M.G., has been consulted during the past 23 years in the construction of many important bridges in all parts of the world. He was also consulting engineer to the late Metropolitan Board of Works for several years. Sir William Arrol was apprenticed to a Paisley blacksmith at the age of thirteen. He became foreman of the bridge and boiler departments in the works of Messrs. Laidlaw and Sons, of Glasgow and Edinburgh. Twenty years ago, with £85 which he had saved, he started in business for himself as a contractor and repairing engineer. Within three years he received important contracts for iron bridges on the Glasgow, Hamilton, and Bothwell Railway, and for a bridge over the Clyde near the Glasgow Station of the Caledonian Railway. He was also engaged upon the reconstruction of the Tay Bridge.



## MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. "Betterments," by T. W. Wheeler, Q.C. 8 p.m.

TUESDAY.—Society of Architects. Society of Arts. "The Claims of the British School of Painting to a Thorough Representation in the National Gallery," by Jas. Orrock, R.I. 8 p.m.

Institution of Civil Engineers. Discussion on "Railway Bridges at Hawkesbury, N.S.W., Benares (Dufferin), and New Blackfriars." 8 p.m.

WEDNESDAY.—Society of Arts. "The Sliding Railway," by Sir Douglas Galton, F.R.S. 8 p.m.

Carpenters' Hall Free Lectures. "The Tree, from the Sapling to the Bench," by Prof. Marshall Ward. 8 p.m.

THURSDAY.—Society of Arts. "Agriculture and the State in India," by W. R. Robertson. 8 p.m.

FRIDAY.—Architectural Association. "Modernism in Art," by Henry Holiday. 7.30 p.m.

Bradford Historical and Antiquarian Society. "Old Newspapers," by J. N. Dickons. Royal Institution. "Electro-Magnetic Radiation," by Prof. G. F. Fitzgerald, F.R.S. 9 p.m.

Architectural Association. 9, Conduit-street, W.—March 14, paper on "Modernism in Art," by Mr. Henry Holiday. 7.30 p.m.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

## Trade News.

## WAGES MOVEMENTS.

KENT.—BRICKMAKERS' BARGEMEN.—The barge-men employed by the Kentish brickmakers have issued a demand for increased freightage. The masters have determined not to pay the increase, but to close their brickfields first.

MANCHESTER.—At a meeting of the Bricklayers' Joint Societies, Manchester, Salford, and district, it has been unanimously resolved to petition the employers for an advance of wages from 8½d. to 9d. per hour, and also for a code of working rules.

MERTHYR.—The majority of the masters have consented to grant the men's amended terms of an advance of a halfpenny per hour all round, so that the strike is virtually at an end.

NEWCASTLE-ON-TYNE.—At an influential meeting of the builders and contractors, held on Tuesday afternoon in Mr. Walter Scott's office, it was unanimously resolved to refuse the demand of the bricklayers' labourers for an advance of ½d. per hour, they having had a substantial increase of their wages only about four months ago.

Dr. Waldstein writes from Athens that the excavations of Mr. Cavvadias at Lycosura last summer have resulted in the discovery of the fragments of the group of Demeter and Despna (Persephone), described by Pausanias (Arcadia VIII., 37) as he saw them in the Temple of Despna, the statues and the throne on which they sat being of one piece of stone, carved by Demophon.

The Widnes local board met on Tuesday to consider the 167 applications which had been sent in for the post of surveyor to the board; the situation is worth £250 a year. A memorial was read from a public meeting of ratepayers asking the board to reappoint Mr. Thomas Higginson, who was recently requested by the board to resign the post of surveyor. The memorial pointed out that Mr. Higginson had discharged his duties faithfully, and had served the township well for fifteen years. It was pointed out, however, that the board could not rescind its past resolution without notice of motion, and ultimately it was decided to refer the applications to a committee on the understanding that Mr. Higginson should be one of the half-dozen applicants to come before the board for selection.

The will of Mr. Stephen Stiles, late of 69, Richmond-road, Dalston, and of 8, Cecil-square, Margate, retired builder, who died on December 16th last, has been proved, the value of the personal estate amounting to upwards of £28,000.

The main roads committee of the Cheshire County Council held a special meeting at Crewe last week, to select four road inspectors for the county, the salary attached to the office being £200 a year. The Cheshire County Council recently decided to take over the oversight and repair of their own main roads, a work which had for many years been carried out by various highway boards. There were no fewer than 454 applications. These were first reduced to 13, and out of these the following received the majority of votes and were elected:—Messrs. Linnell, Chester; William Holland, Chester; James T. Boyd, Halifax; and Perman, More, near Chester.

## CHIPS.

It is proposed to restore the exquisite Lady-chapel of Gloucester Cathedral, which is rapidly falling into a ruinous condition, at a cost of £10,000, towards which Dean Spence has promised to contribute £1,000.

At the last meeting of the Aston Manor local board they unanimously resolved to increase the salary of Mr. W. A. Davies, A.M.I.C.E., their engineer and surveyor, £50 per annum.

The new organ gallery at Christ Church, Bristol, is to be decorated with a series of eight carved panels. Two of these have just been fixed in position. One of them represents St. Cecilia seated at the organ attended by St. Urban. This has been given to the church in memory of the late Mr. R. Benson. The other is a fine group illustrating the shepherds and the herald angels. This forms the centre or principal panel. Both panels are the work of Mr. George Houghton, of the Society of Bristol Sculptors.

Holloway's Ointment.—Go where you may, persons will be found who have a ready word of praise for this Ointment. For chaps, chafes, scalds, bruises, and sprains, it is an invaluable remedy; for bad legs, bad breasts, and piles, it may be confidently relied upon for effecting a sound and permanent cure.

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## TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

AYLESBURY.—For alterations and additions to Dinton Hall, near Aylesbury, for Colonel Goodall. Mr. A. Bovill, A.R.I.B.A., 24, Charing Cross, S.W., architect. Quantities supplied by Messrs. Pryce-Cuxon and Leigh, 17, Victoria-street, Westminster, S.W.:—

Bird, S. G.	...	...	£3,576	0	0
Rider, T., and Son	...	...	3,468	0	0
Holloway Bros.	...	...	2,889	0	0
Ball and Mayne	...	...	2,438	3	6

BALLINTORE, N.B.—For the construction of a harbour at Ballintore, near Tain, for the trustees:—  
Pirie, G., Aberdeen (accepted) ... £6,625 0 9  
[Lowest of twelve tenders received.]

BISHOPSWOOD ESTATE, NEAR ROSS.—For the erection of keeper's cottage, for Mr. H. McCalmont. Mr. A. H. Pearson, Ross, architect:—  
Perkins and Bellamy, Ross (accepted.)

BURTON-ON-TRENT.—For new farm buildings at Callingwood Hall, near Burton-on-Trent, for the Right Honourable Lord Burton. Mr. R. Waite-Waite, Duffield, Derby, architect:—

Sharp, W., Barton-under-Needwood	...	...	£4,760	0	0
Lowe & Sons, Burton-on-Trent	...	...	4,600	0	0
Hodges, G., Burton-on-Trent	...	...	4,330	0	0
Walker and Slater, Derby	...	...	4,300	0	0

\* Accepted.

RUSHEY GREEN.—For residence, Rushey Green, Kent. Messrs. W. A. Williams and Hopton, 156, Regent-street, W., and Bromley, Kent, architects:—  
Lowe (accepted) ... £2,200 0 0

CAMBERWELL, S.E.—For alterations and extension of choir vestry, &c., at St. Luke's Wilberforce Memorial Church, Rosemary-road, for the churchwardens. Mr. J. W. Stevens, 21, New Bridge-street, E.C., architect:—

Falkner	...	...	£523	0	0
White and Co.	...	...	520	0	0
Whitehead and Co.	...	...	490	0	0
Chaffin	...	...	483	10	0
Marsland	...	...	443	0	0
Beenhams	...	...	395	10	0
Peppiatt	...	...	315	0	0

CHELSEA, S.W.—For alterations and additions to Nos. 16 and 18, Kings-road, for Messrs. Lester and Co. Mr. J. W. Stevens, 21, New Bridge-street, E.C., architect and surveyor:—

Prestige and Co.	...	...	£495	0	0
Buckeridge	...	...	465	0	0
Peppiatt	...	...	460	0	0
Leslie and Co.	...	...	453	0	0

CHELSEA, S.W.—For alterations, decorative and sanitary works at No. 59, Little Cadogan-place, Chelsea, S.W., for Mr. W. J. Smith. Mr. J. Emes, 151, Ebury-street, S.W., architect:—

Craske	...	...	£149	0	0
Postlethwaite	...	...	117	0	0
Simmonds Bros. (accepted)	...	...	100	0	0

CHISLEHURST.—For seven cottages at Chislehurst, Kent. Messrs. W. A. Williams and Hopton, 156, Regent-street, W., architects:—

Lowe (accepted)	...	...	£1,500	0	0
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CLAPHAM, S.W.—For two new shops, Grosvenor Lodge, High-street, for Mr. W. Grey. Mr. J. W. Stevens, 21, New Bridge-street, E.C., architect and surveyor:—

Macey	...	...	£735	0	0
Prestige and Co.	...	...	627	0	0
White and Co.	...	...	620	0	0
Peppiatt	...	...	595	0	0
Whitehead and Co. (accepted)	...	...	595	0	0
Creed	...	...	583	0	0

CLERKENWELL, N.—For laying out the parish churchyard as a public recreation ground, for the vestry:—

Bell, of Tottenham (accepted)	...	...	£948	0	0
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CUNNYNHAME HILL, ST. ALBAN'S.—For decorations, for Mr. Purrott. Mr. F. W. K. Tarte, 36, Farnival-street, E.C., and St. Alban's, architect:—

Pelley, Victoria-street (accepted.)

EAST BARRY, GLAM.—For the erection of a Congregational church:—

Richards, W., and Sons, East Barry (accepted) £800.

EAST DEREHAM.—For the erection of a mortuary, for the East Dereham Local Board. Mr. F. W. Skipper, Opie street, Norwich, architect and surveyor:—

Hubbard	...	...	£129	0	0
Mayer	...	...	128	5	7
Beeston	...	...	120	0	0
Mack	...	...	112	10	0
Larner (accepted)	...	...	112	0	0

EDINBURGH.—For the construction of a police-station in the Waverley Market, for the town council:—

Greig, D., and Sons, Edinburgh (accepted) £808.

HALIFAX.—For painting five new middle-class houses, Heath-avenue. Mr. T. L. Patchett, Halifax, architect:—  
Stringer, J., Halifax (accepted.)

LEDBURY.—For reconstructing conservatory, for Mr. M. Biddulph, M.P. Mr. A. H. Pearson, Ross, architect:—  
Perkins and Bellamy, Ross (accepted.)



LONDON.—For additions to No. 31, Endell-street, St. Giles', for Mr. W. W. Langley. Mr. E. P. L. Brock, F.S.A., architect:—

Patman and Fotheringham	...	£1,357	0	0
Patrick, M., and Son	...	1,338	0	0
Pusey and Lumley	...	1,290	0	0
Kynoch and Co.	...	1,241	0	0
Scott, M.	...	1,027	10	0

LONDON.—For additions to buildings at Acre-street, Wandsworth, for the Projectile Co., Ltd. Mr. Tolley and Son, 66, Cannon-street, architects:—

Shepherd, London	...	£1,236	0	0
Faulkner, London	...	1,137	0	0
Waddington, Sydenham	...	1,137	0	0

\* Accepted.

LONDON, E.C.—For constructing about 100ft. 4ft. 6in. by 2ft. 6in. brick sewer in portion of Myddleton-street, for Vestry of Clerkenwell. Mr. W. Iron, surveyor:—

Bell, G., Tottenham	...	£206	0	0
Mowlem and Co., Westminster	...	195	0	0
Pizzey, J., Haringay	...	194	0	0
Dickson, J., St. Alban's	...	170	0	0

Surveyor's estimate, £153.

LONDON, E.C.—For laying out churchyard of St. James's Clerkenwell, as a public garden, and also for throwing part of churchyard into the public way in St. James's-walk, for the Vestry of Clerkenwell. Mr. W. Iron, surveyor:—

Mowlem and Co., Westminster	...	£1,433	0	0
Benedict, W., Newington Butts	...	1,105	10	0
Bell, G., Tottenham	...	948	0	0

Surveyor's estimate, £1,033.

LOSTIFORD.—For St. John's Seminary, Lostiford. Mr. F. A. Walters, 4, Gt. Queen-street, S.W., architect. Quantities by Mr. J. B. Lofting, 6, Great Queen-street, S.W.:—

Patman and Fotheringham	...	£27,336	0	0
Colls and Son	...	27,200	0	0
Stimpson and Co.	...	27,130	0	0
Goddard and Sons	...	26,840	0	0
Marriage, Croydon	...	26,500	0	0
Silver and Sons	...	26,010	0	0
Sanders, Southampton	...	25,990	0	0
Gregory and Co.	...	25,777	0	0
Harris and Wardrop	...	25,622	0	0
Parnell, Rugby	...	25,497	0	0
Higgs and Hill	...	24,990	0	0
Thompson, Peterborough	...	24,975	0	0
Smith and Sons	...	24,767	0	0
Bottrill and Son, Reading	...	24,195	0	0
Longley and Co., Crawley	...	22,665	0	0

PENARTH.—For the erection of public offices, for the local board:—

Tape, H. M., Penarth (accepted)	£2,300	0	0
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ORPINGTON.—For additions and alterations to the board schools, Orpington, Kent, for the Orpington School Board. Mr. St. Pierre Harris, A.R.I.B.A., 1, Basinghall-street, E.C., and Orpington, architect. Quantities by Messrs. C. Stanger and Son, 21, Finsbury-pavement:—

Lowe, R. A.	...	£2,497	0	0
Stevenson, G.	...	2,371	0	0
Simms, W.	...	2,302	0	0
Battley, R.	...	2,271	0	0
Marsland, M.	...	2,217	0	0
Knight, T.	...	2,211	0	0
Satchell, C.	...	2,195	0	0
Payne, D.	...	2,175	0	0
Holt, W., and Son	...	2,170	0	0
Akers and Co.	...	2,141	0	0
Somerford and Son (accepted)	...	2,132	0	0
Garnar, A. and W.	...	2,113	0	0
Grubb, W. A.	...	2,089	0	0

ROSS.—For building boundary walls, &c., at Caradoc Villa, Ross. Mr. A. H. Pearson, Ross, architect:—

Kemp, J. B.	...	£80	10	0
Lewis, J.	...	77	12	0
Aldom, G. (accepted)	...	68	10	0

All of Ross.

SHEERNESS-ON-SEA.—For the supply and erection of pumping machinery at the new well, for the local board:—

Moreland, R., and Son (accepted)	£4,161	0	0
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SHEERNESS-ON-SEA.—For additions to the surveyor's office, for the local board:—

Hughes (accepted).

SOUTHAMPTON.—For the erection of a caretaker's dwelling at the Northam Schools, for the borough school board. Mr. Howell, architect:—

Dyer and Son, Southampton (accepted)	£287.
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SOUTHEAST.—For house, for Mr. G. Wood, Southend. Mr. C. Pertwee, Chelmsford, architect:—

Gozzett, H., Woodham	...	£2,762	0	0
Whur, T., Southend	...	2,649	0	0
Dark, S., and Son, Southend	...	2,550	0	0
Letch, W., Braintree	...	2,400	0	0
Dupont, J., Colchester (accepted)	2,375	0	0	0

STONE, STAFFS.—For making up Granville-terrace, for the local board:—

Swinton, J., Milwich (accepted)	£120	0	0
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SOUTH KENSINGTON.—For erecting a new proscenium to the stage of concert hall, and for redecorating, gilding, and other works to the ball, supper, and dressing-rooms; also concert hall at the Queen's Gate Hall, Harrington-road, South Kensington. Messrs. Rogers, Chapman, and Thomas, 50, Belgrave-road, South Belgravia, surveyors:—

Aldin Bros. and Davies	...	£353	0	0
Manders, W. R.	...	323	0	0
Douglas, J.	...	313	0	0
Smith, H., and Son	...	312	0	0
Hook, E. D. (accepted)	...	280	0	0

STUBBINGTON, HANTS.—For constructing water-works.

Jenkins, Leamington (accepted)	£632	13	0
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ST. PANCRAS, N.W.—For the erection of a cookery centre, laboratory, and drawing classroom on the Medburn-street site, St. Pancras, for the London School Board. Mr. Bailey, architect to the board:—

Mace, J. M., and Sons	£2,330	0	0	...	£2,399	0	0
Killby and Gayford	2,323	0	0	...	2,363	0	0
Cubitt, W., and Co.	2,305	0	0	...	2,360	0	0
Dove Bros.	2,280	0	0	...	2,345	0	0
Patman & Fotheringham	2,173	0	0	...	2,223	0	0
Lawrance, E., and Sons	2,091	0	0	...	2,128	0	0
Goodman, W., Hartham-road, Holloway	2,078	0	0	...	2,128	0	0

[ (a) Cost of school buildings only, including closets, £1,990; (b) tar pavement and playgrounds, £30; (c) extra depth of foundations, £58; building brickwork in cement, £50; total, £2,128. ]

\* Accepted.

SWANLEY.—For 17 cottages at Swanley, Kent, for Mr. Hutton. Messrs. W. A. Williams and Hopton, 156, Regent-street, W., and Bromley, Kent, architects:—

Herbert (accepted)	£2,720	0	0
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WESTCOMBE PARK.—For the erection of the first portion of St. George's Church, Westcombe Park, for the Rev. W. H. K. Soames. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Balaam Bros. (accepted)	£5,172	0	0
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(No competition.)

WHITEHALL GARDENS, ST. ALBAN'S.—For drainage, &c., for Mr. F. W. Silvester. Mr. F. W. K. Tarte, 36, Furnival-street, E.C., and St. Alban's, architect:—

Linney, Park-street (accepted.)

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<b>Railway Stations.</b>	Broadstone, Dublin	Ealing Terminus	Kenilworth	Monkwearmouth	Slough	Westminster	Dublin Castle	<b>Schools, &amp;c.</b>	Stratford, Col-
	Burdett Road	Earl's Court	Kensal Green	Moorgate Street	Soho	Whitechurch	Police Barracks		grave Road
Accrington	Bursough	Edgware Road	Kentish Town	Monument	South Bromley	Whitechapel	Eastney	Belfast Method-	Stratford, Sal-
Acton Green	Junction	Falsworth	Kilburn	Newcastle-	South Kensing-	Whitefield	Fleetwood	ist College	way Place
Aldersgate street	Burton	Farringdon	Kilsby	under-Lyme	ton	Whitley	Fulwood	Battersea, St. Sutton	
Alldgate	Bury	Street	King's Cross	New Cross	Southport	Widnes	Halifax	Mary's Church St. Jude's	
Althorp Park	Borough Road	Fenchurch	King William	Newport	Spring Grove	Willenhall	Hamilton, Glas-	Birmingham, Tayport	
Altrincham	Mersey Tunnel	Street	Langley Green	Newton Heath	Stepney	Willesden	gow	Cowper Street	Torrington
Aston	Canonbury	Finchley Road	Latimer Road	North Brentford	Stechford	Wood Green	Hulme	Clapham	Upton Cross
Ash Street,	Camden Road	Firby	Lea Bridge	North Bridge	Stoke	Wormwood	Knightsbridge	Colchester	Wandsworth
Stockport	Chalk Farm	Forest Gate	Leamington	Northampton	Stourbridge	Scrubs	Leicester, Glen	Forest Gate	
Birmingham,	Charing Cross	Forest Road	Leman Street	(Castle Station)	Stratford	Worsley	Parva	Hanway Place	Hospitals.
New Street	Cheddington	Level Crossing	Leyland	Nottingham	Stretford	Wolverhampton	Mancheste	Harrow	Belfast County
Banbury	Cheetham Hill	Fulham	Leyton	Oldbury	Sudbury	Wolverton	Newbridge	Haverstock Hill	Voluntary Asy-
Barnsbury	Junction	Gedley	Leytonstone	Old Ford	Sunderland		Newcastle-on-	Orphan Work-	lum
Barnsley	Chequerbent	Gloucester Road	Lichfield	Oldham (Mumps)	Sutton		Tyne	ing School	Greenwich In-
Batley	Clayton	Gower Street	Limehouse	Paddington	Sutton Coldfield		Normanton	Jamaica Level	firmary
Bedminster	Clifton	Grantham	Lincoln	Parsons Green	Ashtown-under-		Northampton	Leyton, Gram-	Guy's Hospital
Bescot Junction	Clitheroe	Greenwich	Little Ealing	Patricroft	Lyne		Norwich	mar School	Lincolnshire
Birmingham	Crews	Hackney	Liverpool Road,	Penzance	Barnet		Portsea	Leyton, Church	County Asylum
Bishopsgate	Crooked Billet	Haggerston	Liverpool Street	Pickle Bridge	Belfast		Portsmouth	Road	Middlesex
Blackfriars	Level Crossing	Hammersmith	Liverpool Street	Plaistow	Belfast		Preston	Newhaven	County Lunatic
Blackfriars	Cross Lane	Heaton Park	Llandudno	Pleek	Budbrook		Regent's Park	North Bow	Asylum
Bridge	Crumpsall	Hereford, Barr's	Long Buckby	Plymouth	Burnley		Salford	Old Ford	Netley Hospital
Blake Street, Sut-	Cullercoates	Court	Ludgate Hill	Portsmouth	Catherham		Shorncliffe	Poplar, Byron & Peterborough	Infirmary
ton Coldfield	Cannon Street	Highbury	Mark Lane	Prestwich	Chatham		Thrim	Bright Streets	Rubery Asylum
Blaydon-on-Tyne	Dalston	Hollinwood	Maidstone	Raddcliffe	Chester		Warley	Church Path	Northfield
Blethley	Daubhill	Holyhead	Manchester, Ex-	Road	Curragh Camp		Winchester	Southsea, Omega St. Thomas's	Hospital
Bolton	Daybrook	Homerton	Manchester	Salisbury Road	Dublin, Beggars		Woolwich	Street	
Bolts Bridge	Denholme	Horley	Manchester	Seething Lane	Dublin, Island		Wrexham		
Bombay, India	Derby	Horslow	Manchester	Shadwell	Bridge				
Bow	Droylesden	Hounslow Bar-	Mansion House	Shedfield	Dublin, Ship				
Bowdon Central	Drighlington	racks	Mildmay Park	Shoreditch	Street				
Brick Lane	Dudley	Keighley	Milhill	Sloane Square	Dublin Royal				
Bristol	Dundee	Kemble Junction	Milverton	Snow Hill, Bir-	Barracks				
Broadfield	Ealing Common			mingham	West End Lane Dundalk				

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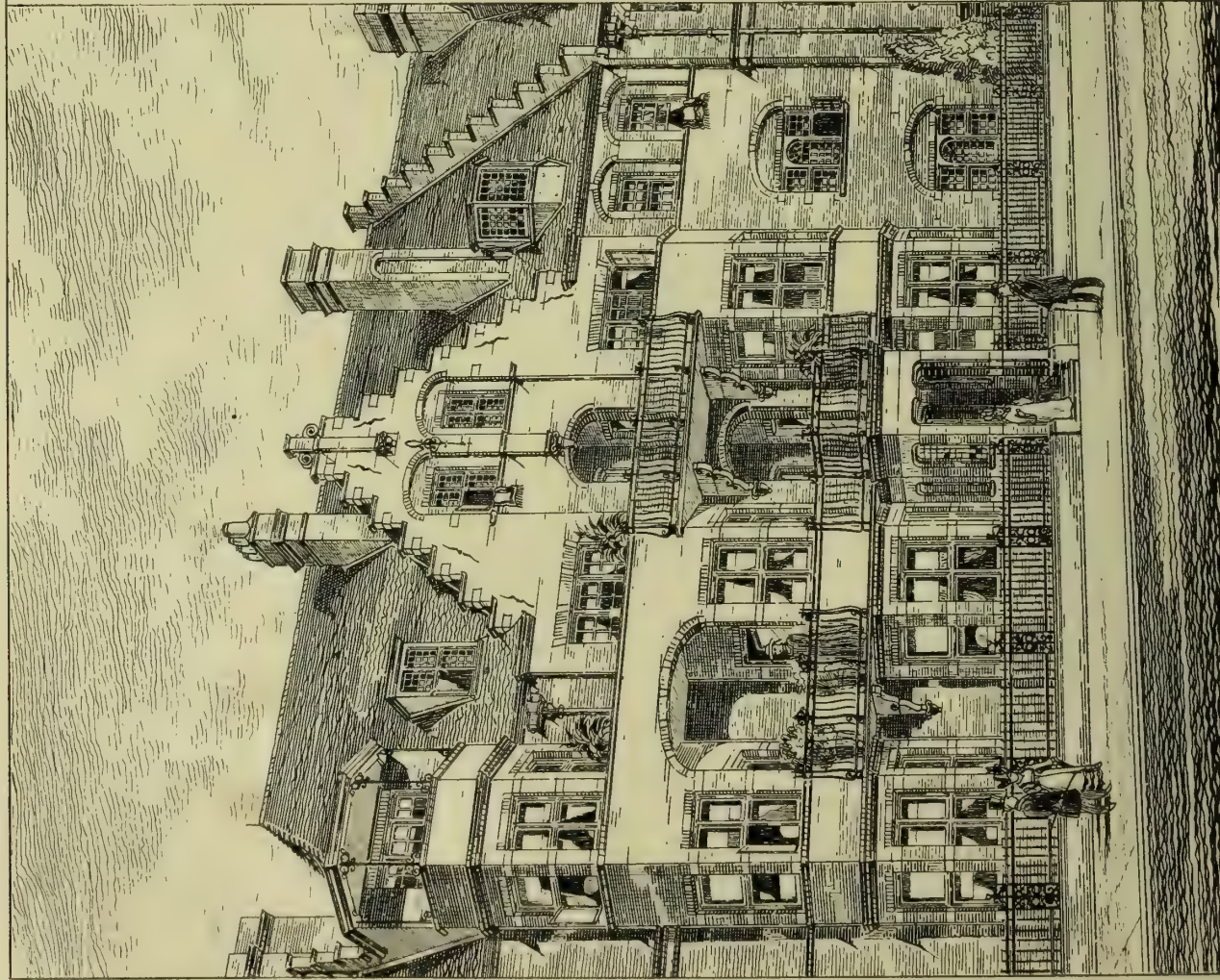








THE BUILDING DEWS, MAR. 7. 1890.



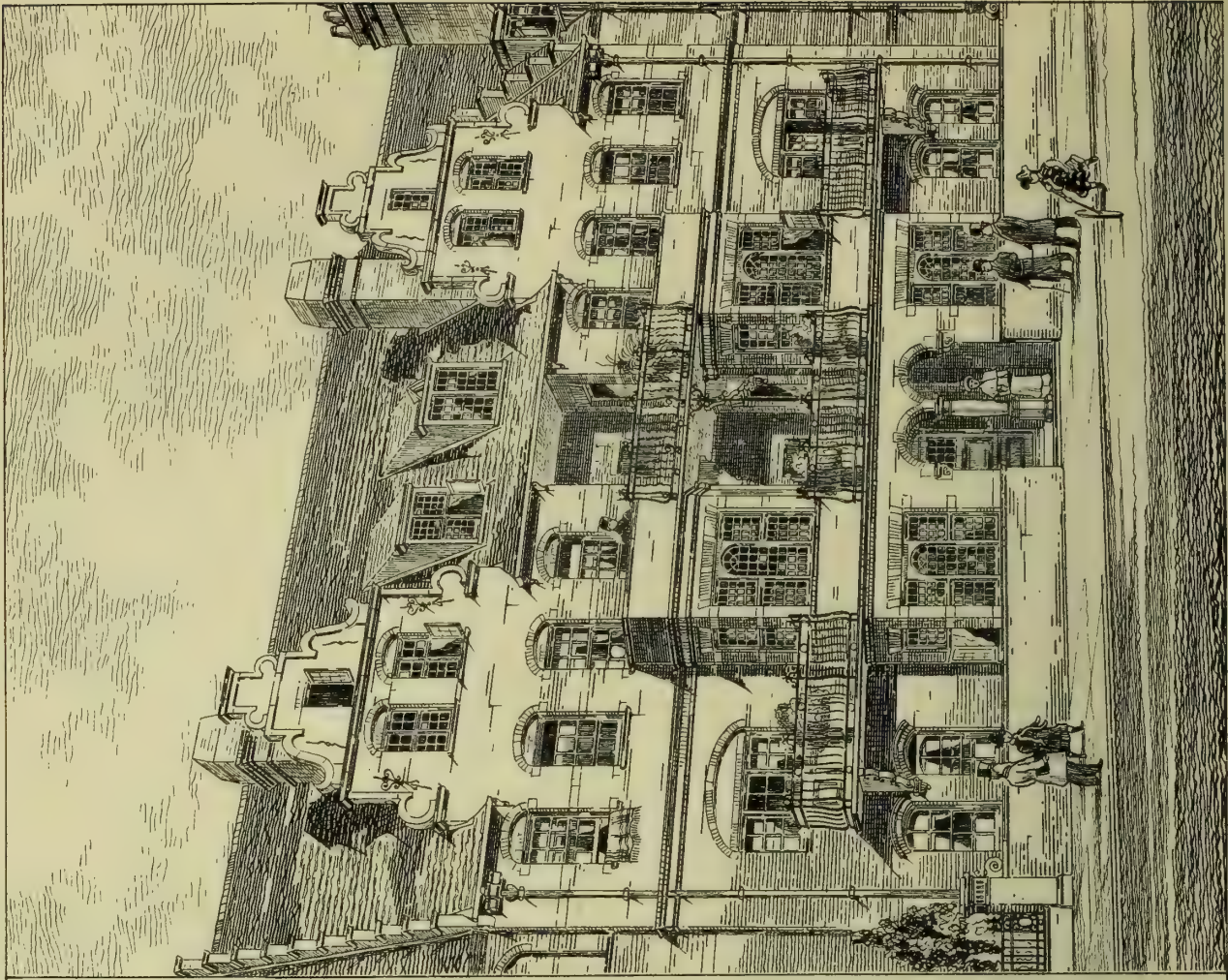
LEWEN-SHARP & ARPIN ARCHT<sup>s</sup>

Dordrecht Munsien.

Harlem Road, Breukelen, W.

Vtrecht Mansion.

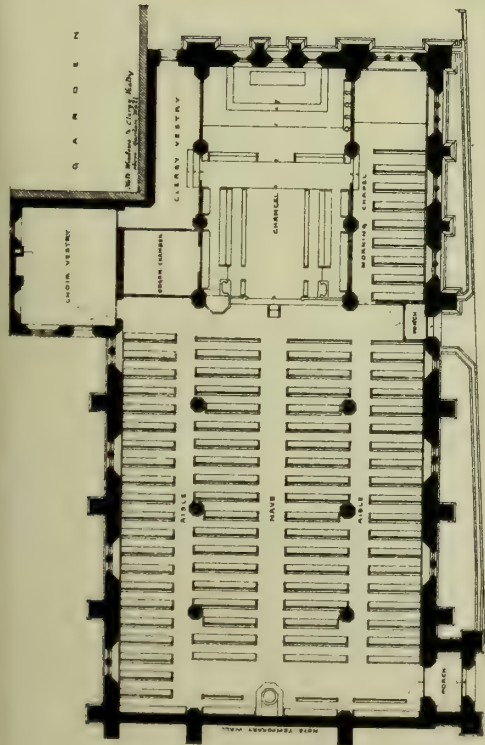
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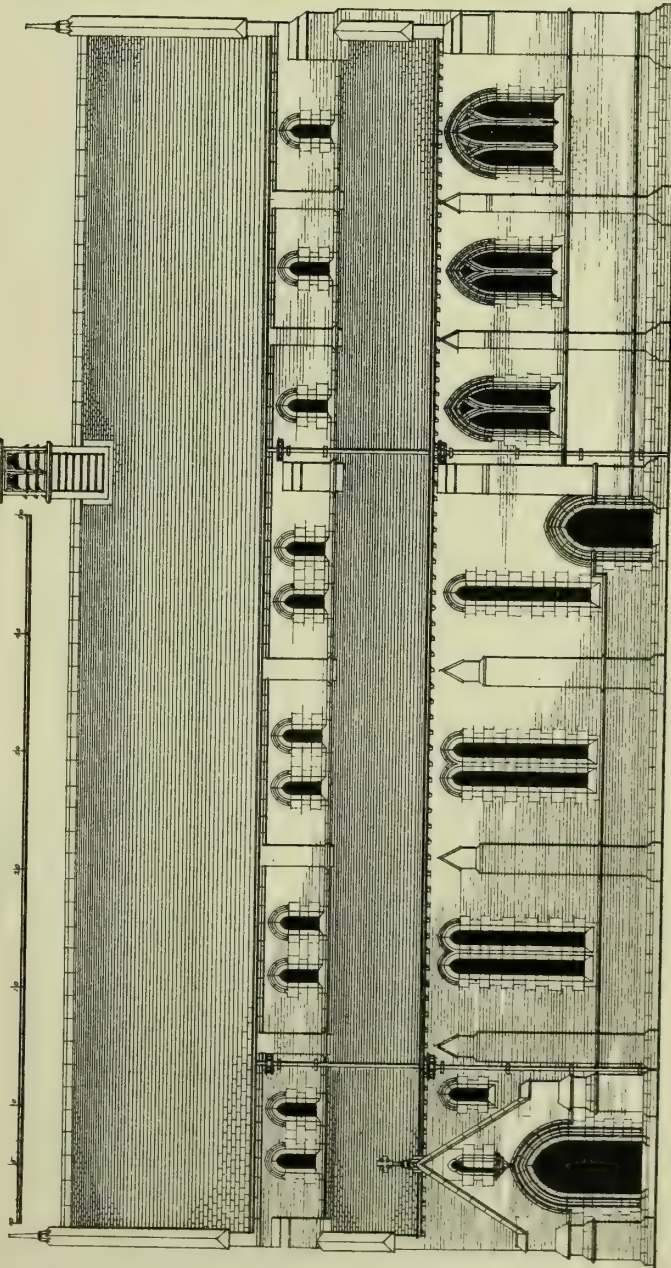


# ST HILDA'S CHURCH MILLFIELD SUNDERLAND

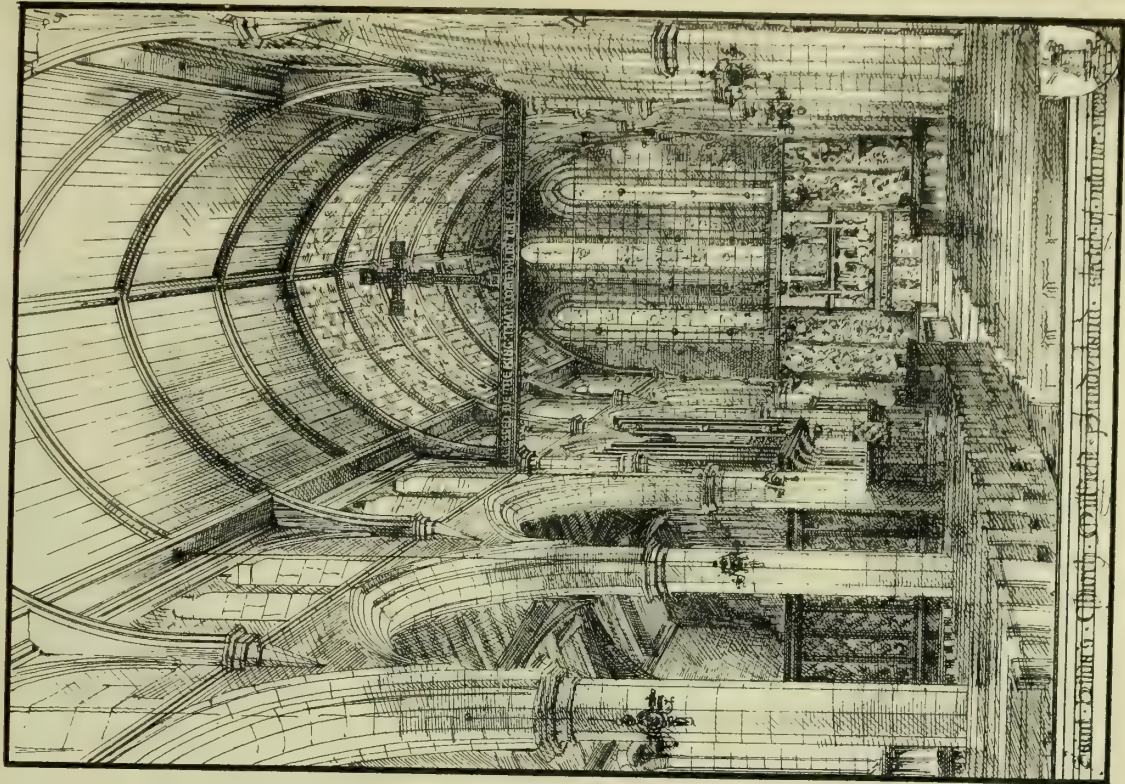
ACCOMMODATION—  
 NAVE . . . . . 250  
 AISLES . . . . . 250  
 CHANCEL . . . . . 25  
 WESTERN TOWER . . . 25  
 TOTAL . . . . . 550



GROUND PLAN



ELEVATION IN WESTERN TERRACE



HICKS & CHARLEWOOD  
 ARCHT'S

This is the original of the plan and elevation of St Hilda's Church, Sunderland, and is the property of the architect, Hicks & Charlewood, 10, Queen's Square, W.



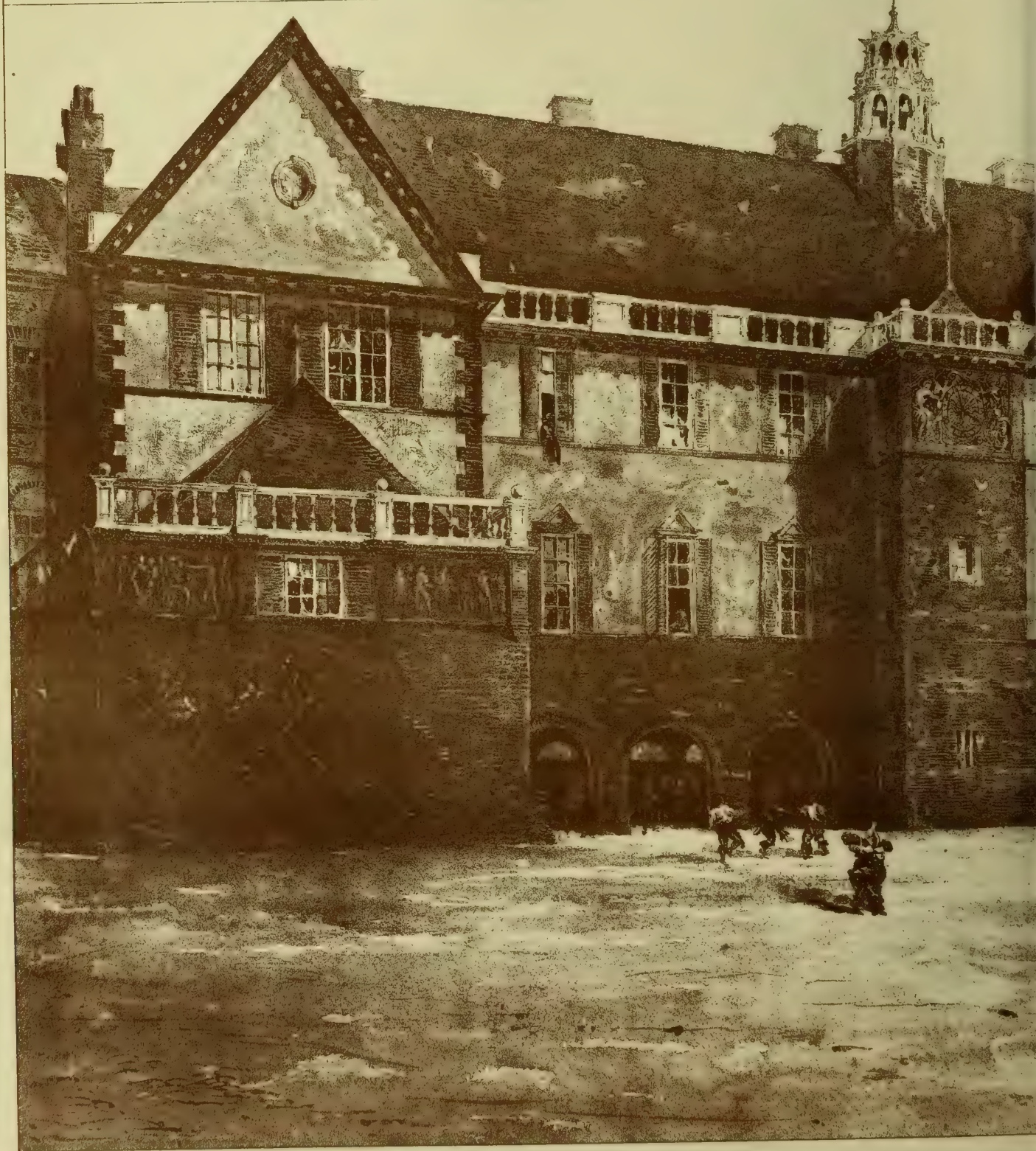
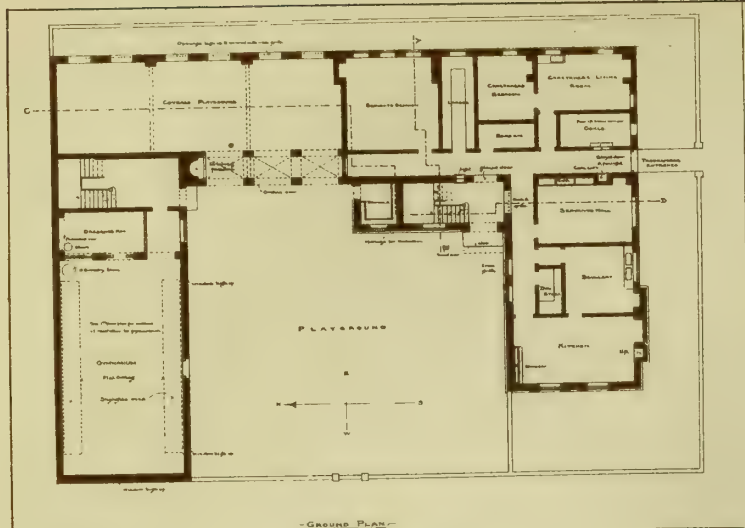








ROYAL INSTITUTE OF BRITISH A  
1ST MEDAL DESIGN E

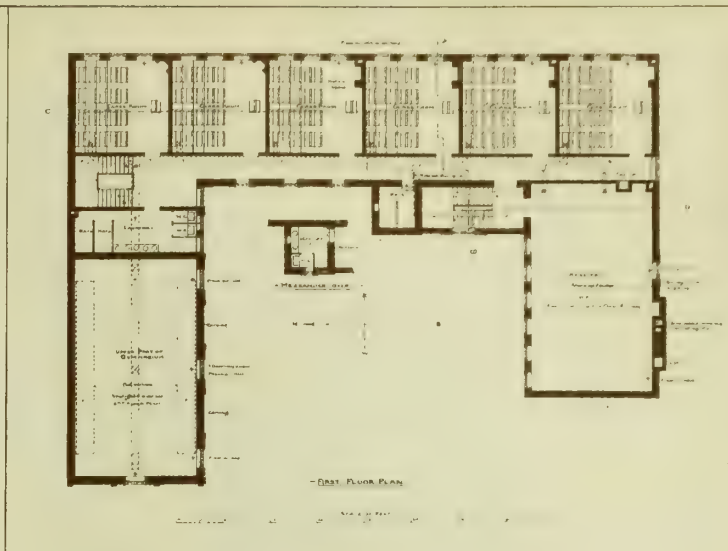


Design for a Public B



MAR. 7. 1890.

ARCHITECTS · SOANE · MEDALLION ·  
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"PHOTO-TINT" by James Akerman, 6, Queen Square, London, W.C.

School for 400 Boys.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1836.

FRIDAY, MARCH 14, 1890.

## THE ARCHITECTS' REGISTRATION BILL.

THE second reading of the Architect's Registration Bill, in its amended form, is expected to take place on Wednesday next, the 19th inst., and those who have made up their minds on the subject ought to lose no opportunity of using their influence in promoting the measure. It is no longer a party question: it is simply, Which is the best and most desirable means of protecting the profession from the incompetent, and making the architect's status known to the public? The members of the Council of the Institute, who still maintain an attitude of opposition to the Bill, on the self-assumed pretext that they represent the opinion of the body of Fellows and Associates, have made known their chief ground of antagonism in a leading sessional note in the *Journal of Proceedings*. The chief argument is exceedingly weak and inconsistent. Their first ground of objection was the inclusion of engineers and surveyors; now they object to their exclusion. The Council in their statement urge that "the enforced registration of those only who call themselves architects could not include a vast number of surveyors, engineers, builders, and others who practise architecture as a branch of their business; and therefore such registration would be not only incomplete, but delusive." The injury that might follow by giving to incompetent persons the legal qualification of 'architect,' and by allowing every description of architect under the title of 'surveyor,' or of some other title, to practise architecture with impunity, provided only that he does not style himself 'architect,' is incalculable." Let us for a moment analyse this statement. The Council say that by enforcing registration on architects only, it would allow a large number of surveyors, builders, and others "to practise architecture as a branch of their business." Certainly they could practise it, but in the same manner only as the chemist can prescribe, or as any incompetent person may practise an art which he has no legal right to follow as a profession, and only in that sense. Are there not hundreds of medical quacks in spite of the Medical Act? And will not builders and engineers be able to design buildings and prepare drawings and specifications even after the most stringent law is in force? Of course they will practise, but at their own risk, and by the folly of those who employ them; and, furthermore, they will then be unable to recover in a court of law any charges they may make. We should like to ask one question—namely, To what an extent would the tests imposed by the Institute exclude these men from practising architecture? The argument, in fact, used by the Council, weak as it is, applies with tenfold more force against their own scheme than it does against enforced Registration. We are, at any rate, tempted to ask How much would the Institute scheme do to prevent "surveyors, engineers, builders, and others" from practising architecture as a branch? Can the Council say their scheme is more complete and less delusive? When they can do so, we shall be the first to relinquish what at present clearly seems to be the more comprehensive and practicable principle.

Again, the statement sent to the home members of the Institute observes that any "architect and surveyor" can avoid registration by simply dropping half of his pre-

sent ordinary title. This is merely begging the question. A practitioner, professing the double capacity, will have to register or exclusively confine himself to the surveying branch. By dropping the title of "architect," the practitioner may avoid registration, but he will not be a gainer in any way, because he will have to forego his architectural practice, except such as he can manage to retain surreptitiously. Everyone knows that the strictest registration or examination test will still permit irresponsible clerks in law, or unqualified men in medicine, to give advice and prescribe remedies to those who are either too ignorant to know, or are willing to run the risk of employing unqualified persons. But they will practise only at their own risk, and be subject to all the penalties to which unregistered practitioners are exposed. The arguments based on the defectibility of any legal scheme are therefore worthless, as if allowed there would have been no legally registered medical practitioners or qualified solicitors in existence, and the public would have been exposed to all sorts of charlatanism.

With the exception of this most untenable objection to the Bill, there is nothing worthy of notice. The opposition, indeed, has been prompted chiefly by party feeling; the chief offence committed by the promoters of the Bill has been that they were the first to practically deal with registration, and that while their opponents were cavilling and sleeping they were taking action and organising the profession. The unanimous opinion of the whole profession, not only in this country, but in France, in America, and Australia, is that the principle of Registration is the only practicable one to deal in a comprehensive way with the matter. As Mr. Hugh Roumieu Gough points out in his letter to us, the demand for Registration has spread to all the leading countries. The Secretary of the Ontario Association writes "that 93 per cent. of the whole profession in the province are in sympathy with the movement," and we hear of the same general approbation of the measure in the United States, in Australia, and in every other country where the State has not already provided protection for architects. It is well known that a large proportion of the members of the Institute are favourable to the measure, although some of them are waiting for the Institute to move in the matter, while others are timid of acting on their own judgment. At least 350 of the members favour the scheme, and we have good grounds for knowing that some of the Council themselves privately acknowledge that Registration is the only principle that ought to be adopted. Let them at least openly speak their minds on the question, for if they do that they will be promoting the best interests of the society to which they belong. Seventy-one of those who have obtained admission to the Institute by examination, 23 qualified for district surveyorships, and 15 prizemen and medallists have petitioned in favour of registration, and their opinion is of value.

So much for facts which speak with no uncertain sound of the growing recognition of a measure founded on legislative sanction. Of the Bill itself, its provisions are pretty well known to most of our readers. The framers of the Bill have met every serious objection that could have been urged against it. No one can object to the constitution of the "General Council of Architectural Education and Registration of the United Kingdom," referred to as the General Council. The Institute are empowered to send five from their own body, the Royal Academy, one; the Institute of Architects of Ireland, one; the Society of Architects, two; the Architectural Association, two; provincial societies, five; and registered practitioners in the United King-

dom, nine. The mode of selection and nomination of the Council, the members of which are elected for a term not exceeding five years, the rules and regulations and mode of voting, cannot be questioned, the whole of these rules being subject to the Privy Council; nor can any exception be taken to the powers conferred on the General Council in revising its constitution. Under the Bill, every Fellow or Associate of the Institute will be entitled to be registered under the Act without payment of a registration fee, and, so long as he remains a Fellow or Associate, shall be exempted from the payment of an annual fee; also every person practising architecture prior to the 1st day of January, 1884, or who has served as apprentice, assistant, or practitioner in architecture all or either for seven years in the aggregate after having attained the age of fifteen years prior to the passing of the Act. After the passing of the Act an applicant for admission must not be less than twenty-one years of age, and must have served as an apprentice for not less than three years with a registered practitioner, and have passed a qualifying examination. Any who before the passing of the Act has entered into an apprenticeship for a shorter term than three years with a master qualified to be registered may serve the additional period necessary to make up that term. The provisions in the Bill thus meet the case of any apprentice or assistant to an architect qualified to be registered, and who passes the necessary examination. The examinations required for the purpose of conferring the right of registration are provided to be held by the Institute, the General Council having power to secure the maintenance of a standard sufficient to guarantee the possession of knowledge and skill requisite for efficient practice. Other clauses provide for the registration by branch registrars, the publication of the names and addresses of registered architects, the non-recovery of charges in any court by unregistered persons, the right of only registered persons to hold public appointments, and other details to which it is unnecessary to refer, as copies of the Bill are easily procurable from Messrs. Eyre and Spottiswoode, or through any bookseller. Those who read carefully the provisions will see that there is nothing to which any reasonable person can take exception. The measure is comprehensive, as it provides for the whole profession, irrespective of members of representative bodies; it takes in all who can show that they have been in practice for a certain number of years, and who are willing to prove they are competent to practise the profession. The scheme of registration has in principle been adopted in France at National Congresses of Architects at Nice, Toulouse, and Hyères, as pointed out last Tuesday by Mr. Roumieu Gough in a paper on "Professional Practice," reported in this issue. The resolutions passed at those congresses were to the effect that every person practising must be provided with a compulsory Government diploma, certifying a minimum knowledge, and that all existing architects at the time when the diploma shall come in force shall be completely respected.

The Bill we have been discussing exactly provides for these requirements and no more, while in the next generation or two the effects of the measure, if carried, will be to guarantee to the public that every architect in practice is a qualified and educated man. Not less important is it to observe that any measure to be successful must have the force and sanction of an Act of Parliament. To believe, as some do, that a voluntary submission to an examination instituted by one of the bodies representing the profession, rewarded only by the right of membership to that society, will secure in time the adhesion of the senior members of the profession who have won a



position, no less than the rank and file, is too credulous an assumption to entertain for a moment. Where would the legal and medical qualifications have been if those professions had relied upon the voluntary system to do that which they have obtained only by the Legislature? Much as the Institute may do by its preliminary, intermediate, and final examinations for those who seek admission to its ranks, the fact remains that the bulk of those in practice will never avail themselves of the qualifying test as long as they are not compelled to do so by law, or so long as the benefits to be derived from closing the doors against the incompetent is not secured to them. For these obvious reasons the Registration Bill calls for the support of every loyal member of the profession, and, much more, for that of the general public and their representatives in Parliament, for the general public is, after all, more interested in its success than even the members of the profession who are wisely and disinterestedly promoting it.

#### THE ÆSTHETICS OF ENGINEERING CONSTRUCTION.

**P**RECEDENT and routine have been as powerful in enforcing adherence to certain types on the engineer as they have in the case of the architect. The latter may be more conservative in declining to introduce new methods of construction—more obstinate in clinging to old forms than the engineer; but it cannot be denied that the engineering formula is more binding and inelastic; that the iron rule of precedent has dominated the mind of the engineer in his conceptions, and that what may be regarded as a triumph of engineering skill is often merely the working out of a problem on a more gigantic scale. The latest feat of engineering science and enterprise, the newly opened Forth Bridge, naturally occurs to the reader as an instance of a principle of bridge construction that has of late years superseded the older forms of the cast-iron and wrought iron rib, the bowstring, and the open truss types. Composed of three immense double cantilevers, resting on three piers, the design holds rank as being the boldest attempt to apply the cantilever principle of construction to the requirements of a large span. It is, however, as an example of engineering simply that we must mention it. Though the principle of construction is comparatively new, it has been used before at a bridge at Niagara, at another on the St. John's River, New Brunswick, over the Hudson at Poughkeepsie, and in several in India as those at Sukkur over the Indus, and over the Hooghly. The engineer selects a type in every case, and thenceforward his work is to apply it to the circumstances. Our girder and open-truss bridges are examples of the pertinacity with which the engineer has followed a precedent. The details are his own, and in their design he may have shown much ingenuity, mechanical skill, and ability; but the actual design so much depends on the type that the details may, from an artistic point of view, be disregarded. The girder-bridge type, as the simplest and most static form, has received a great deal of attention from engineers; but in how few cases has there been any improvement in design? It may be argued that in the plate and lattice forms of girders there are little opportunities for improving the design, as the same members are necessary, the same economic disposal of material must be maintained. Very true, if the straight, rigid girder form is accepted as the best; but do not art and science both point to a curved or differently-shaped upper member? A further and stronger reason why the straight girder has so long been a favourite with engineers is that it saves trouble: it is considered the simplest and least costly form of bridge con-

struction. The straight-sided girder is a marketable type, moreover, and this goes a long way in commercial undertakings.

These are a few of the obvious reasons why certain types have been adhered to, why the engineer has been so slow to avail himself of more artistic and graceful designs; but there is one more potent influence which has interfered with the development of an architectural phase of bridge-building—we allude to the training and habit of the engineer. He does not make design a subject of study: his bridges, and girders, his embankments and retaining walls, his engine-houses, all his structures are the simple results of formulæ or calculation; they are the net results, nothing being added like flesh or muscle, or contour, to improve the lines or the ensemble. Confined to workshop practice, or to the routine of the civil engineer's office, no latitude is allowed to the imagination; every design is a simple question of practical data: so much capacity, so much resistance to stress; it is a matter of meeting certain forces or requirements in the most economical manner. In the design of a retaining wall, the engineer first finds out what the conditions and amount of pressure is, and then he determines by equation or certain rules founded on experiment the thickness of wall of a certain material or weight necessary to afford a safe resistance. The section or profile of the wall is quite immaterial from an æsthetic point of view: that which is given to it is generally the result of calculation or some graphical rule—graceful it may be; but that quality is generally the result of applying a curve based on mathematical principles, and in no way one of intention. On precisely similar lines the design for an iron bridge is made. Having fixed the piers from an examination of the bed of river, and therefore the spans, the type of girder or truss is determined. Having decided upon the type, the stationary and moving loads are calculated, and the proportions and outlines of the truss are governed by formulæ. At this stage the design might with propriety be handed over to the architect, for him to suggest improved lines and proportions; but, as a fact, he is called in after the construction has been practically decided upon to design the details and to "ornament the construction." The engineer's design is submitted to the architect after it is completed, when its form and type of construction have been decided, simply for ornament. What can be expected? The lattice bars may have ornaments placed at the intersections, such as gilded rosettes, huge terminal castings, and armorial bearings or trusses are fixed at the ends of the straight girders, like those we see on the Blackfriars railway bridge; the piers are improved by the addition of capitals or carved ornaments, as at Charing Cross and Cannon-street bridges; but the design in its totality is left bare, and looks a colossal unclothed skeleton, always offending the eye, and destroying the landscape or river scenery beyond. What can be claimed for the straight-plate, lattice, or trellis girder? The open, Warren type, single or double? Nothing in the way of ornamentation can make them agreeable objects. The curved class of girders are more inviting. The parabolic curve or bowstring girder is a pleasing outline in itself, and offers facilities for decorative effect; so do the varieties of suspension systems. The suspension bridge type is at least elegant; but the engineer has not been able to satisfy his mind as to its rigidity and strength under rapidly-moving loads. The flexibility of the chain under an unequal load is the difficulty. Sometimes the chain is connected by bracing to the platform to prevent the deformation of the chain and to produce rigidity, by the use of vertical and diagonal members which act as struts and ties. Then there is the Ordish system, in which the horizontal

girder is carried by inclined chains, themselves stiffened by vertical suspending members. These straight diverging chains extend from the abutments or piers to several points along the bridge, as in the Albert Suspension Bridge at Chelsea, the lines of which are at least agreeable to the eye, while the curved pendent chain is always graceful. The suspension chain with stiffening girder, in which the platform or girder partly rests below and partly above the chain, and the suspension with braced chains are types of bridge which were suggested for the Forth Bridge. These designs showed two spans each of 1,700ft., with a central pier. Sir Thomas Bouch's preliminary scheme had also the suspension principle, the chains being stiffened by radiating struts from the piers springing from the platform level. In all of these types the curvature of the chain was a graceful line which connected the piers. In the design selected and carried out on the cantilever principle, straight lines forming the top member connect the centre and Queensferry piers, and this upper member and bottom tubular member, forming the main arches, are connected by a bracing of struts and lattice ties, the platform of viaduct being carried between them. Undoubted strength and rigidity are given by the arrangement; but the outline of the bridge, composed of short horizontal and oblique lines, is devoid of beauty. Seen in perspective, the obtuse angles between the cantilevers and the horizontal girders are intensified; added to which, the massive inclined columns supporting the piers have a clumsy appearance. There is a sense of disproportion between these colossal raking piers and cantilevers and the load actually carried. We are tempted to exclaim why so much *tour de force*, such a colossal exhibition of strength in these cantilevers, for the small internal viaduct and its load they are intended to carry? These are reflections that the architect is likely to indulge in when he sees the colossal structure for the first time. The artist has at least the right to inquire why the same results cannot be obtained by more graceful lines. Not till engineers learn the physiological *rationale* of the sense of beauty in which the muscles of the eye are intimately concerned, as was pointed out by Mr. Albert Goodman in a recent paper, will they discern that there are certain lines and curves which produce pleasing effects on the mind, and endeavour to introduce them into their structures.

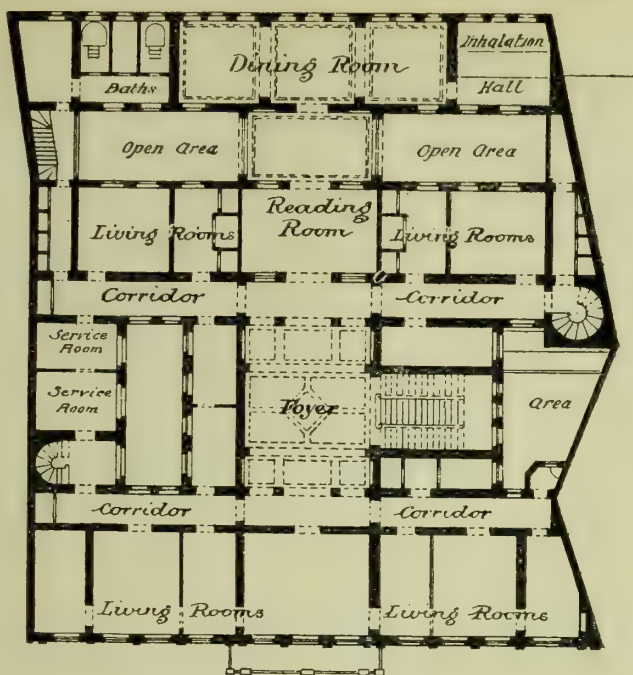
#### THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—VI.

By R. OWEN ALLSOP, Architect.

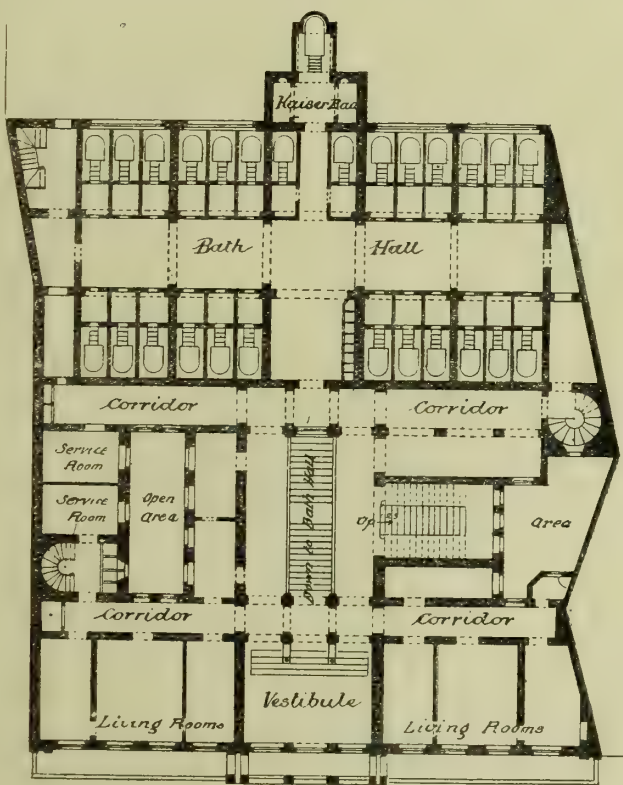
(Author of "The Turkish Bath: Its Design and Construction.")

**O**NE great principle to be observed in the planning and designing of true works of architecture would appear to be that, when any necessary, but at first sight unattractive and awkward, feature must be included in our scheme, we should not make endeavours to hide it away by every means in our power, but that we should strive, with equal ardour, to give it individuality and dignity. Now in many hydropathic establishments we shall find that the baths are treated in almost a shamefaced manner, being hidden away as much as possible, as if they were features whose presence, though a *sine quâ non*, is yet to be concealed and rendered, before all things, as unobtrusive as possible. We find them cramped and huddled away in dark basements, approached by undignified passages and staircases. This is quite the wrong principle to go upon. The baths are necessary; without them there would be no hydropathic establishment. All things are, in a measure, subordinate to the baths; they





First Floor Plan



Ground Plan



building, and in themselves comfortable, convenient, and attractive. Take, for example, the *Kaiserbad* at Aix-la-Chapelle—the well-known spa with thermal waters in Rhenish Prussia. Looking at the plans which are given herewith, and which have been prepared from illustrations kindly supplied me by M. Dremel, the proprietor, one cannot fail to note the importance attached to the bath-house of the establishment. It is true that this building differs somewhat from the ordinary hydropathic, as possessing a supply of hot mineral water, thus allowing a large number of baths of a special nature to be supplied. Nevertheless we may compare it with a hydropathic in our country, and point a moral that it would be well for the interests of all, that similar care and thought should be evidenced in planning the baths of our own buildings. From the plans, it will be seen that the bath-rooms and baths, and the great thermal bath-hall, are treated most architecturally, and that the cramping and meanness of the arrangements of many of our English hydropathics gives place to liberal planning and dignified architectural treatment, culminating in the central *Kaiserbad*—the elegant suite of bath-rooms reserved for the use of the German Emperor.

In the light of previous illustrations, the plans given will be intelligible to the reader. Continental habits and customs are, of course, evidenced in the arrangements. The building comprises ground, first, second, and third floors, and the bath-hall is in a basement, vaulted and top-lighted. The upper floors and portion of ground floor are devoted to the residential apartments, &c. On the first floor is placed a *vaporarium*, or inhalation hall. Each of the thermal baths has a small dressing-room attached, screened by a curtain from the bath-room. The baths are constructed of marble slabs, sunk, approached by steps, and fitted with douche and shower attachments.

(To be continued.)

#### THE ROYAL INSTITUTE OF PAINTERS IN WATER-COLOURS.

ALTHOUGH no very strong subjects or striking pictures are to be seen on the walls of the Institute in Piccadilly, there is a large number of small works of more than usual merit. Harry Hine, in his several views of Lincoln, with its splendid cathedral looming over the city, seen under various atmospheric conditions in early morning (100), under an evening sky (391), in sunlight and mist, displays his accustomed refinement of drawing and delicacy of colouring. No. 391 represents the cathedral towering above the mists and housetops, a majestic fane, the roseate glow of a sunset setting it off in its full splendour and proportions. No. 776 is a larger and more architecturally perfect view of the cathedral, showing its rich canopied screen or west front, and its cluster of three towers in perspective above a mass of houses. Sunlight and shadow break up the great edifice and its foreground of roofs. We also admire Mr. Hine's sketch, "The Seven Gables, Bucks" (256), "King's Lynn" (491), and the drawing of Ely (691). "A Rest on the Dunes" (9), by Hugh Carter, is full of poetic sentiment and delightful colour—a young girl and child on one of those sandhills which are found on the coast. A restful idea is conveyed by the artist; the rising ground and the silvery light of the sea are charmingly rendered. "A Fisherman's Home" (14), "A Grey Morning" (438), "An Irish Cabin" (448), and No. 591 are other subject pictures by the same hand—all sympathetic studies of nature and humble life. Full of atmosphere and colour is Edwin Bale's "Convent Terrace" (15). Keeley Halswelle's view "On the

must, therefore, be recognised as a feature of features, to be treated, as regards plan, design, and appearance, in as respectful a manner as their importance warrants. Instead of hiding them away they must be brought forward, and designed as something in which we take a just pride. Their approaches must be dignified, the position on the plan an honoured one, and their scope of a size calculated to produce a sense of respect. If these facts be borne in mind, over and above the reasons put forward in article No. IV., it may prevent the designer falling

into error and treating the baths as a wholly secondary matter, to accommodate themselves to the plan, and fill up any odd space that may become available.

There is more regard paid to this question of rendering the bath-house a feature on the Continent than in this country. In some of the institutions to be found there, of a class corresponding to our "hydropathic establishment," we see that the greatest attention has been given to the subject, and the baths are both carefully planned with regard to the residential portion of the



Mersey at Rochester" (17), his "St. Alban's" (21), and "Royal Windsor" (245) are welcome contributions. The melting mists, the liquid, mirror-like waters, irradiated by pearly hues, are, especially in the last picture, marvels of brilliancy and luminous colouring, mellow and subtle in their ever-varying gradation of tone, contrasting with the vigorous handling of E. M. Wimperis, whose "View at Aldborough" (34) hangs not far off. A nice bit of figure drawing and colour is Claude Hayes' "Corner of a Dutch Studio" (19). Frank Walton (23, 24) gives us charming studies of quiet waters and bays, broad in treatment, and on the values of light and shade. "October Woodlands," by C. W. Adderton (26), may be noted also for breadth of colouring. As a finished study of *genre*, Miss Eleanor G. Manly's "Lady Peggy's Birthday" (29) takes a place for its pretty and graceful childlike group of juveniles; the style of the room and the costumes of the children drawn with admirable skill. The wainscoted walls, sideboard, and ornaments make a rich background to the daintily-dressed group. R. Phené Spiers sends a cleverly-drawn sketch of the "Market-place of Rodez" (49). Of landscapes in this gallery we must accord praise to E. M. Wimperis's "Gathering Bait" (64), a strong and fresh work; to James Orrock's equally bold and vigorous "Common in Essex" (184). W. B. Wollen's "Capture of French Guns at Waterloo" (71) is animated, and some clever drawing is apparent; but the composition lacks repose, the colours are vivid and distracting in the extreme. Less painful are A. W. Weedon's "Dordrecht" (81), Arthur Severn's "Coniston Lake" (83), a riverscape by Stuart Lloyd (125), Anderson Hague (110), Thos. Pyne (111), J. Jackson Curnock (108), and W. H. Weatherhead (124). The latter's touching group of fisher-folk women and children by the seashore, anxiously looking for missing boats (126), is full of masterly tenderness. The anxious faces of the women, and their "weary and trembling" watchfulness by the saddened sea, are expressed with wonderful reality and pathetic power. Near it we notice one of John Fulleylove's scholarly architectural landscapes, "Greenwich Hospital" (127), and Edwin Haye's charmingly breezy seascape, "Dover Roads" (136). In the central gallery Keeley Halswelle's "Royal Windsor" (245), already referred to, is one of the chief pictures, though the walls are graced by many little studies. One of these is E. J. Gregory's classically-treated little study, "Esthetic Amenity" (302), a gracefully drawn figure of a girl seated in a tea-gown of blue and terracotta. Around her the same well-selected notes of harmonised colour and refined taste are evident. Frank Dadd is as harmonious as ever in his "Hawks Abroad" (303), representing a gentleman about to leave a country inn of the last century putting on his glove, while the waiter is holding his riding whip and cloak. He has just paid for a glass of wine; at a side table of the bar parlour sit two suspicious looking characters over their ale, one with a stall over one eye, both eagerly taking stock of the visitor's equipment. The workmanship, need we say, is excellent, and every little detail has been studied. Miss Bessie Spiers's little sketch of "Cavendish, Suffolk" (224), John Scott's "A Tiff," two carefully drawn figures of a lady and gentleman in 18th century costume, Henry J. Stock's "Sea-Born Venus" (420), and Charles Green's "Pickwick Club," to which we must add J. C. Dollman's clever picture "Hawks Dinna Pike out Hawks' Een" (427), a companion subject to "Your Humble Servant," comprise the chief works. It is needless to say that in Henry J. Stock's conception of Venus, in J. C. Dollman's drawing of mounted highwaymen, and in Charles Green's Pickwickian characters we have ample satis-

faction. Sir James D. Linton, the President, has a very scholarly study of a young lady "Waiting." Her intellectual and pretty face is enhanced by the large brown fur hat; she is shown resting her head on her arm, leaning against a deep crimson plush couch. We may be sure that Sir James's work is one of refined colour and exquisitely rendered textures, if there is little other motive. The fan held in one hand, and the loose sleeves make a very charming model. We cannot leave this gallery without remarking the very clever cattle subject of Miss Mildred F. Butler, "Coming Home," admirable in drawing and colour; also Hamilton Macallum's "Sheltered Nook" (466), Miss Maud Brewer's nice bit of colour, "Meadows" (437), E. M. Wimperis's particularly vigorous landscape, "The Hayfield," and Joseph Knight's "Marsh Land" (488), though there are many other pictures of merit, including W. Harding Smith's fine interior of the choir of St. Paul's, Antwerp.

In the East Gallery, Anderson Hague gives us some very strong, but rather impressionist, studies of landscape. "In the Heat of Day," "Baiting the Hook," and "January at the Marl," we have true effects, the "lights and shades" are cleverly distributed, and we cannot fail to perceive a mind realising the poetry of landscape. G. G. Kilburne's figure-picture "Mischief," a young lady in patterned-quilted satin petticoat, with overdress, behind a curtain, listening to the love converse of two guests who are seated near, is graceful in drawing and refined colour. Bernard Evans's "Byland Abbey," and "Rievaulx Abbey" (545 and 685), are solidly-painted pictures of delightful valleys. The first is a little too dark in the foliage of the vale, but the painter has striven, and successfully, to produce the delicious and umbrageous retreats of those great Yorkshire abbeys. W. Ayerst Ingram, in his "High Noon, Sidmouth" (558), E. M. Wimperis "The Winding River" (594), "Windy Day on Marsh" (662), John M. Bromley (661), Joseph Knight "In Sheltered Vale" (639), A. W. Weedon (699), and Edward Hargett atone for much poor work. The crowded figure subject of William W. Collins, "B.C. 85" (559); Edgar Bundy's cleverly-executed subject of historical *genre*, "His Last Descendant" (608)—a masterly work, in which true pathos and scholarly handling of textures and accessories are shown; F. M. Evans's admirable figure interior, "When Jack's at Home" (625); Thomas W. Couldery's "Sent out for Punishment" (707); C. MacIver Grierson's "Poacher" (718); and Walter Langley's "Knitting" are other pictures of the year which will make the exhibition remembered. The classically-conceived decorative compositions of Miss Gertrude Demain Hammond, including her "Harvest Festival," a frieze or panel treatment, which we have illustrated, are worthy of special mention for their graceful drawing and colour.

#### THE SOCIETY OF ARCHITECTS.

THE fortnightly meeting of the Society of Architects was held on Tuesday evening, Mr. William Allport, member of Council, in the chair.

#### PROFESSIONAL PRACTICE.

Mr. HUGH ROUMIEU GOUGH, F.R.I.B.A., Past-President, read a paper on this subject. In his preliminary remarks, the lecturer touched on the subject of the education and training of architects. He held very strongly that all desirous of entering the profession should have passed a compulsory examination. This could only be done by an Act of Parliament, and a movement in this direction was very general. In France, America, Canada, and Australia similar efforts were being made. The miserable petty jealousies so prevalent amongst our profession in England might retard the movement for a while,

but that sooner or later their efforts would be crowned with success he had not the slightest doubt. The machinery for carrying out the provisions of the Bill was already in hand. In the Architectural Association and its branches there was what could scarcely fail to become the recognised College of Architects, and the Royal Institute of British Architects must, he thought, be admitted by all to be the proper examining body. Mr. Gough quoted portions of the address by Mr. W. G. Storm, the President of the Ontario Association of Architects, to the annual convention held in the Canadian Institute in November last, in which emphasis was laid on the desirability of registration. Until compulsory education and examination were enacted, and some governing body was established with powers to enforce observance of rules of etiquette, Mr. Gough held that the dignity of the profession could not be upheld. Architects had at present no code of ethics to be observed amongst themselves, and towards their employers and the builders and others they were brought in contact with. They could, however, as a society, resolve among themselves to emulate the strict professional etiquette observed among doctors. The author recapitulated some of the rules which they are bound to observe. "Every kind of public laudation, whether it proceeds from the physician in question himself or from others, and continuous advertising in public papers, are to be reprobated. The public offering of medical assistance gratis, underbidding in concluding contracts for sick societies and the like, offering advantages of any kind to a third person in order to procure practice, are inadmissible. Any attempt of any kind on the part of a physician to intrude upon the practice of another is dishonourable, especially in the case of one who has acted as substitute or in consultation. A practitioner must by no means undertake the treatment of a case without the express consent of the previous physician. No physician is at liberty to make disparaging remarks to others about another physician." Were architects, he asked, in no need of some such code? Had no one ever heard one architect speak disparagingly of another, even to the other one's own client? Had they never heard of the case of one architect endeavouring to get, and taking, the work promised to another? Had they never heard of the case in which one architect had promulgated some work of public utility and another had stepped in and taken the execution of the work from him? Had they never heard of dishonest tricks in competitions? Let them look again at law cases. Had they never seen any of their professional brethren eager to be retained on one side or the other, and ready to give evidence to suit the requirements of the case? Were they not aware that by so doing the professional expert had made himself the laughing-stock of the Judges of the land, and that his evidence was set at naught? Was it not a fact that, if an architect's conduct was to be called in question, any amount of evidence would be got for or against him with perfect indifference, provided a guinea were given with the subpoena and the usual three to five guineas a day were allowed? What, then, should their code be? If the old and simple rules—"Do unto others as ye would they should do unto you"—and again, "By brotherly love, serve one another"—were observed between one architect and another, the profession would be a better, a higher, and a more enjoyable one. Mr. Gough next passed on to the relations between architect and employer, continuing:—The first duty of the architect is to ascertain his client's requirements, and the next to do his utmost to meet them. Unswerving loyalty to the client's interests, and perfect candour in dealing with him, are the only principles upon which a man with any self-respect should act. It will often happen that a client expects far more from a given outlay than it is possible for him to obtain. The only honest course to take in such a case is to tell him so candidly at the outset, instead of, as is often the case, leaving him to find it out when the tenders for the work come in. This is not honourable, and almost invariably leads to disputes as to payment. During the preparation of a design it often happens that a client will suggest various alterations and additions. Be careful to point out to him at the time that these will involve extra expense, if such be the case. When you are instructed to obtain tenders the law says that you

\* Extracts from a code of ethics adopted by the 17th Congress of German Physicians, 1888.



are justified, without the express sanction of the employer, in instructing a surveyor to take out quantities for the purpose. To do so without acquainting him of the fact and informing him of the cost may be legal; but it is a foolish thing to do, and often leads to disputes and unpleasantness. For the time being you are the custodian of your client's purse—remember also that he relies upon you to obtain for him a building which will answer his needs and purposes in as complete a manner as the funds which he places at your disposal will permit. It is not the slightest use erecting a building, however beautiful it may be, if it does not meet his requirements, and it is nothing less than a grievous crime, to provide one for him which is not perfect in its construction and in its sanitary arrangements, for, if these be defective, you may not only endanger his life, but the lives of others to come after him. It sometimes happens that clients are very unreasonable in their expectations, and sometimes we have unscrupulous ones to deal with: it therefore behoves us to have self-respect, and to uphold the dignity of our profession. So long as a building is in course of progress we should insist upon all being done under our direction, and, if any alterations are desired by the client, he should distinctly understand that the order must be given by the architect. It is of the utmost importance that in all our transactions we should be strict men of business. The unscrupulous client is often apparently a genial, warm-hearted companion, who poses as a friend, but rather shirks calling at your office, and prefers calling at your private house for a friendly chat, when he will casually mention some matter of business, and induce you to promise to prepare him some sketches. Shun all such men as you would the devil, is my advice. The unscrupulous client of the class referred to has a great objection to writing letters. The way to deal with him is to carefully note what takes place at interviews, and write to him to know whether you rightly understand his directions. Get him to confirm it in writing, and do nothing for him without written instructions. He knows the value of such so well that he will often give verbal directions to the builder or his foreman, and when the work is completed, repudiate payment, because no written authority has been given, as is required by the conditions of contract, and because, he says, he was so innocent as not to know that any extra cost would be involved. If the architect allows payment for it in his certificate, he will not hesitate to say that he has grossly neglected his duty, that he has failed to protect his interests, and will tell everyone he meets that his architect is not a man to be trusted and probably that he is in collusion with the builder. As you can never possibly know when you may meet with such a client as this, it is necessary to be thoroughly business-like with all you may have to deal with. The good client will respect you for this, the bad one will find he has neither a child nor a fool to deal with. I now come to the architect's relations towards the builder. In all our dealings we must be strictly just towards him, and insist upon his doing justice to our clients. We must bear in mind that we are not merely the agents of the employer, but, beyond this, and, in many cases, instead of this, we are arbitrators between the two. This distinction it is important to bear in mind, for in most contracts there are many matters left to the decision of the architect, and this places him in the position of an arbitrator. If he acts simply as an agent of the employer, and does not at the same time consider the fair and legitimate interests of the builder, any certificate or award he may make may be upset by a court of law. A few words seem necessary regarding the quantity surveyor. There should be a distinct contract between the employer, or the architect on his behalf, and the quantity surveyor, and it would be very much better that he should be paid direct by the employer, instead of, as usual, by the builder. In all large works the quantity surveyor should either work in the architect's office, or the architect should spend a considerable amount of time with him, because, however carefully drawings may be made and specifications written, in the process of taking off the quantities very many matters of detail occur to the surveyor, which should be noted at the time, and any necessary additions to the specification should then be made. The quantity surveyor is too often called upon to do his work in a short and insufficient time. However anxious

a client may be to get in tenders speedily, it should be pointed out to him that it is a great error to unduly hurry such an important work as the "taking off" of the quantities is. The architect should always have a copy of the dimensions, especially where the quantities have been prepared from  $\frac{1}{4}$ th scale drawings, in order that he may make his details correspond with the quantities, but it is only in works of a very small and plain character that  $\frac{1}{4}$ th scale drawings suffice. In the majority of cases the surveyor should be supplied with a general set of details drawn to a scale of  $\frac{1}{2}$ in. or  $\frac{3}{4}$ in. to the foot. In obtaining tenders, care should be taken in selecting fit and proper builders, and here the architect should be firm and refuse to allow any but those in whom he has reason to place confidence being allowed to tender. It is true that men with no reputation to lose will be likely to send in the lowest tenders, and clients often feel this to be so and endeavour to persuade the architect to add the names of men of no substance. This should be firmly resisted. If you refuse, it may be thought that you have some unfair interest in one nominated by yourself being chosen. To avoid this, my usual course is this: Say ten are to be invited to compete, I send my client the names of ten, leaving him to select five, and I ask him to do the same with me. If those he names are unknown to me I write for references to architects for whom they have worked, and select the best. Seeing that all sorts of unfair tricks are resorted to in making up tenders, I advise all architects to insist upon the priced bill of quantities being sent in with the tender, and that all tenders be rejected in which the prices against each item in the bill when added together do not tally with the amount of the tender, or in which the provisional amounts are not carried out, or are carried out at a less sum than stated, and all bills in which a discount is taken off at the end. The latter is a trick now often resorted to, but is a very dishonourable one. The object of having a priced bill deposited is that extras and omissions may be valued at the prices upon which the tender is based, but where a discount is taken off at the end of the bill, say 15 per cent., the builder serving you that trick will claim that extras are to be priced at the amounts named against each item in the body of the bill—that is to say, at 15 per cent. above his actual contract prices. The architect should have a written contract with his client. By contract I do not mean a document drawn up by a lawyer, ornamented with an expensive stamp, and accompanied with a pretty little "bill of costs." A contract consists of an offer and its acceptance, and may be verbal only, or in writing, and if the latter it may also be under "hand and seal." All that the architect need do is to write to his client informing him of the terms and conditions on which he consents to act, and on receipt of an acceptance, or orders to proceed, he has all that is required. The acceptance should be stamped within fourteen days of its date with a six-penny agreement stamp, otherwise it cannot be used in a Court of law without payment of a £10 penalty. Verbal instructions are sufficient to alter a verbal contract, but all variations to a written contract must be in writing, and, if under seal, all alterations must be likewise under seal. It is important to bear this in mind. When solicitors are employed to draw up building contracts they very often get the parties to put their hands and seals to them, which may be a source of considerable trouble to an architect, because any agreement made afterwards, to omit part of the work, or add to it, will require to be treated in the same manner. Again, solicitors frequently, in drawing up building contracts, insert conditions different to those contained in the specification and bill of quantities. These should always be made to agree before the contract is entered into. In common fairness to all parties the bills of quantities should be made the basis of the contract. The builder should not be expected to provide more labour or material than he has allowed for in his estimate, made upon the faith of the quantities supplied to him, and, on the other hand, should it be found that there is any excess in the quantities, the employer should not be called upon to pay for what he does not receive. This course is beset with many difficulties, necessitating, as it does, the very careful measurement of every part of the work at frequent intervals during progress, which can only be done at considerable expense; nor is this the only obstacle, for clients naturally wish to know

the precise cost before beginning to build, and therefore lump-sum contracts are invariably preferred. It is supposed by many architects that if the quantities are mentioned or referred to in the contract, that is sufficient to make them the basis of the contract. This is an utterly mistaken idea. If a builder agrees to carry out a certain work according to the drawings and specification, he is bound to do all that is shown on the one and described in the other—that is to say, he is bound by both documents. If the quantities also form part of the work he has undertaken to do, he is surely bound by all three documents, and not by the one to the exclusion of the others. I know of no decision on this point, but it is well known that where a thing is described in a specification and not shown upon the drawings (where these alone are referred to in the contract) the builder is bound to supply it; and further than this, it has been ruled that where a builder undertakes a contract for a house, that though such things as floors or doors are not shown on the drawings or described in the specification, it is reasonably and obviously to be inferred that they are required, and the builder is bound to supply them. I would advise no one to rely upon this to cover his carelessness or haste, but to prepare his drawings and specification with care and exactness, and thus avoid doing an injustice to the builder, causing annoyance to his client, and bringing discredit upon himself. It often happens that, on the completion of a work, a dispute arises as to the ownership of the drawings. By custom, and in all common fairness, these should remain the property of the architect, but here the law is against us. The Court of Appeal decided that the drawings for the Houses of Parliament should be given up by the architect. In my own practice I have for many years past inserted a clause in all my contracts to the effect that "the contract drawings and specification, and all copies thereof, are the property of the architect, and are to be returned to him and to be retained by him on completion of the works." Seeing that the contract is signed by the employer as well as the builder, this places the question beyond a doubt. If I specify that the contractor is to provide the sum of, say, £500, for marble work, or for stoves and chimney-pieces, I expect, and my client expects, him to provide that amount. It matters not whether you put prime cost or net; in fact, these terms are often misleading, for the practice has lately grown up amongst builders, whether you add these words or not, of expecting, or at all events claiming, a discount. Prime cost, or net, they will calmly tell you means the book price, and that they are entitled to the ordinary trade discount. If you specify that a builder is to provide 500 locks, you will certainly not be content to receive 20 or 25 per cent. less than that number, and if you specify that he is to provide 500 sovereigns, you have an equal right to see that he does supply that number and no less. In these days of keen competition, builders send in tenders at cost price, or even something less, trusting to make a profit somehow. We all know how they love to supply us with day-work accounts. In many cases we are powerless to check these—we know that the demand is utterly preposterous; but unless we have that *rara avis*, a thoroughly trustworthy clerk of works, we are at the mercy of the builder so far as day work accounts are concerned. These are cases which call for special conditions in the contract, if we would avoid contention. So far as provisional amounts are concerned, the surveyor should carry these out into the margin of the bill, and not leave the builder a chance of omitting them, or putting some less sum down than is specified. There should also be a clause in the contract to the effect that the employer and his architect reserve to themselves the right of deducting the whole or any portion of the provisional amounts as specified, and in the event of the contractor not being employed to supply the materials or perform the labour included in such amounts, the profit, if any, which he may have added to the same in his priced bill of quantities is also to be deducted. With regard to day work, a clause to the effect that none such will be allowed for unless from its nature it cannot be measured and valued in accordance with the prices in his bill of quantities, on which his tender is actually based, should always be inserted. It should also be distinctly stated that no day work will be allowed, or paid for, without the sanction for the same being given in writing by the architect, before the



same be commenced, and the account for the same be delivered within the week in which it is executed. I will now briefly consider the position of the clerk of works. There are no doubt many honourable men following this calling, but unless an architect has a practice sufficient to support a staff of such, upon whom he may rely, he is better without one. At the best, he occupies an anomalous position—he is the paid servant of the employer, and the agent of the architect. What he sanctions, therefore, the architect cannot condemn. I may be prejudiced against a class of men who ought to be an architect's most valued assistants, but I think this is not without reason. Some 25 years ago, I was employed in the Surveyor's Department of the War Office. I was ordered to report myself at an important station in the south to superintend as clerk of the works certain buildings involving an expenditure of £180 000. On arrival I was met by the contractor, who had a carriage and pair in waiting to convey me to the quarters he had secured for me. I told him at once that I intended to look out for lodgings for myself; however, he said he had ordered dinner, and we could discuss that afterwards. We drove to the best hotel in the place, and after dinner he told me he had secured rooms for me there, and that I had nothing to do but to send my bill to him every week, and so long as I contented myself with two or three bottles of champagne a week we should get on all right. I need say little more than that I reported this to headquarters, and was recalled to Pall Mall. Since then, in the course of my own practice, I have been frequently told by contractors that where a clerk of the works is employed they are bound to pay him. Many of those who have told me this are men in whom I have every confidence, and men who try to carry out my instructions faithfully; but they say the clerk of the works always expects to be paid by both sides, and, if he is not, will condemn good work and material in order to cause trouble. In my own practice, where possible, I ask my clients, instead of paying a clerk of the works, to allow me an extra fee for making frequent visits, and sending my assistants to do the same. I come now to the consideration of the payment of the architect. I have the greatest dislike and contempt for trade-unionism, and I have never been able to see any reason why the skilful and ignorant should be paid alike. Again, the payment by a percentage on the cost is utterly wrong in principle, leading our clients to suppose that it is to our interest to increase the cost of a building as much as possible. Better by far to name a fixed sum before the work be commenced, always on the understanding that if any material alterations are made an extra sum should be allowed, according to time occupied. The custom of a fixed charge, to be made by the good, bad, and indifferent alike, is wrong in principle, and quite as absurd as it would be to lay down a fixed charge of so much per foot superficial of canvas covered, whether it be by a Sir Frederic Leighton, an Alma-Tadema, or a village sign painter. In our own profession, the different degrees of talent are quite as wide apart. A certain Lord Chief Justice once said that the payment of architects by commission was a vicious system. He would have been wise had he stopped here; but he went on to say that they should be paid by time occupied, and admitted that three guineas a day was a recognised and fair charge. Now the absurdity of this is manifest. In a day or two a skilful and experienced architect will succeed in getting out the plan and main lines of the elevation of an important building, whereas a young and inexperienced man might puzzle his brains for a month or more, and then would probably not be able to produce anything nearly as good. It is absurd, therefore, to say that the experienced one should be paid, say, six or nine guineas, and the ignorant one ninety guineas or more. The payment by time, if all are to be paid alike, is a gross absurdity. The payment by commission on the cost has been pronounced to be a vicious system. It would be better, therefore, if we each one did as other artists do, and simply charged for each work we undertook such a sum as we know our reputation and ability warrant us in expecting and demanding. In this way the public would soon learn that if they wished to secure the services of the most eminent specialist, whether it be for a town hall, a church, or a warehouse, they would have to pay more than if they employed an untried man. The advantages of such to the profession at large would be enormous. The most eminent men, instead of taking

more work than they can possibly give personal attention to, and which they must perform hand over to able "assistants," would take less, but receive higher payment for it. Young, rising men would be eagerly sought for, and instead of becoming the drudges or ghosts of "eminent" ones, would soon secure commissions; in fact, work would be more generally distributed. I have lately been studying various schedules of charges of architects adopted in many different countries on the Continent and elsewhere; but they are all open to the fatal objection that they all suppose the experienced and inexperienced are to be paid alike. All these schedules are very elaborate, each giving half-a-dozen or more different classes of buildings and a graduated scale of fees for each, dependent upon the cost, varying as much as from 15 per cent. upon small work involving much labour, to as little as 2 per cent. upon large ones requiring little trouble. Most of these are so complicated that an architect would often be at a loss to know what he ought to charge, and it would be almost impossible to convince a client that your charge was a fair and proper one according to the schedule. Better by far adopt the simple rule of 5 per cent. with all its absurdities than enter upon an amended scale of this description.

Mr. G. Soudon Bridgman, of Torquay, proposed a vote of thanks to Mr. Gough for his interesting paper in an anecdotal speech. He

effect in the conditions of contract, looked ingenious, but was not safe, for the contract was made not between the architect and builder, but between the client and builder, and though the architect might for convenience sign it, he was not a party to it. An action, therefore, to recover possession of the drawings under such a clause would not lie.

Messrs. A. Howard and W. C. Fennings also supported the motion, and the Chairman, in putting it to the meeting, also spoke in strong terms against the strictures passed on clerks of works by Mr. Gough.

### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

#### SEMI-PLASTIC PROCESS OF BRICKMAKING.

WE now pass to the consideration of the plant used in the second great process of brickmaking—viz, the semi-plastic or semi-dry. As we have elsewhere remarked, this process has during recent years made very great progress, and this in the face of many difficulties and much prejudice. Although there is little doubt that greater skill and judgment are required in successfully introducing and working this as

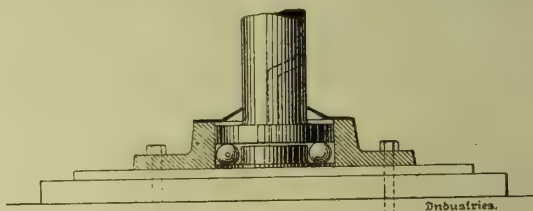


FIG. 11.

heartily endorsed the lecturer's views as to the importance of registration, especially in provincial towns. Mr. Bridgman mentioned that after he had given a lecture on architecture at Torquay, a person living in that town, who

compared with the plastic process, we venture to predict that as its advantages become better known, its application will be much extended. As the beds of ordinary plastic clay become worked out in this country, shales and other

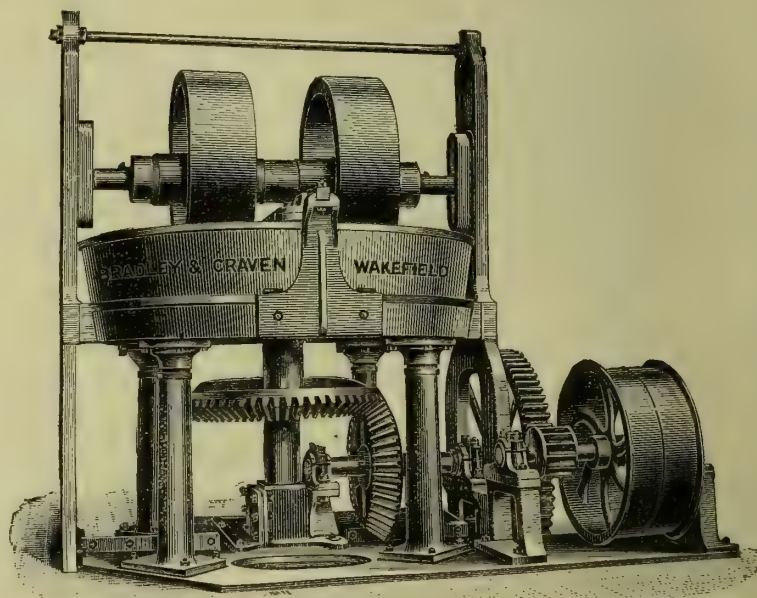


FIG. 12.

professed to practise as an architect, got up and asked what a young man should do before being articulated to arch-itecting?

Mr. S. C. JOHNS seconded the motion, which was supported by Mr. E. TIDMAN, who defended clerks of works as a body from the aspersions Mr. Gough had cast upon their integrity and reliability.

Mr. E. J. HAMILTON, of Brighton, having spoken, Mr. EDGAR FAIRMAN said Mr. Gough's plan for retaining the ownership of drawings in the architect's hands by putting a clause to that

materials will probably have to do duty, and these can be worked to great advantage by the semi-dry process. Although not nearly so largely employed in England as the plastic process, in the Colonies and abroad the semi-plastic process has of late made great headway. This is chiefly owing to its simplification, and to the great improvements introduced in the machines employed, whereby the skilled labour has been reduced to a minimum—a matter of much importance where the cost of labour is very high, as in the Colonies.



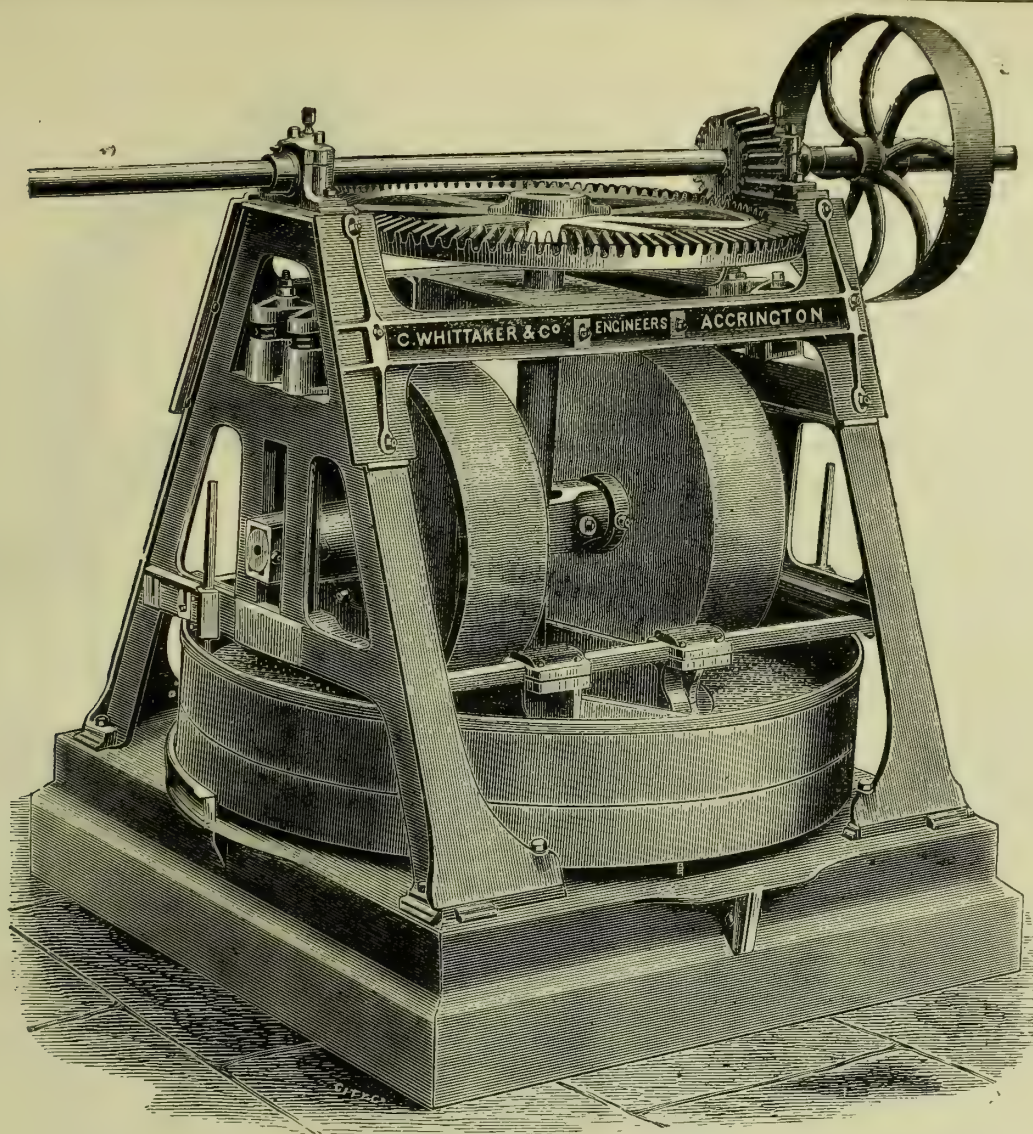


FIG. 13.

#### PLANT FOR PREPARING THE CLAY FOR THE SEMI-PLASTIC PROCESS.

Clays that will not weather or soak, or take much water, such as shale, fireclay, slate debris, and other refractory materials, are usually crushed dry to a fine powder directly from the heap, by means of perforated grinding-pans, or edge-runners. Where the plastic process is pursued the ground clay is then mixed with water in a mixing-pan and tempered before being made into bricks, the water being afterwards evaporated from the clay either by the atmosphere or in drying sheds. With the semi-dry or semi-plastic process the ground clay is usually raised by an elevator to the brick-moulding machine without any previous preparation; it is then subjected to great pressure, and this, together with any natural moisture found in the clay, is relied on to keep the various particles together when formed into a brick, and the bricks when made are immediately walled in the kiln for burning without any previous drying. In preparing hard or friable materials perforated grinding-mills are to be preferred, but for plastic or sticky clays horizontal crushing rollers are used. The whole process, from the crude clay to the finished bricks ready for the kiln, has been gradually simplified and improved so as to be now practically automatic, the clay being untouched by hand through the various operations.

#### PERFORATED PAN GRINDING-MILLS.

As already mentioned, for crushing hard clay, shale, ashes, and semi-dry materials, an edge-runner roller mill is used. This is usually arranged with two pans, the top one, which revolves, having a perforated path or bottom, so that when the clay is sufficiently crushed or pulverised it is allowed to fall through into a lower pan, which is stationary. Scrapers are attached to the under side of the revolving pan,

and sweep the material as it falls over apertures in the lower pan, through which it passes down shoots to be conveyed by elevators or otherwise where required. The perforated grates are made removable, so that grates of any desired mesh may be used according to the fineness of the grinding required. For very fine grinding, perforated zinc or iron sheets mounted on frames are used. In all machines having a vertical shaft on which there is great pressure, especial care should be taken in the construction of the vertical shaft bearing, or considerable loss and annoyance may arise. The usual plan is to form a steel toe on the end of the shaft, and let it run in a steel footstep bearing. This will work fairly well if kept constantly lubricated—a matter of some little difficulty, owing to the small area of the bearing, combined with the heavy pressure on it, which forces the grease out of it, and should the bearing ever be allowed to run dry, it will seize and rapidly cut itself out. To overcome this difficulty, the author has devised an improved form of bearing, which is applicable to all kinds of heavy vertical shafts which require a toe or footstep bearing. As will be seen from our sketch, Fig. 11, the system briefly described consists in extending the base of the shaft and causing it to revolve on balls or rollers confined in an oil-chamber. The balls have a circular traverse, are made smooth and hard, and their pathway is turned. The bearing is covered in with a cap, through which the oil can be supplied, or in certain cases a hole can be drilled up the shaft for the same purpose. By extending the base of the shaft the pressure is distributed, and by using the balls or friction rollers in an oil-bath, the friction is very largely reduced. I may add that I have had shafts carrying several tons running for a considerable period without giving any trouble. For supporting the centre shaft of ordinary mortar-mills, this plan is much to be

preferred to the ordinary cup footstep bearing, which is difficult to keep properly lubricated, and if allowed to run dry will give a great deal of trouble, and consume a considerable amount of power unnecessarily.

The upper pan should be fitted with a set of adjustable scrapers, to throw the material from the circumference and centre of the mill under the rollers, and also a set of solid false bottoms, which would enable the mill to be used for ordinary wet-grinding. The whole should be mounted on a strong cast-iron bed-plate, box section preferred. When these mills are driven from above, to avoid excessive vibration, it is important that the main standards and cross-piece be of massive construction. To lessen the vibration and wear and tear of working, the ends of the roller-axle may with advantage be mounted on strong spiral springs; these can be readily adjusted according to the nature and size of the material being ground. By fitting the roller-axle with loose collars, and altering their position, the path of the crushing rollers may be changed when necessary to equalise the wear of the bottoms.

All bearings should be carefully bored and fitted with covers, to exclude, as far as may be, dirt and grit. The rollers should be made of very hard metal. Sometimes the pans are made of wrought iron, the rims, &c., are thus readily renewable as worn.

We illustrate by Fig. 12 a perforated revolving clay-mill for grinding fireclay, marls or dry clay of any description. It is from the designs of Messrs. Bradley and Craven, of Wakefield. The pan is arranged to revolve, and is mounted on a centre vertical shaft working in a cup or footstep bearing. The centre of the pan on which the material is crushed is made solid, and the outer part is fitted with gratings of a suitable degree of fineness. As the material is crushed it is spread over and passes through the gratings,



the coarse being returned beneath the runners to be reground. The dust which passes the gratings is received in a fixed iron pan beneath, and is delivered to an elevator by means of a series of rotating arms. The crushing rollers are mounted on a stationary cross shaft, which is carried on two side cheeks with slotted guides, and so they are enabled to rise or fall as the charge of clay in the pan requires. Special arrangements are made so that the centre footstep bearing can be readily adjusted or repaired, and the mill altogether is of the most massive construction—a noticeable feature in all Messrs. Bradley and Craven's manufactures.

Our illustration, Fig. 13, represents a perforated pan grinding-mill, from the designs of Messrs. C. Whittaker and Co., of Accrington. It is especially adapted for preparing or grinding refractory material for the semi-plastic process, such as shale, brick, fireclay, slate debris, &c. As will be seen from the sketch, the side frames of the mill are strongly braced together and mounted on a box bed-plate. The body of the pan is divided and arranged with a separate top rim. The pan is fitted with twelve perforated segments, containing about 14,500 perforations for the discharge of the ground material when sufficiently reduced in size. A dead-plate for grinding, centre-piece and twelve under-scrappers fixed to twelve arms forming the pan body are also fitted. All these parts are so arranged that they can be readily removed or adjusted without disturbing the other parts. The crushing-rollers are bushed with long loose bearing-bushes, to keep them perpendicular in case of wear. The rollers work in suspension, and do not touch the pan. A compound footstep-bearing is fitted; this consists briefly of one steel disc fitted to the bottom of the shaft, and one at the bottom of the step, and between these is fitted a gun-metal disc with concave surfaces. Suitable oil chambers are provided, with screwjacks for lifting; and, taken altogether, this must be pronounced a very complete mill.

In lieu of crushing-rolls and edge-runners, in America various forms of disintegrators and pulverisers are used for preparing clay for the semi-dry process; but these hitherto have not found much acceptance in this country for this particular class of work. There is little doubt that, owing to the grinding action of refractory clays on the working parts of disintegrators, the wear and tear on them is considerably greater than is the case with crushing-rolls or edge-runners. At the same time, many of them will grind faster for a given power, and turn out a more even sample. If a disintegrator be used, one running at a moderate rate of speed is to be preferred to a high-speed mill. For crushing and grinding dry fireclay, &c., to a fine powder, revolving-ball mills have latterly been introduced with considerable success, the output, compared with the H.P. used, being large. High-speed disintegrators fitted with revolving arms or beaters, although occasionally used, are quite unsuitable, as the arms rapidly grind away and need constant renewal, and the gratings which regulate the fineness of the material are apt to become blocked.

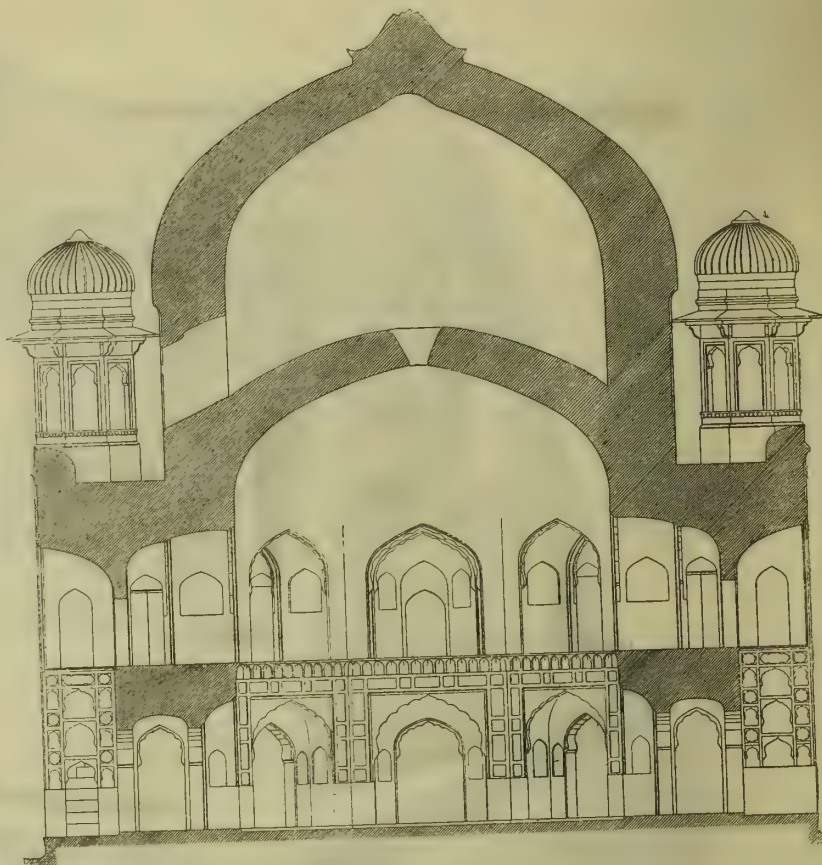
#### TOMBS AT LAHORE.

STUDENTS of Saracenic art cannot do better in seeking for differences of style, both in construction and decoration, than carefully compare the Moslem tombs scattered over the countries which from time to time submitted to the influence of the Mohammedan religion. In regions so vast the exigencies of various climates are sufficient to account for great differences in domestic and ecclesiastical architecture; but the tomb being solely monumental is less likely to be varied in consequence of any such conditions. The origin of the domed Mohammedan tomb is a vast subject for inquiry, at present in the stage of conjecture, and, although great variations of shape exist in the Moorish, Egyptian, Turkish, Persian, and Moghul styles, yet certain peculiarities common to all point at some arbitrary laws ruling in a measure the plan and decoration. The glories of white marble and elaborate mosaic decoration and praise of generations of poets have probably caused undue attention to be centred upon the great Taj Mahal at Agra, to the disadvantage of buildings somewhat similar in form in many cities of Northern India, but, of course, inferior in size and costliness of decoration. The number of these square and octagonal tombs covered with a central dome and bastion corners

reaches many thousands, and, although influenced by the various styles and periods of Moslem art in India, and varying in size and importance, yet they are practically the same building. We illustrate two of these tombs from the royal city of Lahore. The drawings are from actual measurement of the buildings by students of the Government School of Art of that city, and have been kindly placed at our disposal by Mr. J. Lockwood Kipling, C.I.E., the director of that institution. Anyone turning to the plan of the Taj Mahal, and again to that of Mahmoud Shah's tomb at Bijapur in Fergusson's "Indian Architecture," will see that, although differing in magnitude, yet certain peculiarities of plan are repeated, and probably the Nawab Amir Khan's tomb at Tatta, although a comparatively modern building, shows one of the earliest forms from which the others are derived. Speaking from memory, both of these Lahore tombs are either of brick or stone of inferior quality, faced with stucco, their ornamentation principally panelling. So far as the interior and four external faces are concerned is Persian, but the Indian Moghul characteristics are more shown in the treatment of the domes, which, in India, are generally relieved by an acanthus band round its springing, and often, as in these, fluted to the apex, where a bell-based finial gracefully reverses the bulbous curve. The so-called Tomb of the Dancing Girl was most probably built for one of the ladies of the court of Runjeet Sing, although the style appears more modern than his tomb, which was built a few years later. The great thickness of the walls shown in the plan is not unusual in buildings of this class, and although of rubble of very wide-jointed brick, the very high quality of the mortar will preserve them for ages to come. The date of the Mohammedan tomb is unknown; the style is more pure, and belongs to the 17th century. To afford an idea of the quantity of Moslem tombs in India, at one place alone, the cemetery on the Makli-hill at Tatta, over a million tombs were counted and registered by the district officer. These varied from an ordinary grave with a simple head-stone, to buildings of the size of these Lahore tombs, in many cases with a mosque attached, the whole extending a distance of nine miles, by a width of a thousand yards.

We are indebted for these particulars to Mr. C. Purdon Clarke, C.I.E., F.R.I.B.A., of the Indian Museum, South Kensington, and the drawings

MUHAMMADAN TOMB NEAR MIAN MIR  
LAHORE



illustrated have been sent over by the Principal of the Government School of Art at Lahore, Mr. N. J. L. Kipling, for publication in our pages. They are the work of native students, whose names are given on the reproductions.

#### CHIPS.

The town council of Burslem proceeded on Wednesday week to elect a borough surveyor, and 81 candidates presented themselves, the salary offered being £200 a year. Mr. F. Bettany, assistant in the office of the town surveyor of Tunstall, was elected. Mr. T. R. Roscoe, of Hammersmith, being placed second.

The corner-stone of the new Science and Art Schools at Wakefield will be laid to-morrow (Saturday), by Sir E. Green, M.P. The new buildings are being erected on the site of the previous schools in Bell-street, and, as far as possible, the old structure will be worked in with the new building. The front will be of hard Huddersfield stone, the sides and back will be coursed with delph parpoints with stone dressings. The style is Renaissance. The whole of the contracts have been taken by Wakefield tradesmen. The architect is Mr. William Watson, of Wakefield, who is personally supervising the work as it proceeds. The cost will be over £5,800.

The memorial stones of new schools in connection with the Wesleyan Chapel, Union-street, Willenhall, Staffs., were laid on Monday week. The cost will be £1,800, and they will be used as day and Sunday schools. The contractors are Messrs. Guest and Son, of Brierley Hill, and the architect Mr. B. Baker, of Willenhall.

The large Perpendicular church of Hemingborough, near Hornden, in the East Riding, is about to be restored in accordance with a report prepared by Mr. J. L. Pearson, R.A., and at an estimated cost of £3,500. The chancel has recently undergone restoration, and the proposed works include new roofs to nave and transepts, the lowering of the floor levels, and reseating.

Mr. Ewan Christian's plans for the new building to house the National Portrait Gallery have been completed and are under consideration by Mr. Plunket, the First Commissioner of Works. The site is, it will be remembered, in Charing Cross-road, at the back of the National Gallery.

The committee of the Leeds General Infirmary, who recently selected, in competition, the plans of Mr. George Corson, of Leeds, for the extension of the building, have now approved Mr. Corson's modified design.



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ILLUSTRATIONS.

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BUILDINGS, ST. MARTIN'S-LE-GRAND—ALTERATIONS AND	
ADDITIONS TO "LATCHMERE," SURREY.—MOHAMMEDAN	
TOMBS NEAR LAHORE.	

OUR LITHOGRAPHIC ILLUSTRATIONS.

STATUE OF ST. GEORGE, IN OR SAN MICHELE, FLORENCE.	
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This figure was judged such a great masterpiece that Francesco Bocchi wrote a whole book about it. Donatello first executed a statue of St. Mark in 1411 for this same church at the commission of the Guild of Linen Weavers, and Michel Angelo said of it, "One could not fail to believe the Gospel preached by such an honest-looking man." Then the Guild of Butchers bade this sculptor fill another niche on the south side of the façade with a figure of St. Peter, and the Armour Smiths ordered St. George, now illustrated. So earnest and manly is the elder Apostle, and so bright and brave the young, youthful warrior saint, that Donatello's fame was made. Like Prometheus, Donatello was inspired by the life of his own work, and whilst engaged on it would often stand back, exclaiming, "Speak, speak!" His works bear the germ of that energetic, strong school which Michel Angelo brought to perfection. The breadth and vigour of his St. George is marked to a degree, and its repose well adapts the marble figure to the architectural purpose for which it was intended. The date of the statue is A.D. 1416.

ENGLISH CHURCH FOR GRASSE, ALPES-MARITIMES, FRANCE.	
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The small church of which we give the south-west view is shortly to be erected at Grasse, about eight miles from Cannes, on a site bordering the National-road, a short distance from the town, and adjoining the charming property belonging to Mr. John L. Bowes, late of London and Liverpool. It has been mainly through the liberality, and entirely through the exertions, of this gentleman that the scheme of erecting an English church in this health resort and garden of sweet-smelling flowers has been carried out. The church is to be built of pitch-pine framework, filled in and backed with brickwork throughout. Externally the red bricks will be displayed up to the stringcourse of the windows, all spaces above that and between the framework being finished with hydraulic cement. The exposed woodwork will be stained dark brown and well oiled. The roof will be covered with red English tiles, which will be shipped along with the entire woodwork from this country. Internally the furniture and fittings will be of a simple and tasteful character, in keeping with style of architecture adopted, and the walls will be plastered and ultimately decorated. The roof will be open timberwork, with a good deal of turning introduced in the principals. The dedication of the church has not yet been decided. The architect is Mr. G. A. Audsley, F.R.I.B.A., of London, and he will probably be assisted in

the local superintendence of the work by Mr. E. Hewetson, F.R.I.B.A., of Cannes.

STABLING, LEE'S MEWS, GROSVENOR-SQUARE.

These stables have just been built for Mr. Samuel Lewis, of Grosvenor-square, under the direction and superintendence of Messrs. J. T. Wimperis and Arber, of No. 25, Sackville-street, Piccadilly. The site being small for the large amount of accommodation required, it was determined to make the basement into the coach-house; by this means the whole of the ground-floor was available for the horses. The large stable has nine standings, stalls, and boxes, and a separate two-stall stable is provided for the horses used in the evening, or it is convertible into a box for a sick horse. The basement is reached by a hydraulic lift, the lift table forming, when up, a single coach-house, also for use in the evening; the whole being lighted by gas and the electric light, and warmed by hot water. The first floor contains the coachman's residence and offices, besides the fodder and large harness room. The top floor contains the grooms' and helpers' mess rooms, offices, dormitory, and bedrooms. By these means, on a site of 75ft. by 20ft., accommodation is afforded for eleven horses, twenty carriages, the coachman's residence, and about a dozen grooms and helpers, besides the fodder, harness, cleaning places, and the other small offices. The contractors for the works were Messrs. A. Bush and Sons, the hydraulic lift by Messrs. Waygood, and the terracotta by Messrs. Doulton and Co., all of whom have carried out the work in a very excellent manner.

NEW GENERAL POST-OFFICE BUILDINGS, ST. MARTIN'S-LE-GRAND.

We fully described this important addition to the General Post-office, of which Mr. Henry Tanner, of H.M. Office of Works, is the architect, on p. 306 *ante*, when giving elevations and plans of the building.

ALTERATIONS AND ADDITIONS TO "LATCHMERE HOUSE," SURREY.

These alterations, which have recently been carried out for Mr. Joshua Field, constituted almost the entire remodelling of the house, the greater part of the old building having been, to some extent, altered or improved, and large additions having been made. The new work is so arranged, however, as to fit on to the old in such a manner as to harmonise with it and render the actual junction between the two as little apparent as possible. The exterior is of Suffolk facing bricks, with stone dressings, and the interior joinery is of oak wainscoat throughout, part stained and part fumigated and oiled. The work was carried out at a cost of about £5,000 by separate contracts for the various trades, under the superintendence of Messrs. Wylson and Long, architects, of 15, King William-street, Strand.

On Saturday the Master of the Skinners' Company laid the foundation-stone of the public library building, Skinner-street, Clerkenwell. The site is at the junction of Skinner and Whiskin-streets, and the building will have a frontage of 70ft. to each thoroughfare. The library is to be built of red brick with stone facings, and will be three stories high, with room for 30,000 volumes, and reading-rooms. The builders are Messrs. McCormick and Sons, and the architects Messrs. Karslake and Mortimer.

The County Council of Devonshire considered at their last meeting the appointment of additional county surveyors. A committee reported that they had arranged with the present surveyors for a redistribution of their duties and the rearrangement of their salaries. Mr. E. H. Harbottle had undertaken the superintendence of the bridges and main roads in the western division, and Mr. Little in the eastern division. As to the salaries of the present surveyors, the committee were of opinion that Mr. Harbottle's salary should be £355 a year, and Mr. Little's £325; these sums to include their work as surveyors of the county buildings (except police-stations) at present under their respective superintendence. The committee had taken steps to obtain application for the offices of surveyors of bridges and roads for the northern and southern divisions, salaries for these divisions being fixed at £250 each. Advertisements were accordingly issued, and applications had been received from 40 persons. The report was adopted, and Mr. F. C. Masterton, of Devonport, was elected for the northern division, and Mr. C. G. S. Acock, of Ashburton, for the southern division.

COMPETITIONS.

DORSET COUNTY ASYLUM.—This competition was advertised last November by the Dorset County Council, and brought together 16 sets of designs. The present asylum at Charminster, built about 20 years ago for 320 patients, is to be enlarged to give accommodation for 720 patients, including those now lodged in the old asylum at Forston. The new buildings comprise, in addition to rooms for 400 patients, a new administrative department, a detached chapel in the grounds, a large recreation hall, new laundry buildings, and various alterations to the old asylum. The committee appointed Mr. C. H. Howell, consulting architect of the Lunacy Commissioners, as assessor, who has awarded the first premium of £40 to Mr. George T. Hine, of Nottingham (the architect of the new asylum at Claybury, which is being built for the County of London), and the second premium of £20 to Messrs. Giles and Gough, of London. The committee have confirmed the award of Mr. Howell, and appointed Mr. Hine as the architect to carry out the work. The total cost is estimated at £48,000.

HARROGATE.—In connection with the Montpelier Baths competition, the Corporation of Harrogate have received 26 sets of designs, and they have appointed Mr. George Corson, F.R.I.B.A., Cobridge-street, Leeds, as assessor. It will be remembered that the estimated outlay is £50,000, and four premiums, amounting in all to £375, are offered.

PROPOSED MINISTER'S HOUSE, BOROUGH SYNAGOGUE, S.E.—A considerable number of drawings were received in this competition. The committee called in a professional assessor to assist them in coming to a decision. Acting on his advice, the design submitted by Mr. Sidney G. Goss, A.R.I.B.A., of 48, Finsbury-circus, E.C., was adopted, and he has consequently been instructed to prepare the necessary working drawings, and obtain tenders for the work as soon as possible.

SOUTHPORT.—The corporation recently invited local architects to submit competitive plans for a block of shops and business premises, to be erected in Eastbank-street; and at the last meeting of that body it was decided to award the first premium to Mr. C. Sydney Ingham, of Manchester and Southport, and the second to Mr. Goodwin S. Packer, of Southport.

CHIPS.

The Local Government Board have refused to accede to the application of the borough of Bolton for an extension of boundaries.

The new works of water-supply at Stone, Staffs, were inaugurated by the Earl of Harrowby, on Tuesday.

Mr. John D. Sedding has reported to the rector and churchwardens of St. Mary's, Stamford, on the condition of the tower of the church. He states that there are large cracks in all the walls, partly due to lightning, but chiefly to the pealing of the bells. He recommends that the bells should not be pealed, and that the cracks be carefully watched to see if they extend.

The partnership heretofore subsisting between Pincher and Long, of West Bromwich, architects and surveyors, has been dissolved.

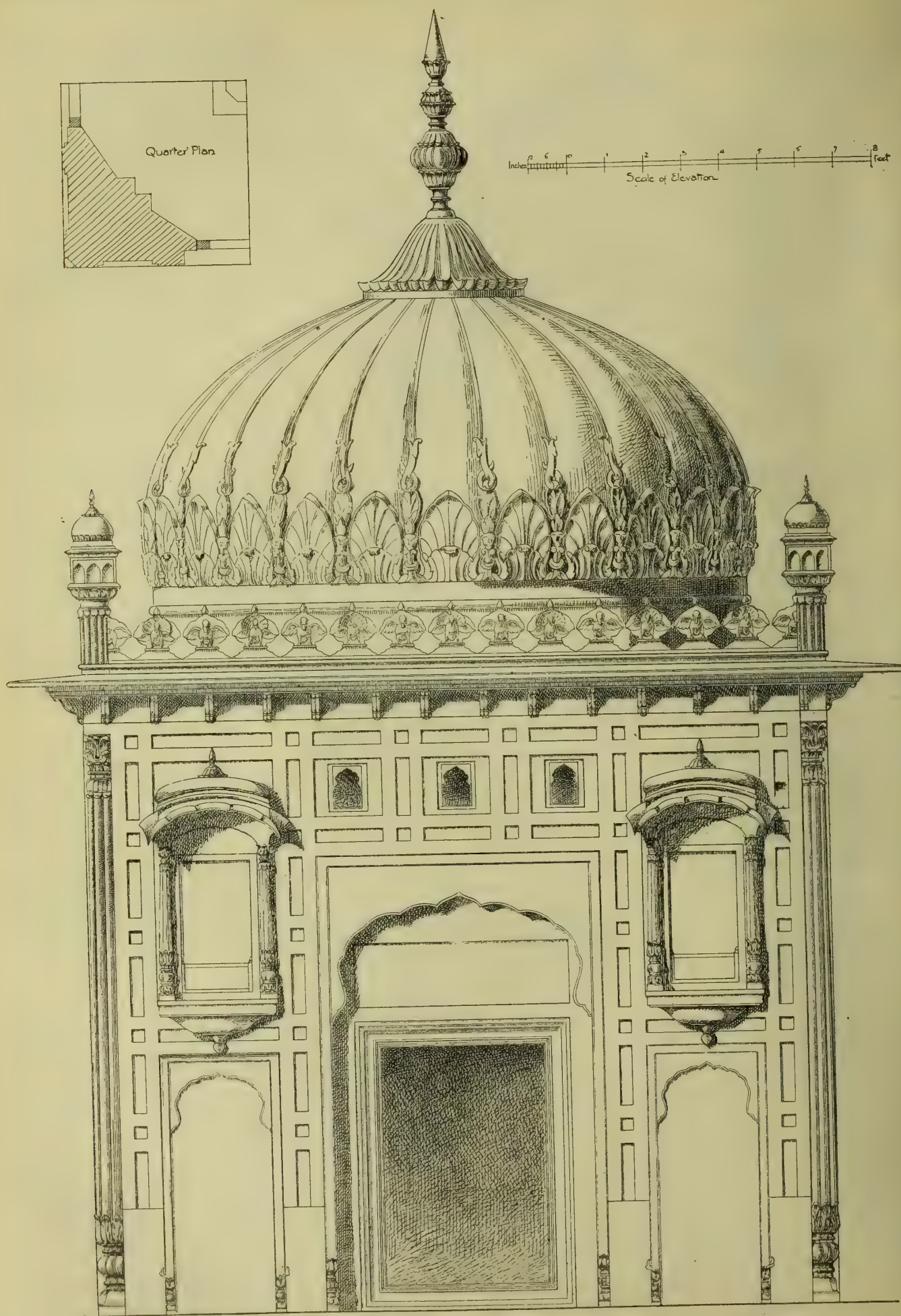
At a special meeting of the township commissioners of Bilston it has been decided to adopt the plans of Messrs. Horton, architects, Wednesbury, for covering-in the market at an estimated cost of £3,500, and to seek the sanction of the Local Government Board to borrow £3,500 to defray the cost of the work.

The Local Government Board has sanctioned the amalgamation of Lillington and Milverton with Leamington. The borough will thus gain 4,000 inhabitants, and be increased in area from 1,570 to 2,900 acres.

The vestry of the City church of St. Swithin's, London Stone, recently proposed to repair the church in accordance with plans prepared by Mr. G. Elkington, their surveyor, at a cost of £750. At a vestry meeting held last week it was stated that Mr. Ewan Christian had inspected the fabric as surveyor to the Charity Commissioners, and estimated the cost of necessary repairs at from £410 to £430.

The committee for providing a new church for Hamstead, near Birmingham, have accepted a site at the junction of the Hamstead and the New Walsall-roads. The designs for the church, by Mr. Wm. Davis, of Birmingham, show an unpretentious structure seating 450 persons.





TOMB OF A DANCING GIRL A.D. 1840  
LAHORE

SITA RAM. 71088.







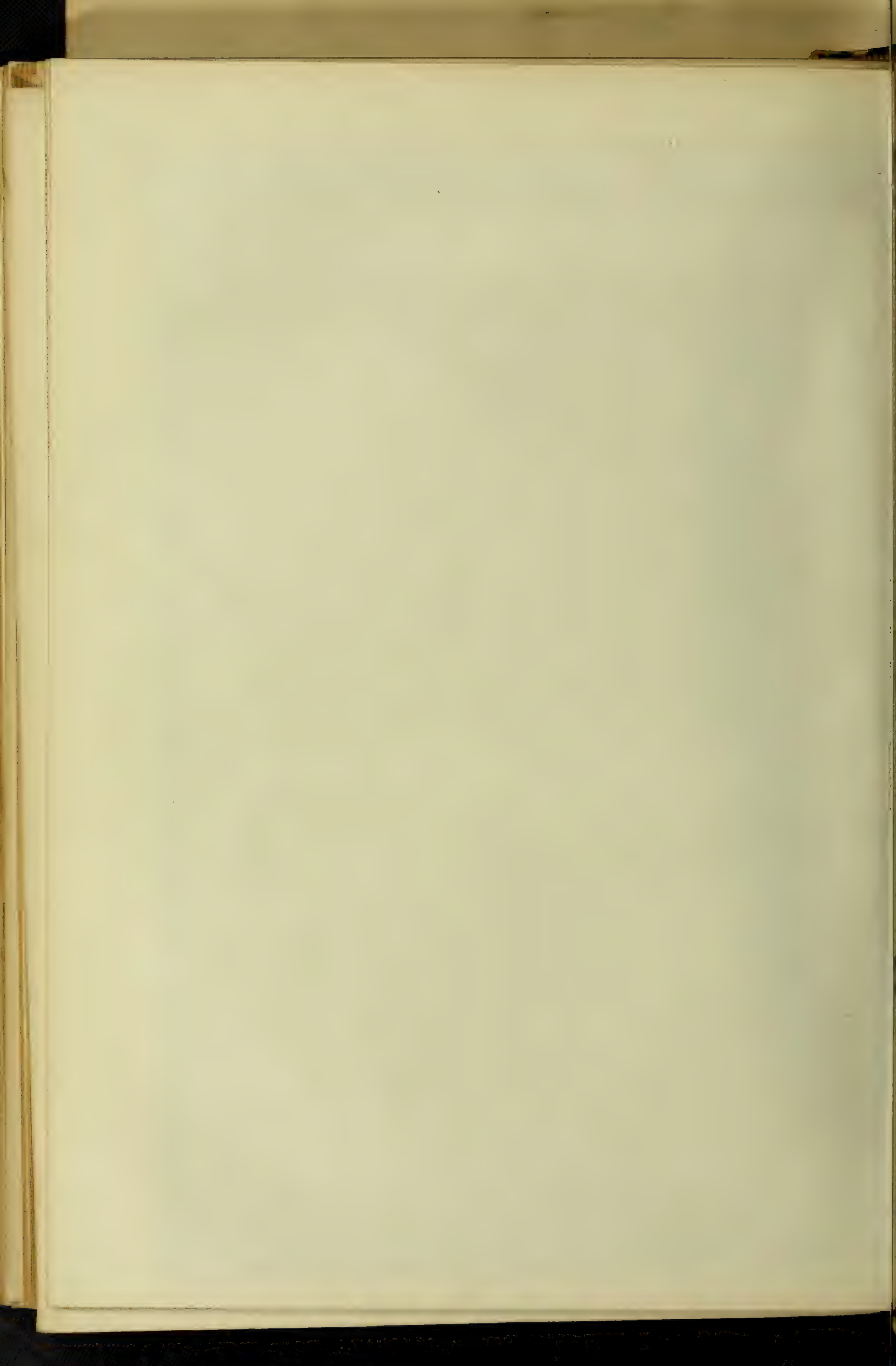
THE BUILDING NEWS, MAR. 14, 1890.





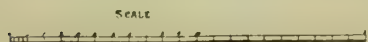
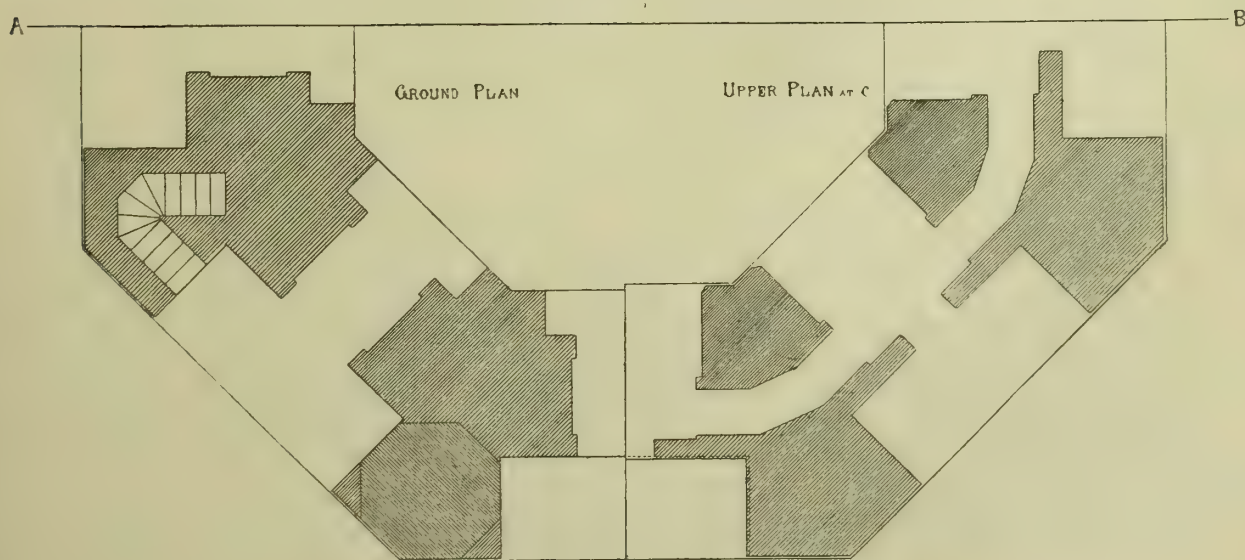
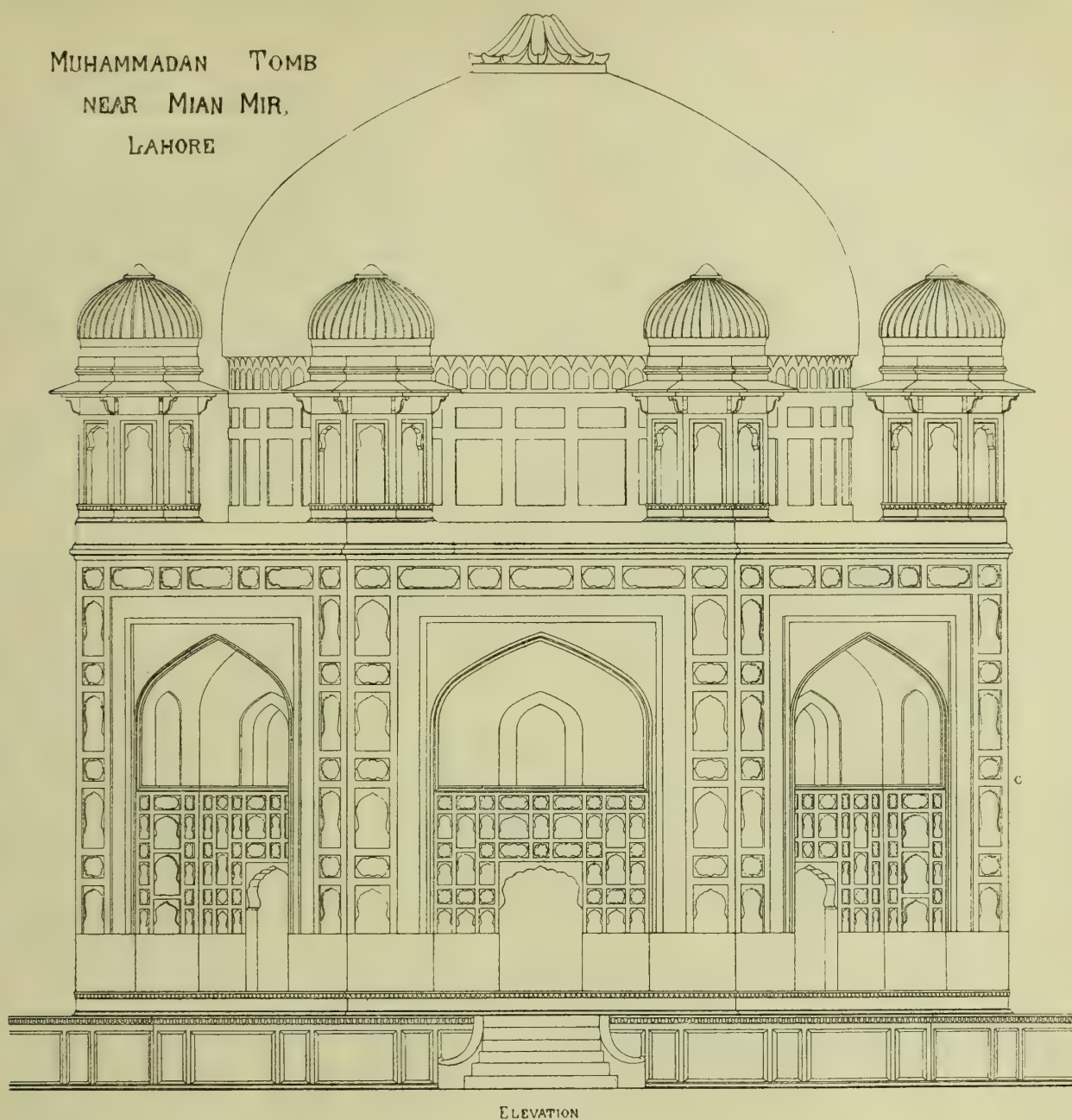








MUHAMMADAN TOMB  
NEAR MIAN MIR,  
LAHORE



Measured and drawn by Gurdit Singh  
Student Mayo School of Art Lahore 27.88



## WAYSIDE NOTES.

PROFESSOR AITCHISON said little new or worth much comment at the Academy this year till in his concluding lecture, when he informed the students that there are not ten architects in London earning a decent living by their profession. The Professor says he does not include surveyors and those engaged in business of a practical nature, but only architects who are designers of pure works of architecture. I don't know, of course, what pure Aitchisonian architecture is; but anyhow, this seems rather an invidious declaration, and one which, made with whatever goodwill to all, is calculated to leave an erroneous impression on the minds of the young students who were present at the lecture. For, as expressed, it would seem to infer that there was something derogatory about the business of the workaday architect and surveyor, whereas we know that these latter gentlemen, who compose the rank and file of the architectural profession, are of infinitely more service to humanity than the few who affect to pick and choose their commissions.

That the architectural profession is not a money-making one is an old cry. Those, however, who by their energy and talents are deserving of some measure of success can always get a "decent" living out of architecture, and, in spite of our good professor's *not ten*—which I will call *nine*—it remains a fact that some odd thousands of us manage to keep body and soul together, and make the two ends meet comfortably, by the exercise of such humble talents as kindly Nature has bestowed upon us. But when young architects commence to practise with the expectation of designing nothing but mansions, palaces, and churches, and turn up their noses at the duties of a practical architectural surveyor, they generally get their reward in chronic impecuniosity. No one who has ever been *above his work* has risen to a position of honour among architects any more than among other men. I warrant that none of the gentlemen who may be included among the nine earning their livelihood by pure architectural work have gained their positions by a process of dainty selection in their younger days. The truly high-class architect becomes so only by virtue of laborious struggles in the early portion of his career, and by engaging himself on any honourable work, be it ever so humble. It is the *snob* who affects to do without the odd jobs that fill the time of ninety-nine hundredths of our architects. And it is a fact that in many cases architects professing to be nothing but very high-art men, are all the time quietly engaged in earning their bread and cheese by occupying themselves with the despised surveying duties, either in the capacity of district surveyors, or in the execution of private commissions.

Wealth "beyond the dreams of avarice" is not given to any professional man—understanding the term "professional" in its proper sense. The riches of the brewer, merchant, and banker are to be gained by none whose income is dependent, primarily, on the exercise of their own brain-power; for even the most mercenary professional man must more or less vigorously put his own shoulder to the wheel. And although in every trade and calling the head and chief must do something to keep the business in a prosperous condition, this something is infinitely less in the case of the business man pure and simple than in the case of those following a profession. In some businesses all one has to do, having made a connection, is to sit at the receipt of custom. In others the thought and care of the principal are necessary, even if an army of assistants actually do the work. But, although it is thus evident that great riches are not for the architect, it remains patent to all that comfortable incomes are earned by those having the requisite energy, perseverance, ability, and integrity, and if architecture cannot be classed as a money-making profession, those professing it can, if they have their heads screwed on the right way, and are above the snobbishness of throwing away work not exactly to their taste, make a very "decent" living, and maintain, at the same time, their reputation as high-class architects.

Your correspondent Mr. Parminter, of Lille, occasionally sends you some exceedingly interesting communications, not the least of which is his

letter which you published last week on the French view of the Registration question. The main argument of the English Registrationist is that *bad planning*, as well as bad construction, and unscientific arrangement, are detrimental to the interests of the British public. Now, Mr. Parminter, writing either his own conviction, or placing himself in the position of an ordinary French architect, says: "A badly planned building or badly studied façade does not necessarily occasion anyone's death." The statement is perfectly correct; but the *harmfulness* of bad planning is a very real thing, and it would be easy to prove that a bungling and unscientific disposition of the various apartments of a house is at all times detrimental to the health of its inmates. As your correspondent puts the views of the French architects, they would appear to think too much of the art side of the question; whereas we, in England, know that this should have little or nothing to do with the case. The Registration question should be in France, as in England, an eminently practical one, dealing solely with evils that arise through the incompetence of some who adopt the title of architect, and whose manners and customs do not redound to the honour of the true architectural profession. Although the ultimate effect of making close the profession of an architect will be to raise the standard of design, I think that we have by this time said enough to defeat the ends of those persons who have been pleased to try and bring the Registration question into ridicule by proclaiming aloud that an artist cannot be tested by examination. Whether he can or cannot matters little, for the aim of the Registrationist is unaffected. The latter seeks to remove the evils arising from incompetency in practical matters. The weal of the public, and the honour of his profession, are his watchwords.

Mr. Joseph Lavender is evidently one of my friendly A.R.I.B.A.'s of whom I have great hopes. His letter, which you printed last week, is of a kind for which I have often looked. It is practically the identical appeal which I have frequently made to Associates of the Institute, only it comes from one of their number. I do hope that others will respond, and that an influential petition will be forthcoming. On this particular point I have already, at various times, said so much that it would be wearisome to reiterate. The Associates are now appealed to from amongst their number, and it remains for those in earnest to prove their earnestness by assisting in preparing the way for a successful promulgation of the proposed petition.

Admirers of Mr. Herbert Railton's beautiful drawings may have noticed during the past month or two a slight falling off in quantity of works produced by this prolific artist. Mr. Railton, unfortunately, has been suffering much from an aggravated form of writers' camp, which has prevented him, for the time, from maintaining the marvellous rate of speed with which he produces the black-and-white drawings of old architecture that we all so much admire. I am very glad to say, however, that our incomparable artist is now on a fair way to complete recovery from an affection of the arm that must have been most distressing to one engaged on the finest kind of pen draughtsmanship.

Though Mr. Railton's indisposition has led in some instances to his adoption of a remarkably bold style of drawing which, for my own part, I greatly admire, yet, judging from recently-published work, he has been able to maintain his old, grand combination of broadness and boldness with delicacy and refinement. In the current issue of *Scribner's Magazine* is a most pleasant essay, by Mr. Benjamin E. Martin, entitled "In the Footprints of Charles Lamb." Mr. Railton has illustrated it with five charming vignettes, which include the "Entrance to Christ's Hospital"—that charming view of Old London that we obtain from bustling Newgate-street—and that peep of Staple's Inn from Southampton-buildings, which I have long made up my mind is on a level, from a pictorial point of view, with anything in London. The drawing in *Scribner's* gives just the effect one likes to see; but it is rather small. In an edition of the "Pickwick Papers," published by Messrs. Macmillan in 1886, and illustrated by Mr. Railton, is this view of Staple's Inn nearer at hand, which shows what a glorious bit of the picturesque it

forms from all standpoints. This drawing, however, does not show the gates, which, when between the spectator and the hall, help the whole composition to an extraordinary degree. GOTH

## BOOKS RECEIVED.

*Practical Plane and Solid Geometry, including Graphic Arithmetic*, by Professor HENRY J. SPOONER, F.G.S., 3rd edition (Cassell and Company).—This is one of the Polytechnic series of Science Textbooks, and is intended to meet the requirements of the new Syllabus of the Science and Art Department. The author, Professor Henry J. Spooner, is director of the Polytechnic School of Civil and Mechanical Engineering. The geometry is sufficient for the requirements of the drawing office, and the diagrams and solutions clear and explicit. The problems on proportion, the construction of triangles, and areas of plane figures are practically treated. The explanation of scales, the section on graphic arithmetic, and the chapters of simple projection and solids, are very valuable parts of the treatise, and the author has succeeded in rendering these important functions of practical geometry interesting, by bringing before the student methods of treatment that are found to entertain as well as to instruct.

## CHIPS.

The late Mr. Michael Beveridge, who was Provost of Kirkcaldy, has bequeathed to its inhabitants the sum of £50,000 for the purchase of a public park and library.

The new swimming-bath at the Pump-room at Leamington was opened last week by the Mayor. The building measures 118ft. by 60ft., and the swimming-tank is 100ft. by 40ft. Mr. de Normandie, the borough engineer, was architect for the building, and was engineer for the filter, and for all the heating and ventilating appliances. Messrs. Heatherley Bros., of Coventry, were the contractors, and Mr. G. Atkins, of Leamington, was clerk of works.

The estate of Wilton Lodge, extending to 107 acres, has been purchased privately by the Hawick Town Council for £14,000. It is intended to transform a portion of it into a public park for the town, and to feu the remainder for the erection of factories, dwelling-houses, &c.

The parish church of Almondsbury, near Bristol, has been completely fitted with handsome carved oak seating, designed by, and carried out under the superintendence of, Mr. C. E. Ponting, F.S.A., of Marlborough. The work was intrusted to Messrs. Jones and Willis, of Birmingham and London.

The Town Council of Cardiff have accepted the tender of Mr. J. Allen, at £8,500, for taking down and reconstructing the market in St. Mary-street, in accordance with plans prepared by the borough engineer, Mr. W. Harpur.

Mr. Charles Edward, a well-known architect of Dundee, died at his residence at Broughty Ferry on Saturday evening.

The workhouse in King's-road, St. Pancras, is about to be reconstructed from plans by Messrs. A. and C. Harston. The St. Pancras Board of Guardians have accepted, for carrying out the work, the tender of Messrs. Kirk and Randall, of Woolwich, at £74,827.

The trustees of the poor for Maidstone have elected Mr. J. S. Anscomb, of that town, their surveyor, in succession to Mr. R. Troutbeck, resigned.

Messrs. C. Isler and Co. have recently completed Artesian bored tube wells on their principle at Messrs. Ellis, Warde, and Co., brewers, Ormskirk, obtaining a copious supply from the new red sandstone formation. Similar works have been carried out at Messrs. Barker's brewery, Huyton, near Liverpool; Messrs. C. Vaux and Son, Sunderland; Mr. E. Wells, Wallingford, where an abundant supply is obtained from the lower greensand formation; the Wantage Brewery Company (Limited), Wantage; Messrs. H. W. Carter and Co., Bristol; Messrs. R. White and Sons, Camberwell, at their Kingston-on-Thames works, and also at their Watford works. The following are a few of the works now in progress:—The Atlas Brewery Co. (Limited), Dewsbury; Mr. J. A. Chadwick, Wrexham; Mr. T. Kenward, Hartley-row, Winchfield, having reached the depth of 530ft. after passing 430ft. of the tertiary beds; the Pure Water Co. (Limited), Battersea; the Manchester Hotel, Aldersgate-street, E.C.; Messrs. A. M. Perkins and Sons (Limited), brewers' engineers, Regent-square, W.C.; the St. James's and Pall Mall Electric Light Co., Mason's-yard, Duke-street, W.; and at the Military Forts, Freshwater, Isle of Wight.



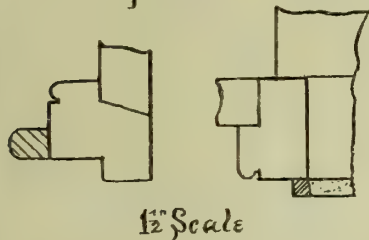
CARPENTRY AND JOINERY.—XXVIII.

FINISHING OF WINDOWS.

HAVING fixed the sash-frames, and fitted in and suspended the sashes, the finishing of the windows internally may be proceeded with, and as has been the usual custom in this series, taking the easy and elementary first, and going on from that to the difficult and better class of finishing.

The very simplest arrangement is that of nailing on a plasterer's stop on a solid frame with a plancier to form a rest for the side stops, they being mitred at the top. These stops should be fair with the outside of the frame, and in theory should be bevelled to form a key for the plasterer, but in practice this is seldom done.

Fig 193

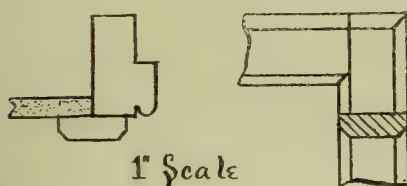


1/2 Scale

Fig. 193 gives sections through stile and sill of frame in order to show the position of the plancier on the sill, and also of the stop on the stile and head; it has been stated that the stops are mitred at the juncture of stile and head-stops. The stops usually stand out 1/4 in., which is generally all that is allowed for plaster in cases where this very simple finish is adopted. Consider well even this primitive finish, as it contains the germ of (it may be stated) all further developed finishing for windows.

But this will be seen as we proceed. The plancier, be it observed, has its ends returned, showing the same projection behind the line of stops that it does in front of it. The stop is slightly developed when a simple kind of architrave is introduced instead of the stop, which consists of a band or strap, say from 2 1/2 in. upwards, chamfered at each edge as shown in Fig. 194.

Fig 194



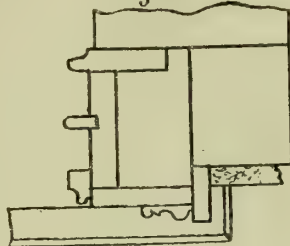
1 Scale

In this illustration on the left side is seen the section of what has been just now described, and it will be obvious that this should be placed against the plaster, which would require the frame to stand out fair with the plaster, in which case this trimming would be put on after the plastering was done. The plancier would be put on first, the ends being returned (as in the first case) beyond the line of the chamfered band. The band would reach over unto the plaster a little way, so as to cover the joint between the plaster and the frame. On the right-hand is seen the method of joining at the upper corner, and take notice of the principle involved, as it often repeated. Instead of the mitre continuing through, it is only carried as far as the line of the internal chamfer, and the head is mitred to match, and the remainder forms a square butt with the upright piece. The chamfer is then wrought across the end grain of the upright or stile-piece. As work of this kind is usually painted, this is no objection, and it will be noticed a slight saving is effected in the length of the head, which occurring from a score to 1,000 times in one or a series of buildings, becomes very material. For kitchen and bedroom windows, a further advance occurs.

Examining Fig. 195, the sash-frame section is seen, and a moulding nailed on the inner casing to form an architrave, the moulding or bead of the batten-slip forming that of the architrave.

Notice that the square of the moulding forms a capping, and reaches into the brickwork nearly, and the plastering is finished close up against it. This style of finishing has a plancier for the moulding and capping to rest on, in fact the

Fig 195

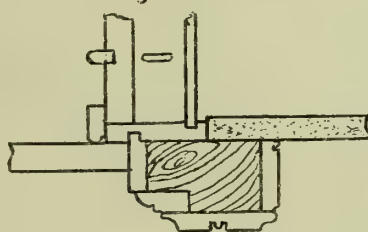


1 1/2 Scale

capping is checked out, and is continued down to the under side of the plancier. The plancier has the nosing or rounding returned at the end, as in previous cases. The double line in the figure indicates the rounding or even chamfering of the plancier. The whole of this finishing is put on before the frames are taken from the bench, and these frames are built in, so that joiner work in such tenements may be described as a vanishing quantity.

Windows require to be blinded occasionally in order to shut out the light for various reasons, and

Fig 196

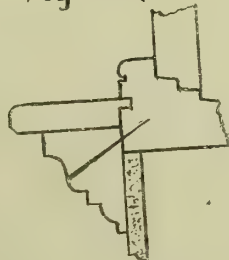


1 1/2 Scale

with the style of finishing shown in Fig. 195, very rough and ready arrangements are made for blinds (common sun-blinds). One method in use is to make two brackets to screw against the inner casings at the top, and the blind-roller is provided with long wire axles, which pass through holes in the brackets. Another method is to screw the little brass brackets supplied with the roller ends, against the pulley stiles in the space for the inner sash to slide in (this sash not being suspended), but, as will be found, this is only a shift at the best. A better method, and which is capable of many applications, will now be described.

On looking at Fig. 196, which gives only a

Fig 197



1 1/2 Scale

part section of pulley stile, it is seen that in the groove of the inner casing a jamb lining is inserted which should stand out 2 1/4 in. at least, so as to receive the blind roller ends, and also suffice to screw the brackets to for the support of the roller.

It will be seen by this plan the sun-blind or Venetian can fall perpendicularly, and on account

of the jamb lining being set back a little (say an inch) from the fair of the pulley stile, the blind is wide enough to prevent peepers from seeing into the room.

Now it will be obvious on account of the projection of the jamb lining and a double-faced architrave, which is the kind shown, either a window bottom must be adopted, or the architrave, &c., must continue to the floor. Both cases shall be dealt with. First, with a window bottom, the sill of the frame should have a groove for a tongue on the window bottom or board to pass into; this will help to bear the weight of the jamb linings, &c., and in the case of shrinkage will prevent an unsightly opening.

Fig. 197 shows a window bottom (board) with bed mould suitable for the finishing shown in Fig. 196. The window board and bed mould

Fig 198

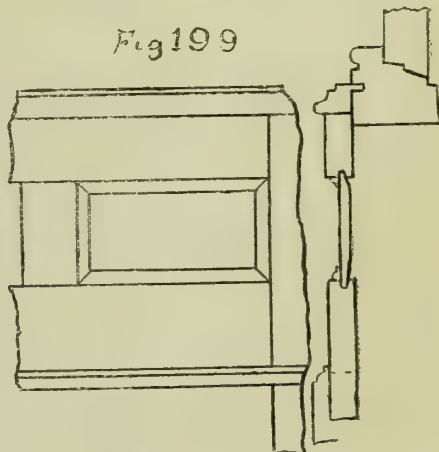


1 1/2 Scale

should have their ends returned, as was stated in the simpler methods of finishing. To work the return it requires to be marked at the necessary length, and a piece of similar moulding is used for the purpose. Cut this piece 4 in. or 6 in. long, and scribe the ends of this piece so as to fit the moulding. This scribing is done by cutting with a saw in a cutting-box (as described for moulding doors), and when both ends have been so cut, one right and the other left hand, to the angle of 45°, the outline thus obtained is wrought to and at right angles to the back of the moulding. When this is done a scribe will be formed, which will exactly fit the bed mould. Place it on the bed mould, and, keeping to its extreme length (as it is supposed to be cut to the net length), mark and work the ends to this, and it will be right.

Fig. 198 shows a simple bed mould with window board, in order to show what is meant by returning the ends. The spectator is sup-

Fig 199



1 1/2 Scale

posed to be looking straight at it when in position. A very simple way with these returns, and which, in fact, in some kinds of hardwood must be done, is to mitre and glue on the returns. But, for painted work, this is not done, and a bed mould is usually outlined, so that it can be returned on the end grain.

In the case of the architraves continuing to the floor, a window back of some kind is required, sheeted or panelled; the jamb linings are continued to the floor also, and will be at least as broad as in the previous example (Fig. 196).

As sun-blinds are required, whether Venetian or other, the jamb lining requires to be of this width to suit them. The window-back will just fit in between the jamb linings for width, and its height, including a plancier capping upon it, will



reach to within, say,  $\frac{3}{4}$  in. of the batton slip on the sill of the sash-frame.

There is a *plinth* or skirting nailed against the back, similar to that around the room. The *capping* may either project beyond the face of the window-back or not, and the size of the panels of the back will be a matter of arrangement either to suit the width of boards or to match the door of the room, or suit the design of the furniture.

Fig. 199 gives a section in elevation of a window-back; a part of the front view is also shown, and it is hoped that the drawings will be readily understood. No attempt is made to show the jamb linings; these will be well understood by referring to Fig. 196, where also are seen two lines to indicate the window-back in plan. It will be readily understood that the height of a window-back will vary according to the height of the window-frame sill from the floor; and as windows are placed at different heights from the floor, according to the use the room is to be put to, the joiner will require to know the height from the floor of the room to the groove in the sash-frame sill before he can commence framing his window-back. He will, in addition, require to know the depth of skirting and the thickness of the capping; and for dimensions the other way, the distance between the jamb linings. It will be seen by reference to Fig. 196 that grounds or blocking is required in order to block out for the support of the jamb linings and architraves; there will be a ground nailed on the floor at each side, and as soon as the jamb linings are put up, and also the grounds, the back can be fitted in and nailed through the jamb linings, and then the remainder of the work can be proceeded with. The *lining* at the back of the architrave requires to be scribed to the plaster, and a small bead could be worked on it, to break the joint with the plaster.

#### ROYAL SCOTTISH ACADEMY.

[SECOND NOTICE.]

THERE are a few sea-pieces, but none of any outstanding interest or merit, and some very much the reverse. 331, "Making for the Harbour, Dunbar," by W. F. Vallance, is one among the best, where water and sky are excellently true. Animal studies are not very numerous, nor, with exception of one or two, of any importance. W. G. Steele has a number of vigorous pieces, of which 242, "Disturbed," is a very faithful portraiture of a mustard dandie. R. Alexander and J. Donovan Adam are both well represented.

In architectural pieces, P. W. Adam contributes some very interesting Italian sketches. 139, "Evening, near Venice," may be noticed as a curious picture, where the Bride of the Sea appears as a low white line on the horizon, with dark grey leaden sky and its reflections on the water, making up the greater part of the picture. It is not a very pleasing study, and one turns from it with satisfaction to his other somewhat panoramic view, "The Ducal Palace," which is bathed in the sunshine. The palace is not the only building, and its relation to other architectural surroundings is shown with great minuteness of detail, and apparently careful study of their relative positions. The colour is bright and warm on the building, and with the broken reflections on the water, it is perhaps a more faithful presentation of the subject than others which show more startling contrasts of local colouring. 165, "A Canal, Venice," is a gondola moored beside an old plain house; but it is an admirable piece of work as respects colour and movement of the boat, and its reflections on the water. 255, "Ponte Vecchio, Florence," is a very carefully drawn view of the old Mediceval bridge, with its many houses projecting from the sides. 447 and 462 are two curiously-framed canvases about 24 in. by 3 in. each, representing the view "looking up" and "looking down" Baxter's Close, one of the narrowest of the old wynds of Edinburgh. The perspective is more satisfactory in looking up than down. These pictures are by Mrs. Haycraft, and show a very masterly power of dealing with the various details which make up the visible parts of the close, and impress the spectator with a proper sense of the amenity of residences of ancient aristocracy of the city.

The water-colour section is large and of superior character, the pictures being moderate in size with a very few exceptions. One of the larger faces the visitor on entering, 629, a fancy

figure embowered in leaves of rather shadowy description, the only finished work being the hands and face. These, however, and the colouring and pose of the figure, show a masterly touch. 695, "Sunshine," a smaller but somewhat similar subject, is a highly-finished picture of the same ideal beauty by the same artist, E. A. Walton. 712, "The 92nd Gordon Highlanders Storming the Asmai Heights, Afghanistan," by W. S. Cumming, is an attractive picture with a number of figures in all attitudes, each a study of drawing and colour in itself. It is one of the larger pictures, and conveys a very vivid representation of the incident. Here a soldier finds himself wounded, another has fallen, and the Gordon tartan, very carefully painted, is making its way up a very precipitous incline. Every detail, and specially the foreground rocks and figures, are very natural. 686, "Run to Ground," is another large subject, by Thomas Scott. A fox-hunting scene, where the hounds and huntsmen are shown on the field, which is sharply and very effectively thrown into deep shadow, making a very sharp contrast with the landscape beyond, which is all ablaze with sunshine on hill and valley. 541, "The Harvest is Come," by R. Hume, is a very large picture, but with some good sky and tree painting; the field ripe for the harvest is but an indifferent rendering of the yellow corn. 558, "Autumn Morning," by Thos. Scott, is a very perfect work in every respect, representing a river and wooded bank in the clear sharp air of a bright morning sky, and very pretty touches of colour. Waller Paton contributes seven, all of the well-known characteristic aspect of his works. 701, "Braemar, from the Fife Arms," has more of the ordinary light—a very pleasant picture both in colour and composition. 670 is a view of "Castle Campbell" from the valley afar off, which may be contrasted with another "Castle Campbell" from a nearer point of view, by Agnes McArthur. This latter does better justice to both the castle and the landscape, and shows the richly-wooded Glen of the Ochills in its summer beauty. There are several Eastern studies by A. Melville, Thos. Scott, and others. 699, "Street Scene, Cairo," by W. Forrester, gives a good idea of the architectural detail and love of colouring, but the whole lacks warmth of tone.

To pass from the many water-colours to the architectural section. One of the most showy drawings is, somewhat in the Cairo style of colour decoration, 523, "View of the Main Entrance of the International Exhibition Building," now in course of erection. Three large semicircular, deeply-recessed, and lofty arches form the main features of the frontage, the central flanked by two slender towers with bands of red and white colour, and great expanse of glass. The *tout ensemble* is rather startling at first, and looks rather more gaudy than substantial. 526 gives a view of the offices, which is also fiery red, with brick-tiled roof, and in the English style of half-timbered construction.

Along with the architectural drawings there are a few excellent examples of etching by W. Hole and others. 436 "He is Coming," after Mavis, shows the lady in the foreground with head averted from the coming footfall of her lover, who appears in the avenue at her side. 432 is an etching, after Blaer, by F. Huth, jun. Both of these are remarkable for the clear and beautiful chiaroscuro. 480 "The Sawyers," by W. Hole, is a more important etching, with figures and landscape of more mellow tone than the work of F. Huth, which, however, could not be surpassed for the beauty of its work, the snowflakes falling thick around the figure of the lady. 439 "New Craighouse, Morningside," is a large drawing in black and white of the new asylum as seen from the north-east. It is a great undertaking, and will cost probably £70,000. The principal feature is a large and lofty square tower—which, however, is in the background and in shadow—relieving another somewhat lofty portion of the buildings at its side. Beyond this, west and east, but chiefly west, the main portions of the building extend. The style is chaste, and without any needless ornamentation, but with a little of the Queen Anne style of gabled decoration, which, in the eastern wing, is rather clumsily conspicuous, the ogee line having no projecting member to relieve it at the eaves line. The circular projections also are not improved by putting octagonal spirelet terminations as a crowning ornament on the top of their domes. The whole, if only from its size and situation, will make an important addition to the suburban

landscape. 475 comprises two interior views of the New Public Library, showing the details of entrances to juveniles' and news rooms. These are tastefully ornamented. 482 is a view of the exterior from George IV. Bridge, or rather a view of the turret built into the angle between the building and the staircase tower. 474 is the elevation of some offices and the Hope-street Arcade in Glasgow, built many years ago. The architecture is not on the outside, which is merely a monotonous arrangement of the ordinary windows and plain shop-fronts of a very substantial but ordinary street. 487 is a view of the New Stock Exchange, which looks better on the ground than as represented here. It is not much improved by the carved ornamentation, and the whole gives the impression of the unfinished structure which it really is. There are a number of large mansion houses among the more important drawings. 481, "Mansion for Allan Lane, Lanark," is illustrated on a large scale in three beautiful sepia etchings, giving different aspects of the edifice, which has the advantage of a very picturesque site, of which good use has been made. It is in the Scotch Baronial style, and forms a goodly pile. 427, "Meadow Croft, River Front," is a mansion on a smaller scale, with the principal rooms on the second floor, to which an outside staircase leads. This arrangement, by the contrast it provides with the more solid ground floor, has an excellent effect, though there seems little danger of any flooding from the river. 733, "Mauldslie Castle, Additions and Alterations"—this is a fine water-colour sketch of a very large and castellated mansion, in the English or Italian style, with large tower and lower buildings covering a great expanse of ground, with much variety of grouping and outline, but altogether different from the Baronial style and aspect of similar mansion houses in that style by the late D. Bryce, the architect of the original. The alterations have been made, whatever they may have been, with good effect as to the whole. 732 is an etching of "Pollok Castle Additions, and Restoration after being Burned in 1882." The main feature is the square keep or tower, with bartisans on one front, and a moderate equipment of corbelling and other features characteristic of the Scotch Baronial. Around it is a somewhat commonplace cluster of lower, crow-stepped, gabled buildings, and there has not been any attempt to evolve the picturesque in their arrangement.

Of churches building and to be built there are several in the South Room. Of these, the one most interesting to the general public is 429, the third and last edition of the design for improvement of the Old West Kirk. It is virtually a reconstruction, and to cost about £17,000. The view is from the north-east, and shows the building with new detail on the sides and east end. The style is the same as that of the old building, with a difference in being more elaborately decorated with Classical features of ornamental character. In addition, there is the suggestion of a transept and its pediment, two staircase towers at each eastern angle, and a slightly projecting apse. A correspondent of the BUILDING NEWS very lately discoursed, somewhat furiously and incoherently, on the Conservative instinct which desires to retain the church upon its present site, and so far as the sanitary objection is concerned, it may be safely assumed that not even a homoeopathic dose of phosphorus will ever enter the precincts of the church. His remarks on planting a costly architectural exterior in what is from all points of view a hole are better founded, and this last design is an improvement on its precursor, which was set aside as too expensive. But it is likely that a more simple treatment still would have sufficed. The church had excellent proportions in its height, and its defective aspect consisted in its want of length. The transept does not at all improve it in this respect, and this, with the elaborate architectural finishings of the towers, throw the balance of decorative detail far too much to one extremity of the edifice.

431, "First Design for the Crichton Memorial Chapel, Dumfries," is a highly-decorated Gothic building, apparently comprising a nave with ambulatory aisles, a western tower, an apsidal chancel, flying buttresses, pinnacles, &c. The tower has two lofty narrow lights, surmounted by some over-elaborated arched on the topmost stage, with octagonal lantern and spire above, which do not improve the tower. 438, "New Church, Craiglochart," is a pretty little village church with tracery in its windows and a tower



planted at the side at some distance from either end. It is illustrated by several etchings, of which the interior perspective is, it is to be hoped, no true representation of its aspect. The section of roof timbers shows no provision against stress, and is apparently out of all proportion to the space below. 488, "All Souls, Invergowrie," is a very effective water-colour drawing of a very pretty private chapel, with details of Decorated Gothic. The remaining subjects are of minor interest, architectural or otherwise, comprising parish halls, &c. 428, "New Commercial Bank, near Aberdeen," is a street-front executed with elaborate Perpendicular details. The sculpture is not noteworthy for any special work.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**MANCHESTER ARCHITECTURAL ASSOCIATION.**—At the fortnightly meeting held on the 4th inst. a paper was read by Mr. T. Chadwick, A.R.I.B.A., the subject being a few recent notes in Holland and Belgium. The paper was illustrated by sketches made by Messrs. Chadwick, Col'ey, and Woodhouse during a tour in September last. The route taken was from Harwich to Rotterdam, Delft, Dordrecht, Malines, Brussels, Ghent, and Antwerp.

**THE EDINBURGH ARCHITECTURAL ASSOCIATION.**—A party consisting of from 70 to 80 members of this association visited, on Saturday afternoon, the University buildings of the Edinburgh University and the Edinburgh Free Library. At the University the visitors were received in the Senate Hall by Professor G. Baldwin Brown, who extended, on behalf of the Senatus, a cordial welcome to the Association. After inspecting the interesting collection of portraits contained in the hall, the party passed into the library, where Professor Brown sketched the history of the buildings, and exhibited the plans prepared by Robert Adam, and which were partially carried out before that architect's death. He also exhibited the drawings prepared by Playfair, who was entrusted with the work after Adam's decease, and indicated the deviations from the original designs which were, however, merely in detail, and not in spirit. The dome designed by Dr. Rowand Anderson, which now completes the building, was then referred to, and a visit paid to the museum it contains. The excursionists were admitted to the fine arts classroom, the natural history museum, and other places of interest. The party proceeded to the free public library, and were shown over the building by Mr. G. Washington Browne, the architect of the building.

**THE ROYAL SCOTTISH SOCIETY OF ARTS.**—At a meeting of this society, held on Friday in the hall, George-street, Edinburgh, Mr. D. M. Westland, M.I.C.E., vice-president, in the chair, a paper "On Lead, and its relation to the Science and Art of Architecture," was read by Mr. James Macdonal. He gave an account of the earliest uses of lead, and said it was during the middle ages that that metal began to assume the important character with regard to architecture which it still maintained. He pointed out the importance of a scientific knowledge of the properties of lead to plumbers, and proceeded to refer to what he termed the great want of a plumbers' laboratory in connection with technical classes in Edinburgh. Their system of teaching was not, he said, complete without provision being made for showing practical work. So much had that want been felt, that the governors of the Heriot-Watt College had granted funds for the fitting up of a plumbers' laboratory in that institution. It was to be hoped that their efforts in that direction would meet with the support they deserved. Classes where foremen and journeymen plumbers well advanced in the practical and theoretical knowledge of plumbing could become teachers would do immense good, and be largely taken advantage of by students and apprentice plumbers. The governors, however, had not the funds necessary for working the laboratory, and it was to be hoped that efforts would be made to meet that want by all parties interested in the building trades.

**SOUTH WALES ART SOCIETY.**—On Thursday evening, the 6th inst., a meeting of the South Wales Art Society and Sketching Club was held in the society's club-room at Cardiff. An address, practically illustrated, was given by Mr. Parker Hagarty, R.C.A., on "Rapid Sketching

in Oil-Colour." The club-room was crowded to its utmost capacity. Mr. Hagarty set himself to paint a picture from memory in oil in about one hour, and he chose a landscape subject from near Ross, in which the river Wye, some picturesque groups of trees, and distant hills were the chief features. He prefaced his work on the canvas with some very useful and practical information. A vote of thanks was proposed by Mr. T. H. Thomas, R.C.A., and seconded by Mr. E. Seward, R.C.A. A musical programme, carried out by members, succeeded.

**SUNDERLAND ARCHITECTURAL STUDENTS' ASSOCIATION.**—At the end of last year a few architectural students in Sunderland, with a view to the mutual advancement of themselves and other local students, called a meeting of students, and proposed the formation of an association. An excellent code of rules was drawn up and adopted, the co-operation of the local architects in practice was obtained, and the society was successfully inaugurated. The general meetings are held on alternate Fridays. At the first general meeting a paper on "The Study of Mechanics in their Relation to Architecture" was read by the President, Mr. Frank Caws, and, during the discussion which followed, it was arranged to have interim meetings for the study of the subject in detail, the president undertaking to conduct these interim classes on alternate Wednesdays, and give practical demonstrations on the blackboard. Considerable interest has been evinced by the students in this branch of their study, and encouraging classes are being held. At the following ordinary meetings papers have been read by Mr. H. Barnes on "The Use of Wood and Iron in Building," by Mr. F. J. Purvis on "Stone as a Building Material," and by Mr. T. R. Milburn on "Egyptian and Assyrian Architecture" have been read, the latter having been given on Friday last, while on the 21st inst. Mr. R. Cropton will speak on "Foundations." In addition to the classes for the study of mechanics, another class on alternate Wednesdays, meeting under the direction of Mr. W. Milburn, is engaged in the study of Grecian architecture. Mr. R. Elsey Smith, of London, has kindly lent the association a number of photographic slides taken by himself of Grecian buildings. At a meeting of this class the subject was divided into seven branches, and as many students each severally undertook to deal with the subject set against his name. The committee intend to further pursue this capital method of inducing all the students to share and take a lively interest in class-work, while sketching parties will be organised during the summer. The secretary is Mr. G. T. Brown, 17, Fawcett-street, Sunderland.

#### CHIPS.

The young woman who shot Major Isaacs, M.P., F.R.I.B.A., under circumstances which that architect has made sufficiently public, was acquitted by a Central Criminal Court jury on Tuesday of the charge of attempt to murder.

At the last meeting of the Trustees of Craddock Wells Charity, held at Cardiff, the resignation of Mr. Miles Aspinall, after seven years' service as surveyor to the charity, was accepted, he having received an appointment near Gloucester.

The North-Eastern Railway Company have appointed Mr. J. Wolfe Barry, M.Inst.C.E., London, as their consulting engineer.

A largely-attended and most successful smoking concert was held by the in- and out-door staff of Messrs. Perry and Co., builders, Bow, at the Great Hall, Winchester House, Old Broad-street, on Saturday last, the 8th inst., presided over by Mr. H. H. Bartlett. The vice-chair was occupied by Mr. T. Archer. The programme was well rendered, and included an interesting novelty in the shape of amateur minstrels, consisting of members of the staff.

A fire broke out on Sunday in premises at Brothock Bridge, Arbroath, occupied by Mr. A. S. Mathewson, painter, and Messrs. Carver and Symon, architects. The building is of two stories and attics, and belongs to Mr. Mathewson, who has his painting shop on the ground floor, the architects' office being on the floor above. The stock and paints in the painting shop, as well as the property in the architects' office, were destroyed; but the loss is covered by insurance.

A new art room has been added to the Lewisham Bridge Board School, and special attention has been paid to the ventilation, the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

## Building Intelligence.

**WEST HARTLEPOOL.**—The schools which the West Hartlepool School Board have been erecting in Oxford-street are now completed. They comprise a mixed school for 360 boys and girls and infant school for 270. The former has an assembly hall 54ft. by 30ft.; five class-rooms, each 25ft. 6in. by 24ft.; master's room, 15ft. by 12ft.; and cloak-room, 30ft. by 20ft. The latter has infant school, 50ft. by 24ft.; two class-rooms, each 24ft. by 20ft.; marching hall, 44ft. by 14ft.; mistress's room, 15ft. by 12ft.; and cloak-room, 24ft. by 12ft. There is also a caretaker's house, with six rooms; and there are play-sheds and latrines, approached by covered ways to each department. The buildings are erected in brick, covered with slate, the wood-work being of pitch-pine varnished; the playgrounds are paved with compressed concrete flags. The total cost has been about £4,200, including caretaker's house, or about £6 a head for schools, after deducting the cost of such house. The design, selected in open competition, was that of Mr. J. P. Pritchett, of Darlington, who has carried out the work, with the assistance of Mr. Henderson, clerk of works; the contractor being Mr. Joseph Howe, of West Hartlepool.

**WEST WEMYSS.**—The memorial stone of a new church for the parish of Wemyss was laid on Friday by Lady Lilian Wemyss. The church is being built within the policies of Wemyss Castle, facing the main street of the village. It is cruciform and built in the Scottish Baronial style, the gables being crenellated. The exterior mason-work is of fine dressing, filled in with rubble work. In the nave are to be three-light windows, and red stone pillars support the arcades. The main gable contains a large rose window, which is to be filled in with tracery. In the chancel is a large three-light window, while the walls are to be panelled to the height of the arcades, the roof being open, showing the rafters. The floor is to be paved with wooden blocks, cathedral chairs instead of pews being provided for the worshippers, and the accommodation being for 600. The estimated cost of the church, not including the tower, is £1,600.

#### CHIPS.

The village of Heswall, Cheshire, is about to be sewered at an outlay of £4,600. The works will be carried out for the Wirral rural sanitary authority, from plans by Mr. C. H. Beloe, of Liverpool, and Messrs. Thomas and Co., of Liverpool, are the contractors.

Mr. Sam Timmins, F.S.A., of Birmingham, writes to the *Times* complaining that the rector of Stratford-on-Avon has decided to entirely close the chancel of his church, containing the memorial of Shakespeare, for three months, during the progress of a further section of the work of restoration now proceeding, and for which Messrs. Bodley and Garner are the architects, and Mr. Franklin the builder.

The death is announced of Mr. Frederic Campion, engineer for the southern division of the Midland Railway. The deceased, who was sixty-two years of age, had been connected with the Midland Company for over forty years. He took charge of the construction of the extension to London, including St. Pancras station.

A meeting of the National Sunday League was held on Wednesday evening in St. James's Hall, Mr. Lawson, M.P., in the chair, when, on the motion of Sir H. Roscoe, a resolution was passed in favour of opening the Museums and Art Galleries in London on Sundays, upon the condition that no officer shall be required to attend more than six days per week.

Prior to the commencement of morning service at Headingley Church on Sunday, the Bishop of Richmond dedicated the north porch, which has just been completed. This addition has been erected from the designs of Mr. J. L. Pearson, R.A., who was the architect for the church, by Messrs. Wilson and Sons, builders, the clerk of the works being Mr. E. T. Price.

We were unaware last week, when compiling our notice of the new Midland Station at Bradford, Yorks, that the "Broomhall" vitrified stoneware damp-proof and ventilating course was used in large quantities for this building—in the 1½in. thickness—supplied by the Broomhall Tile and Brick Co., of Queen Victoria-street, London, E.C.

The Burslem Corporation have appointed Mr. Fred Bettany as their engineer and surveyor, in place of Mr. P. J. Sheldon, who has obtained the Essex County Council appointment.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. FASSMORR EDWARDS.

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## ADVERTISEMENT CHARGES.

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## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVII., and LVIII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—B. and P.—C. and R.—W. R. S. A.—W. A. B.—C. B.—Co., Limited.

## Correspondence.

## THE ARCHITECTS' REGISTRATION BILL.

To the Editor of the BUILDING NEWS.

SIR,—The long letter from Mr. Parminster which you published last week was evidently that of a careful and thoughtful man, well acquainted with the architectural section of the Ecole des Beaux Arts, the working of which he describes. Unfortunately for himself, he does this so thoroughly as to show how greatly inferior is the result of the system of instruction in vogue there, even to what has been described as the want of system here. When a young architect has received his diploma, he is sent out to fight the battle of life as an architect with, as his weapons, the power of making an artistically-coloured drawing, and a purely academical knowledge of the "Five Orders." Old buildings he has never studied, and his work is lifeless; but, on paper, it is pretty, and that, he thinks, is enough! Of construction he knows nothing; yet who can design with real satisfaction unless his design be founded on his construction? Of materials, what knowledge he possesses is purely theoretical, and this, as all know, is most delusive. How, too, can he design with truth unless thoroughly acquainted with the properties of every material which he may employ? Of sanitation his knowledge is absolutely nil, and a similar cipher will denote the extent of his acquaintance with building law and general practice. In fact, he is an academical student, and not an architect. Thus Mr. Parminster's deduction is correct: to give to men trained in this way a monopoly to practise would be not only unwise, but criminal; it would be to give a monopoly to the incompetent to the exclusion of the competent.

In England we manage these things somewhat differently, and all that is needed is to regulate our want of system. Pupilage in the office of an

established man is a recognised institution here, and only requires to be made essential, and to point to certain definite and compulsory examinations, to lead to the best results. That this is the case has already been proved by the results of the R.I.B.A. examinations, and it is the extension of these examinations and of compulsory pupilage to all entering our profession, which the Bill now before Parliament would provide. A monopoly given to men trained thus would be most wise; it would be a monopoly to the competent to the exclusion of the incompetent, which anyone who made himself competent could enjoy. "In every case," to quote Mr. Parminster's words, but in the positive instead of the negative sense, "this would be a diploma given with the innumerable guarantees surrounding the medical profession—with its several examinations, its practice, organised and pursued, during a number of years."

On Wednesday next the "Architects' Registration Bill, 1890," is set down for second reading in the House of Commons. The support accorded to it is great, the opposition limited to that of the Council (I advisedly do not say the members, for their opinion has not been asked, though it soon will be, and may probably prove different from that of the Council) of the R.I.B.A. Yet, though the support is great, more is wanted, and I would ask all who read this and are favourable to the measure, as almost all your readers must be, to write to their local members—town and county—at once, asking them to vote in its favour, giving them the date of the second reading, a few concise arguments in its support. Do not let each man think that someone else will write and that he need not do so; but let all write, remembering that if a member receives five letters of the same tenour, he is more likely to attend to them than to one only. Also, if the Bill be not reached on the 19th inst., let every one repeat his effort every time that it is put down until it be discussed and passed.—I am, &c., G. A. T. MIDDLETON.

## THE BRICKS AT WOODFORD ASYLUM.

SIR,—It is the boast of Lord Rosebery, the chairman, that the London County Council have a passion for purity. The London County Council are at the present time having an asylum erected at Woodford. I should like to ask Lord Rosebery whether it is not a fact that the specification for the bricks says "London stock bricks"? Whether, instead of London stock bricks, bricks are not being sent from Peterborough? And whether the architect for the works at Woodford, under the London County Council, is not at the same time largely interested in the manufacture of Peterborough bricks?—I am, &c., ENQUIRER.

London, March 12th.

## BILSTON MARKET COMPETITION.—MORE DISCLOSURES.

SIR,—I think the outrageous way in which the above competition has been managed is a sufficient plea for the insertion of this letter.

As a consequence of my letter of complaint to the local press, a report of the meeting closed to the public (evidently gleaned from the minute book of the Bilston Commissioners) has been published in the Bilston paper, from which it appears at the conclusion of the reading of my letter, which elicited laughter, the clerk was instructed to acknowledge its receipt. The following resolution, proposed by Mr. Skemp, and seconded by Mr. Morrell, was then carried:—"That the board purchase the plans marked 2 by Messrs. B. Horton and Co., for roofing and works at the market for the sum of thirty guineas, they to supply for this sum, the further plans and sections, and working drawings necessary for executing the work, and full specifications of the works, bills of quantities, and of plans for the Local Government Board; to attend the inquiry of the Local Government Board in regard to the loan for the works, and to give evidence thereat."

The editor of the paper gives his opinion in a leading article, and says (with regard to the extension of time to one competitor only) "on the face of it, it really does seem unjust; but, after acquainting ourselves with the facts of the case," it was found it might have been worse!

Personally, I am heartily tired of the way in which competitions are conducted, and think it high time some definite action was taken in the matter. The thoughtless individuals who originated this particular competition should be

taught a lesson which would be beneficial, if not to themselves, at least to the gentlemen who have the management of competitions the kingdom through, a result which would be a "consummation devoutly to be wished."

Registration is doubtlessly desirable, and I sincerely trust the Bill may pass this session; but there is also needed some other kind of organisation which would put its foot down with firmness in cases like the one I have felt constrained to expose, and would say, "This is an injustice, and must be remedied."

Apologising for the length of my letter,—I am, &c., S. HENRY EACHUS.

Bank Buildings, Wolverhampton, March 12.

## ZINC CEILINGS.

SIR,—In reply to your correspondent "Inquisitive," we did execute the above at the Theatre Royal, Malta.

The ceiling was about 60ft. over all, and horse-shoe shape on plan. It was strongly made and very light, considering the size and general character of the design.

The work was very handsome and full of ornamentation; it was fixed with long iron bolts to main ribs of ceiling.

We did this some few years ago, so that it has been thoroughly tested and found to answer its purpose admirably, besides being a great improvement on the ordinary run of ornamental ceilings.

We shall be happy to give "Inquisitive," or any other of your readers, any further information about this or any other ornamental zinc or copper work of any description that they may require.—We are, &c., HOLDEN AND CO.

5, Wood-street, Westminster, S.W., London. March 13.

## CHIPS.

The council of the Surveyors' Institution have decided to give a prize to the value of £10, out of the interest arising from the Crawter bequest, to the candidate doing the best work in the field on Monday, the 24th inst., provided he obtains not less than 75 per cent. of the marks allotted to this branch of the surveying and levelling examination.

Christ Church, Clacton-on-Sea, is being enlarged at a cost of £500. Mr. N. Demaine, of Colchester, is the builder.

The Bridges and Roads Committee of the Kent County Council met at Maidstone on Wednesday week, and appointed the following five assistant county surveyors:—Mr. A. Dryland, borough surveyor at Deal; Mr. F. H. Phillips, of Cardiff, Mr. F. G. Maxted, of Willesborough, Ashford; Mr. W. Forrester, of Brackley, Northamptonshire; and Mr. A. F. Ginn, of Chelmsford.

The Bishop of Carlisle has fixed Thursday, April 24, for the opening of the restored parish church, Workington, which was destroyed by fire on 17th January, 1887. That building was rebuilt in 1770.

The Aberdeen Harbour Commissioners have resolved to use hydraulic power for the opening of the lock gates and bridges, at an estimated cost of £1,350; and they also agreed to make an extension of their fish wharf southwards for a distance of 200ft., at a cost of £1,600.

The parish church of Lewannick, Cornwall, which was greatly damaged by fire a few months since, is about to be restored from plans by Mr. O. B. Peter, of Launceston.

The notices issued by the Kentish brickmakers to close their works in consequence of the dispute with their bargemen came into operation on Friday. The notices have affected several thousand hands.

A meeting of the Munster district council was held on Friday at Cork at the mayor's office, Mr. J. Constantine, and subsequently Mr. Arthur Hill, in the chair. Also present:—Mr. B. C. Galvin, G. Browne, M. O'Brien, J. M'Kay, L. J. Philpott, and James Good, hon. sec. Letters were read from Mr. Coles, Worshipful Company of Plumbers. With reference to the educational branch of the movement, it was decided to forward them to the various city architects. Applications for registration were received and dealt with by the Registration Committee. A meeting of the By-law Committee was subsequently held, and several rules for the regulation of the movement were considered and adopted.

The tender of Mr. Alfred Groves, builder, of Milton-under-Wychwood, has been accepted for restoring the nave of Bourton-on-the-Water Church, and erecting a new south porch. The work will be commenced after Easter. Mr. T. G. Jackson, M.A., London, is the architect.



# Intercommunication.

## QUESTIONS.

[10247.]—**Speaking Tubes.**—Can anyone give me information as to the conduct of sound in speaking-tubes? Are there any rules regulating size for various distances, and how great a length may the tubes be in order that communication may be successful? Any information will be thankfully received. This is "the second time of asking."—Geo. B.

[10248.]—**Warming Apparatus.**—I have found that in severe weather the usual low-pressure system of warming buildings is not sufficient, and I shall be glad to hear if any of your readers have ever used the high-pressure apparatus in hospital buildings, either alone or as an auxiliary to other systems.—COMFORT.

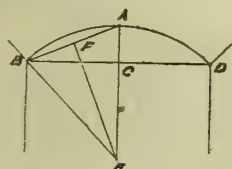
## REPLIES.

[10234.]—**Radius of Arch.**—A slight correction is necessary in the formula given by "J. C. H. S." in last week's replies. The formula should be—

$$\frac{(\frac{1}{2}S)^2}{R} + R$$

It is the square of half the span which has to be divided by the rise. The formula previously given implied that it was half the square of the span—two very different quantities.—Geo. B.

[10234.]—**Radius of Arch.**—"Clerk of Works" can obtain the radius of an arch when the span and rise only are given by the following process:—Divide the sum of



the square of the rise plus the square of half the span by twice the rise. For example: Suppose AC in sketch to be 4ft., and BD 20ft. Then—

$$AE = \frac{AC^2 + BC^2}{2AC}$$

$$AE = \frac{4^2 + 10^2}{8}$$

$$\therefore AE = 14'5''.$$

This can be obtained trigonometrically, first by formula

$$\tan. BAC = \frac{BC}{AC} = \frac{10}{4} = 2'5.$$

Whence— $\angle BAC = 68^\circ 11' 55''$ .

Then by formula— $BE = AC \cdot \sec.^2 BAC$

$$BE = \frac{4 \times 2'692583^2}{2}$$

$$\therefore BE = 14'5.$$

—F. E. GAY, Bath.

[10234.]—**Radius of Arch.**—The formula for finding the radius of an arch is as follows:—

$$\frac{(\frac{1}{2} \text{ chord of arc})^2}{\text{versed sine}} + \text{versed sine} = \text{diam.}$$

$$\frac{1}{2} \text{ diam.} = \text{radius.}$$

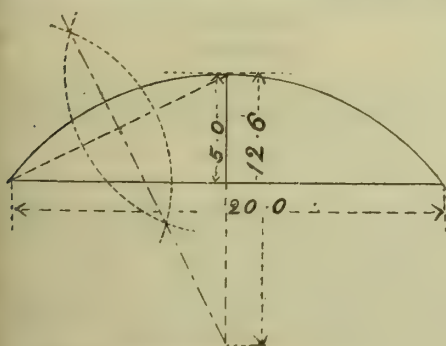
This may be stated in words as:—Divide the square of half the chord by the versed sine (or vertical height); to the quotient add the versed sine, and the sum will be the diameter of circle. Example: Take the span as being 20ft., and the rise 5ft. To find radius of circle—

$$20 \div 2 = 10.$$

$$\frac{10 \times 10}{5} + 5 = \frac{100}{5} + 5 = 20 + 5 = 25\text{ft.}$$

$$25 \div 2 = 12\text{ft. 6in. radius.}$$

This same result may be arrived at geometrically as under.



—CHARLES BARKER, Surveyor.

[10234.]—**Radius of Arch.**—The rule to find diameter is—Divide the sum of the squares of half the chord and versed sine by the versed sine or rise, and the quotient is the diameter. Thus, if the span (or chord) of an arch be 6ft. and the rise (versed sine) 2ft., the diameter will be  $6\frac{1}{2}$ ft., half of which will be the radius.—G. H. G.

[10241.]—**Sundial.**—Perhaps a better method than compass variation would be to choose a starlight night, put two rods in the ground to the northward of the site

of the dial, attach a crosspiece to them, and from the crosspiece hang a plumb-line; then at a reasonable distance to the southward of the site hang another in a similar manner. Range the two lines with the North Star, and then stretch a third line horizontally from one to the other. This should give the Polar meridian, and will be more reliable than allowance for compass variation. If the dial is fixed on a pillar, the plate must be carefully levelled, and the angle formed by the edge of the gnomon must accord with the latitude of the place.—F. SMITH.

## LEGAL INTELLIGENCE.

IMPORTANT TO BUILDERS AND LOCAL AUTHORITIES.

—Messrs. John Grover and Son, of Wilton Works, New North-road, were summoned at the Highgate Petty Sessions in respect of an alleged breach of the by-laws of the Hornsey Local Board. Mr. Ricketts, solicitor, appeared for the board. From Mr. Ricketts' statement it appeared that the offence alleged by the board against Messrs. Grover was that they had not fitted trapped gully and grating at a house erected by them in Spencer-road, Hornsey, as was required by the board's 66th by-law. Under the 98th by-law the penalty for the offence was £5 with 40s. per day for each day of the continuation of the default after written notice had been given. Mr. Ricketts then proceeded to read a mass of correspondence on this matter that had passed between the complainants and the defendants. Mr. George Poole, building inspector to the Hornsey Local Board, said that at the building in question there were two traps to which he took exception; the one received the sink water and the other that from the lavatory. Notice had been given to Mr. Grover in the usual way. The receiver provided was simply a siphon trap, whereas the by-law required that it should be a trapped and grated gully, such as that produced. (The witness here produced a good-sized square gully, having a coarse grating and a moderately deep well, the outlet from which was a 4in. siphon trapped pipe. The defendant also produced a fellow receiver to those complained of. It consisted of an exactly similar siphon trapped pipe, set in a cement cube and a crown or head-piece, consisting of a separate block with a deep sink-like cavity, in which was a fine grating. It was explained that the upper block was cemented to the lower, so that when fixed in position it formed one entire block.) In cross-examination, Mr. Poole said Mr. Grover's trap was a trap only; but he subsequently admitted that it was also a gully to some extent. Mr. T. DeCourcy Meade, surveyor to the Hornsey Local Board, described Mr. Grover's appliance as a trap pure and simple, and as being so described in trade lists; he argued that to simply bend a pipe was not to form a gully. As to the contention that the fixing of the upper block formed a trapped and grated gully, he could not admit that this was so; he maintained that it did not come within the meaning of the by-laws. The tenant of the house was called to prove that the present receiver frequently overflowed. For the defendant it was contended that his appliance was more perfect and far preferable to the model produced by the board, and that as the by-law did not define the pattern, but simply required a trapped and grated gully, it had been absolutely complied with. The Bench inspected both samples, and one of the magistrates, Mr. Horsley, while admitting that Mr. Grover's gully might overflow more quickly than the other, said he considered it the better of the two; he had one like that produced by the board, and it often overflowed and required cleaning. Mr. Hyams (Emanuel and Simmonds), who appeared for the defendants, said the complainants had sought to put in a Doulton's list to prove that Mr. Grover's appliance was described as a trap; that very list gave an illustration of an exactly similar thing, which described it as being what the witnesses had just sworn it was not. Mr. S. Knight, F.R.I.B.A., architect, surveyor, &c., was called for the defence, and explained at length his reasons for considering Mr. Grover's gully the better of the two samples produced. After a lengthy hearing, the Bench decided to dismiss the summons and allow the defendant five guineas costs.

IN RE C. KILLINGBACK.—In this case the debtor, a contractor at Camden Town and Lee, has filed a statement of his affairs, which gives liabilities at £21,587, of which £10,311 are expected to rank, with assets £2,891. The Official Receiver states that the debtor commenced business twenty years ago with a capital of about £150; he attributes his failure to an estimated loss of £6,500 in respect of a contract entered into in January, 1889, for the construction of sewers at Lee. The Official Receiver states that his books are of an incomplete and imperfect character, and not such as sufficiently disclose the results of his trading or his financial position at any time. The Official Receiver adds that the greater part of the indebtedness appears to have been contracted within the last 12 months.

The name of George Priestley, of Manchester, surveyor, appears in Friday's list of adjudications in bankruptcy.

# Our Office Table.

THE Society for the Preservation of Ancient Monuments in Egypt will hold a meeting this (Friday) afternoon, at 5 p.m. at Oxford Mansions, W., to consider what steps can be taken to prevent the wanton mutilation of Egyptian monuments. The excision of portions of the well-known fresco paintings in the tomb of the Colossus on a sledge, dating from the Twelfth Dynasty, or between 2,000 and 3,000 years B.C., at Der-el-Barsha, the chipping out of cartouches of different Sovereigns from the Sixth Dynasty tombs at the same place, the mutilation of tombs at Beni Hassan, and the malicious removal of curious bas-reliefs of Tel-el-Armana are very recent acts of vandalism, of which the society proposes to take notice in order that a public expression of their indignation may be duly forwarded to the proper quarters. The mischief done at Beni Hassan has already been the subject of a question in the House of Commons, but it appears that, as usual, the Government have not any "official information" on the matter. Supported by representations from the society, it is hoped that the Foreign Office will be enabled to concert measures for the future security of the ancient monuments of Egypt.

NEXT Thursday, 20th of March, at the City and Guilds of London Central Institute, Exhibition-road, South Kensington, Mr. Harvey will explain a new method of covering the crossing of two semicircular barrel-vaults of unequal spans. This method gives a more elegant solution of the problem than any used till now, and will find its application in this year's R.I.B.A. Masonry Competition. All old pupils of the class of masonry, and others interested in the subject, are invited to attend.

THE lecture by Mr. James Orrock, the well-known landscape artist, collector, and connoisseur, on the claims of the British School of Art to a thorough representation in the National Gallery, given at the Society of Arts on Tuesday evening, gives expression to a popular grievance that the successive directors of our National collection have devoted too much space to Italian and Early Flemish ecclesiastical art, to the neglect of our own artists of all periods. This preference for foreign work has, as Mr. Orrock showed, not only resulted in national loss, but has done much to encourage foreigners in their declarations that the English not only have "no school," but are without taste or perception in artistic matters. Owing to noble gifts by private collectors, the Gallery is happily rich in examples of a few of our greatest men, of Hogarth, Reynolds, Turner, Constable, and Landseer; but the danger now to be dreaded is that the rapid and enormous rise of late years in the market value of English pictures and the threatened competition of American and Australian collectors, will soon make prices prohibitive. We possess but one slight example of Cotman, not a single example of David Cox's work in art, nothing of James Holland, only one specimen of William Müller; our only De Wints are at South Kensington; and we have no important example of R. P. Bonington. In regard to water-colours, "the Cinderella among the Arts," our treatment is still worse. Turner's "Liber Studiorum," and his hundreds of drawings in water-colours, are relegated to the cellars of the National Gallery, while Cox, De Wint, Fielding, Barrett, Holland, and Cotman are entirely unrepresented.

THE munificent offer of Mr. Henry Tate, of Streatham, to present to the National Gallery the cream of his splendid collection of modern pictures, places the trustees in an awkward dilemma, as Mr. Tate is understood to have stipulated that they shall accept all or none. The proffered gift has an estimated money value of £90,000, and includes some sixty works, all by British artists, among them being Millais's "Vale of Rest," "North-West Passage," and "The Knight Errant"; "Home with the Tide," and two others, by J. C. Hook; Orchardson's "First Dance," "Her Mother's Voice," and "The Tiff"; Waller's "Success"; two pictures by Alma Tadema, two by Jas. Gow, two Linnells, H. W. B. Davis's "Mare and Foal," and examples by J. Crome and Constable, P. Graham, Waterhouse, Frank Bramley ("Saved"), Boughton, and Lady Butler. Hitherto no works by living artists have been



accepted for the National Gallery, and the same salutary rule exists at the National Portrait Gallery, and while Mr. Tate's collection contains no works of dubious merit such as some of those in the Wynn-Ellis bequest, the Trustees naturally hesitate before closing with the offer, and thus creating a precedent which might, at a future time, place them in an ambiguous position.

"THE REVIVAL OF APPLIED ARTS" was the title of a lecture delivered before the members of the Leeds and Yorkshire Architectural Society, in the Law Institute, Leeds, on Monday evening, by Mr. Mervyn Macartney. Of the revival of applied art in England, said the lecturer, there was certainly no doubt so far as painting, sculpture, and architecture were concerned. Larger fortunes were made in those arts now in this country than ever before. But that did not necessarily show that the various arts were in a more flourishing condition than formerly. Painting was, or had been up to quite a recent date, very prosperous, as regarded material prosperity. That success was, to some extent, owing to State patronage, and to artists producing what was eminently adapted to the wants of the present. The revival in sculpture was due largely to the same cause. Relatively sculptors had reached the highest average of excellence; and that, too, in spite of their being followers almost to a man of the classic school, and not the popular realism of the Italians. As to architecture, he believed that there were never so many real architects as at the present day. He dwelt upon the relation of those arts to applied art, and referred to the dependence of the decorative crafts on architecture. People had found out that there was often more beauty in the thousand and one objects of every-day use than in the paintings that adorned their walls or the statues that graced the hall. The lecturer suggested that his hearers should form an art guild in connection with their society, and explained the aims and methods of similar societies of which he is a member.

MR. ALAN BRENNER, a member of the well-known firm of Messrs. D. and T. Stephenson, civil engineers, Edinburgh, died suddenly on Wednesday week, aged 63 years. Educated at the High School of Edinburgh, Mr. Brenner, before beginning his studies as a civil engineer, served a regular apprenticeship as a mason, and this gave him a thorough knowledge of building construction. In early life Mr. Brenner had considerable experience in railway construction, and afterwards was engaged by Thomas Stephenson as resident engineer at various harbour and lighthouse undertakings. Since 1854, Mr. Brenner has been connected with the design and execution of many important river, harbour, lighthouse, and other engineering works. He devoted special attention also to matters connected with lighthouse engineering, and among the lighthouse apparatus which he devised is the "optical projector," by means of which the prisms for lighthouses can be laid down in about half the time formerly required in protracting them. One of the last pieces of business Mr. Brenner was engaged in, with the other members of the firm, was the important suggested project of connecting the east and west coasts of Scotland by a ship canal.

DR. W. SIPPLICH, late Inspector-General of Forests to the Government of India, read an interesting paper on "Forestry in the Colonies and in India," before the Royal Colonial Institute on Tuesday evening. The direct usefulness of forests, he said, in so far as they yielded timber or other produce, represented capital, and provided labour, depended upon many things, such as the means of communication in a country, and with other countries, the quantity and quality of substitutes for forest produce available in the country, especially iron and coal, the value of land and labour, and the returns which land yielded if used for other purposes, the density of population, and the amount of capital available for investment. The British Empire, although it was so frequently represented as possessing more extensive forests than any other nation, paid every year something like £12,000,000 to foreign countries for timber alone. As under existing circumstances the imports of timber into the Empire would increase rather than decrease, there were reasons why State interference was more called for in the case of forestry than in most other branches of industry.

The Mayor of Sheffield on Saturday evening presided over a well-attended public meeting

held at the Firth College, Sheffield, for the purpose of discussing the National System of Registration and Training of Plumbers. The Mayor, who was supported by the Master Cutler and Archdeacon Blakeney, said that the movement for the Registration and Technical Education of Plumbers had his warmest support in the interest of the public health. The Master Cutler, in moving a formal resolution approving the system and the appointment of a district council to carry it out in the locality, referred to the affinity between the constitution and objects of the Plumbers' Company and the Cutlers' Company. It gave him great satisfaction to find that the Plumbers' Company were engaged in carrying out a work which entitled them to the gratitude of the whole community. Mr. Lockwood, Chairman of the Borough Hospitals Committee, having seconded the resolution, it was carried unanimously, and a district council elected, including the following, as representatives of the public:—The Mayor, the Master Cutler, Alderman Sir Henry Stephenson, Councillors Jackson and Merritt, Professors Hicks and Ripper, and Doctors Thompson and Sorby.

THE forty-first annual report of the Prudential Assurance Company (Limited), states that the large and rapidly increasing amount of the funds of the company has led the directors to the determination that in future the balance-sheet shall be subjected to an independent professional audit. For this purpose they engaged the services of Messrs. Deloitte, Dever, Griffiths, and Co., whose certificate is appended to the accounts. During the year ending Dec. 31st, 1889, the total assets of the company were raised from £9,302,007 to £10,946,156, being an increase of £1,644,149. In the Industrial Branch the premiums received were £3,336,742, the claims amounting to £1,285,409. There were 150,557 deaths, and the number of policies in force was 8,518,619. In the Ordinary Branch 43,792 new policies were issued, bringing the number in force to 177,208. The new policies assure the sum of £4,433,834, and produce a new premium income of £253,483. The premiums received during the year show an increase of £186,067 over 1888, the amount being £904,915. The year's claims in this branch amounted to £213,262.

#### MEETINGS FOR THE ENSUING WEEK.

- MONDAY.—Royal Institute of British Architects, 8 p.m. Society of Arts. "Considerations concerning Colour and Colouring," by Prof. A. H. Church, F.R.S. 8 p.m. Liverpool Architectural Society. Miscellaneous papers by members. 7 p.m. Leeds and Yorkshire Architectural Society. "The Work and Writings of Henry Aldrich," by Paul Waterhouse, M.A. 8 p.m. Institution of Civil Engineers. "Lough Erne Drainage," by James Price. 8 p.m. Society of Arts. "Brazil," by Jas. Wells. 8 p.m. Manchester Architectural Association. Paper by W. E. Potts.
- TUESDAY.—Institution of Civil Engineers. Students' Visit to the Richmond Main Sewerage Works. Meet at Kew Gardens Station, 1.30 p.m. Civil and Mechanical Engineers' Society. "Gold-mining in Merionethshire," by H. C. Paxton. 7 p.m. Carpenters' Hall Free Lectures. "The Construction of Walls," by Prof. W. C. Unwin, F.R.S. 8 p.m. Society of Arts. "Commercial Geography," by J. S. Keltie. 8 p.m.
- THURSDAY.—Architectural Association, Lyric Club. 7.30 p.m. Edinburgh Architectural Association. "Electric Lighting of Interiors," by Prof. F. Grant Ogilvie, M.A., B.Sc. 8 p.m.
- FRIDAY.—Royal Institution. "Electro-Magnetic Radiation," by Prof. G. F. Fitzgerald. 9 p.m. Sunderland Architectural Students' Association. "Stone as a Building Material," by F. Purvis. 7.30 p.m.

### Trade News.

#### WAGES MOVEMENTS.

KILMARNOCK.—The joiners of Kilmarnock went on strike on Monday, in consequence of the masters' refusal to grant an increase of a halfpenny per hour in wages, and a reduction of three working hours per week.

Holloway's Pills completely cleanse the blood, expel all oppressive accumulations from the bowels, and purify both solids and fluids. With the blood perfect, and all poisons purged from the system, regularity must prevail throughout the body, aches and pains must cease, healthful energy must supplant weariness, and the sickly nerves must regain their wholesome tone.

### BILLS OF QUANTITIES & PLANS.

T. PETTITT and CO. Lithograph Bills of Quantities with the greatest expedition. Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.—T. PETTITT and CO., Lithographers, 23, Frith-street, Soho, London, W. Established 50 years.

### GEO. FARMILOE & SONS,

Lead, Glass, Oil, Colour, and Varnish Merchants.

ALL LETTERS TO OFFICES AND WAREHOUSES:—

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#### TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BECCLES.—For residence, Beccles. Mr. F. E. Banham, M.S.A., Beccles, architect:—  
Allen, F. J. ... .. £1,100 0 0

CLAPHAM.—For the construction of a new road and sewer on the Old Park Avenue Estate, Nightingale-lane, S.W. Messrs. N. S. Joseph and Smith, 45, Finsbury-pavement, E.C., architects:—  
Bottom, L., Wandsworth Common £722 0 0  
Mayo, R., and Co., Brixton ... .. 560 0 0

COLCHESTER.—For laying new drain to infirmary, for the Colchester Board of Guardians. Mr. J. W. Start, F.S.I., Cups Chambers, Colchester, architect:—  
Dupont, F. ... .. £79 0 0  
Cook, H. ... .. 77 0 0  
Mackenzie, D., Clacton ... .. 71 10 0  
Farran, G. ... .. 70 0 0  
Ward, T. J. ... .. 70 0 0  
Chambers, W. A. (accepted) ... .. 69 15 0  
Bowles, G. ... .. 69 13 6  
Rest of Colchester.

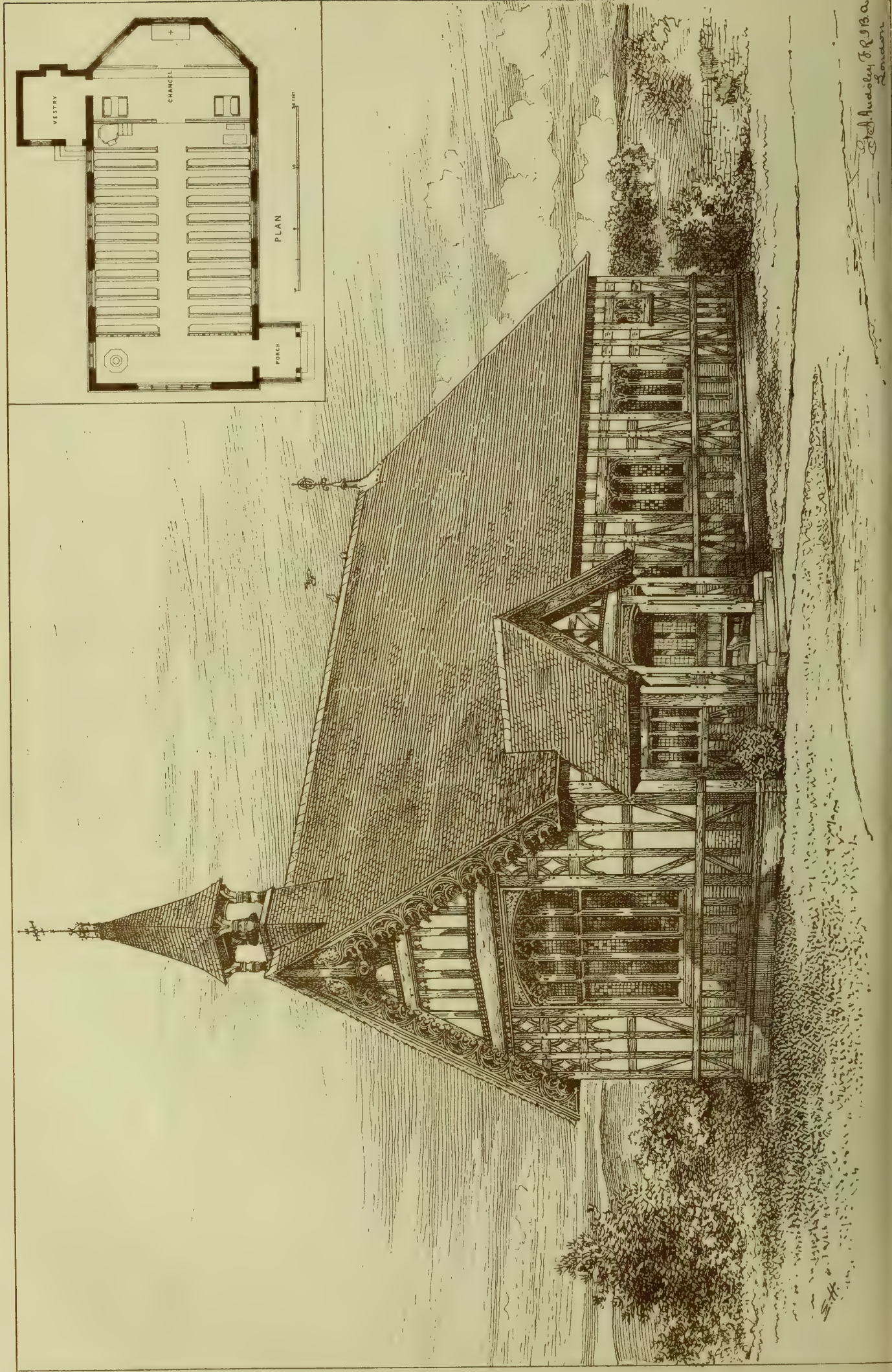
FAZAKERLEY, LANCs.—For the supply of a turret clock with bell at the Cottage Houses, for the West Derby board of guardians. Mr. C. H. Lancaster, Liverpool, architect:—  
Byrne, J., Liverpool (accepted).



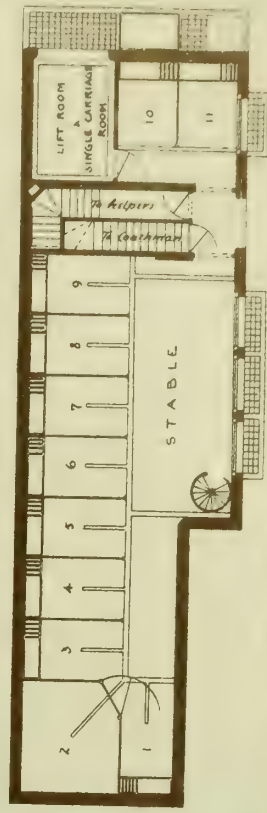
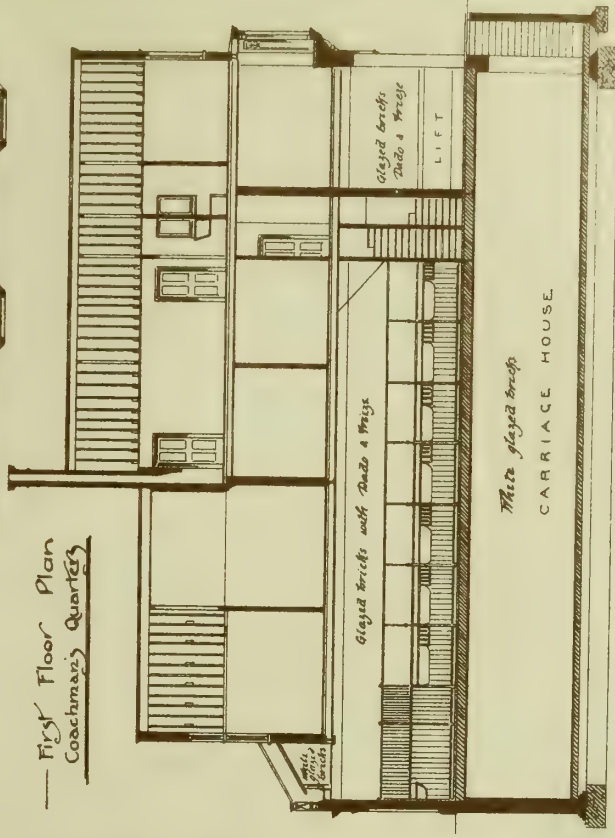
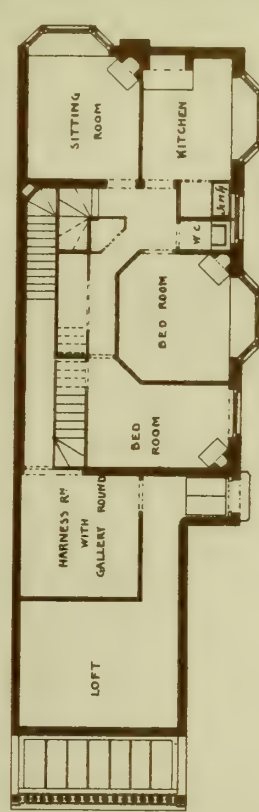




THE BUILDING REWS, MAR. 14. 1890.







STABLES - GROSVENOR SQUARE - WIMPERIS & ARBER - ARCHITECTS

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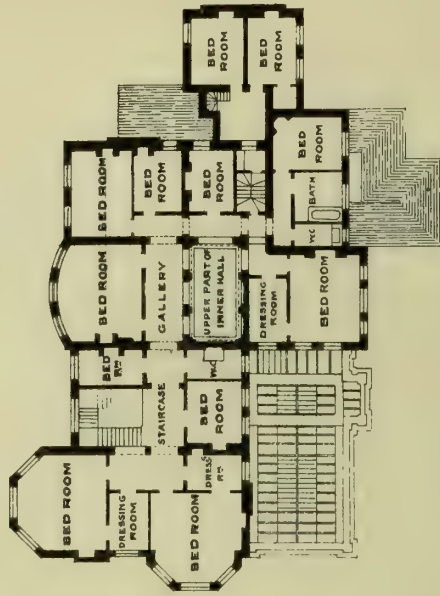
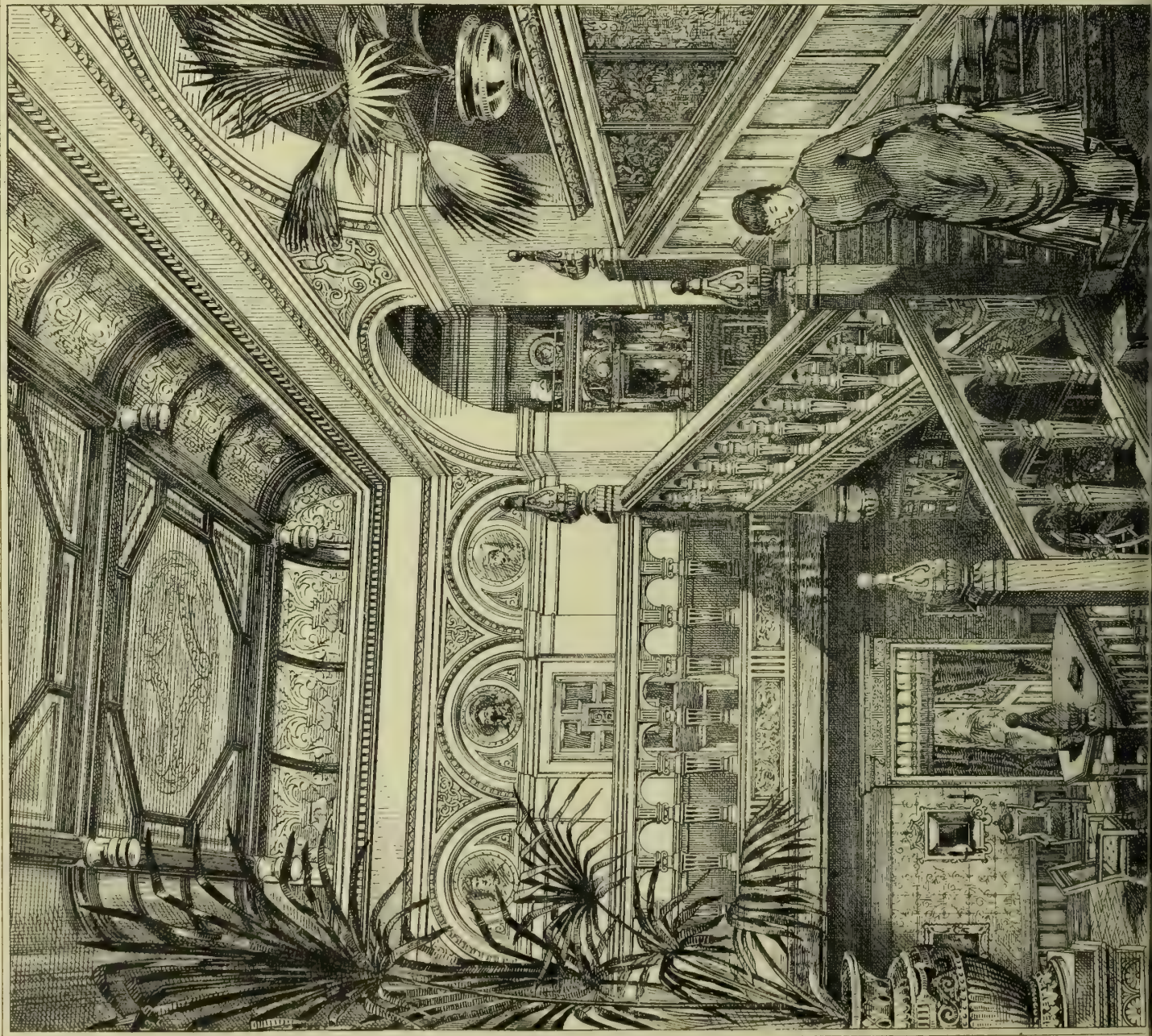






# Alterations & Additions to "Latchmere" Surrey

Messrs. Wyllson & Long, Architects.  
15, King William St. Strand.



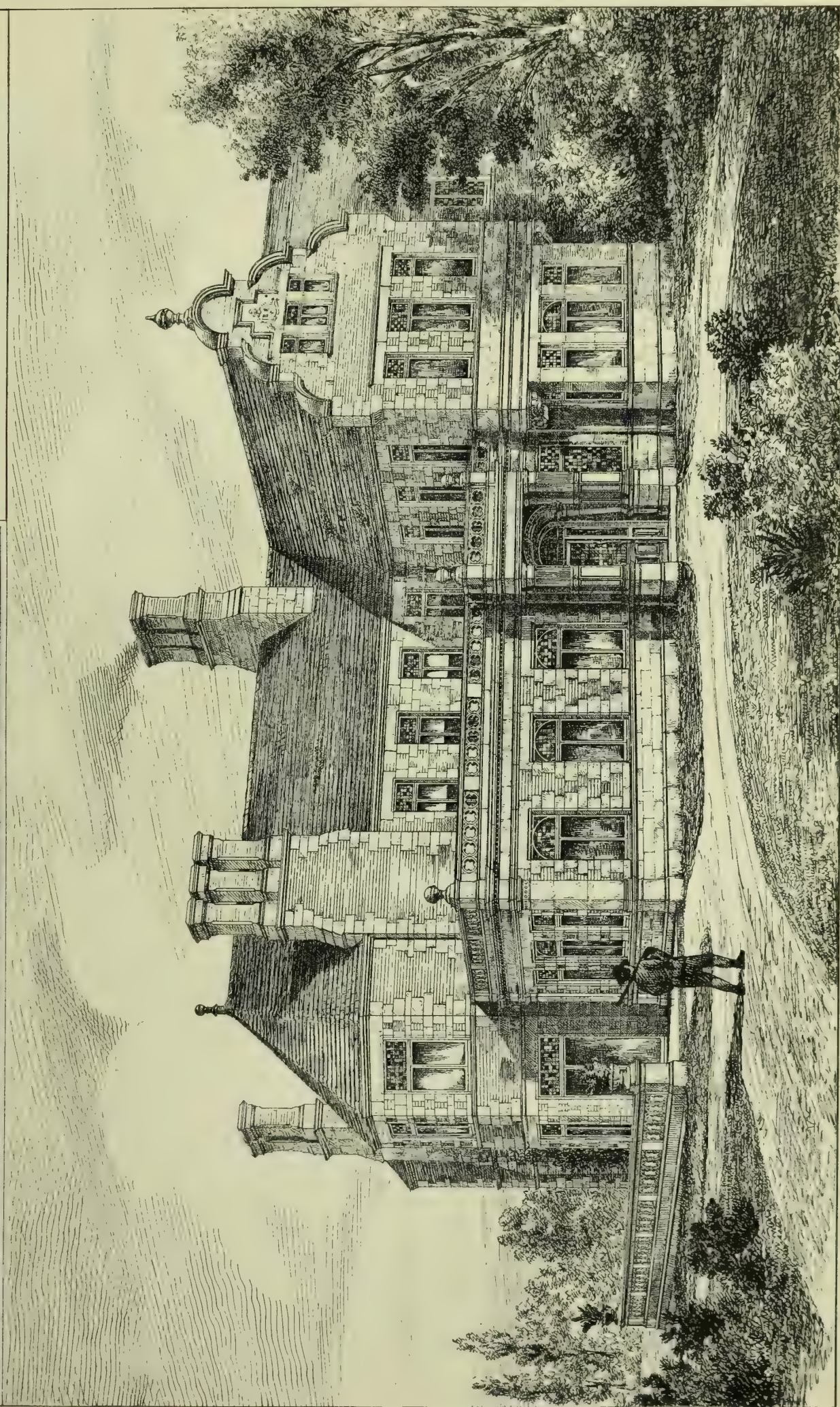
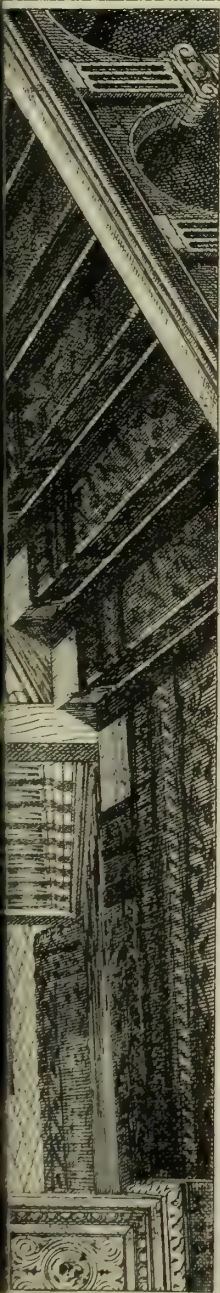
PLAN OF FIRST FLOOR







PLAN OF GROUND FLOOR







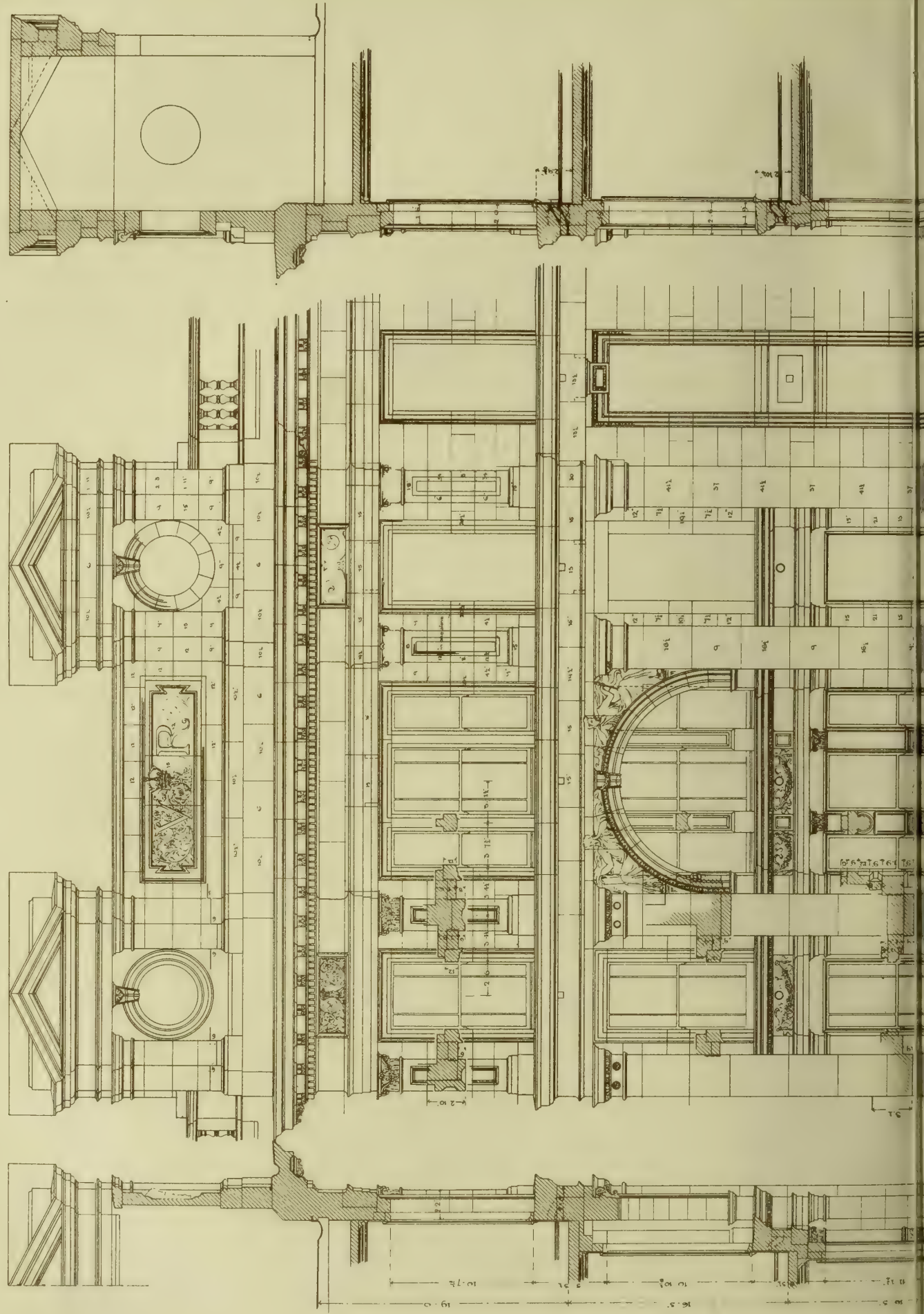






THE BUILDING NEWS. MAR. 14. 1890.

Centre Portion, Saint Martin's-le-Grand.













# THE BUILDING NEWS

## AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1837.

FRIDAY, MARCH 21, 1890.

### BUILDING ACCOMMODATION AND FLOOR SPACE.

A GOOD deal of guesswork naturally belongs to the domain of the architect. He has to prepare designs with very little to guide him, save in the way of models and such information as he can pick up from his clients, whether in their capacity as committees or individuals. The models within his reach are few, and when he finds them the particulars they give are not likely to be those he wants; his clients only furnish him with general and often unreliable data. When he sees a building that has cost a certain amount and accommodates a certain number, a useful idea may be furnished as to cost per individual; but it will be only of service to him under similar conditions to his own. That is to say, if he is commissioned to build a church in a certain locality—say in London—it would be of little use to him to obtain data of an edifice of similar size built in Yorkshire or Cornwall, where the materials and cost of labour are so different. In some parts of Yorkshire or Cornwall a church to hold, say, 1,000 worshippers would not cost more than half the amount necessary to build one in London of the same size, or even less than half; so that the bases or criteria of comparison do not hold. How useless, then, to quote a price per head or by the foot cube for buildings when the material and labour do not bear comparison!

One of the principal kinds of data of value to the architect is that relating to areas assigned for accommodation. As in every place people are of the same average size and stature, the area per person north of the Tweed will be the same as everywhere else; like a unit of measurement, it cannot alter; so the information once obtained for every kind of building is of fixed and permanent value. Yet, strange to say, no writer on architectural or building science has, to our knowledge, ever regarded the capacity or accommodation of a building with the attention it deserves. They have treated the question whether a given room or building should accommodate a hundred or two hundred persons more or less, as a matter of indifference. The architect seldom troubles to inquire, when he is planning his dining or drawing-room, or concert-room, about the number of persons that under exceptional circumstances will be accommodated therein; if it is as large as an ordinary reception-room or concert-hall it is enough, and if a few more score of people can be squeezed into it on an emergency, it matters very little. A room or hall perhaps 80ft. by 40ft., will accommodate 500 seats, though another 100 or more may be got into it. Or nearly double that number can be accommodated standing in the same area. Which of these numbers is really intended is one of the questions left to the architect to decide at his discretion. At any rate, it is only fair that he should know whether the room is to be provided for standing, as a crowded meeting, or for seating only a certain number. He can then give his room the dimensions required. The indeterminateness of these data is what one finds very often in competitions for public buildings. One competitor assumes a standing area, another a seating area, the consequence is that very different sizes are given for the same room. In either case the calculation must be more or less of guesswork, unless a given unit of area per person be stated. It ought to be fixed how many square

feet of flooring per head should be allowed for standing room, and how many for sitting room, and these are limits that can be easily determined by experiment. If we allow 2ft. 6in. or 3ft. area for standing per person, and 5ft. the sitting area, taking the usual dimensions for church seats as a guide, some definite rule might be followed, but of course a room may be packed, and a considerable addition made to the number accommodated.

A schedule of area, to be perfect, ought to give the minimum space for each individual in each class of building. These classes, roughly stated, may be said to embrace—(1) public meeting-rooms, such as those crowded to hear political addresses; (2) concert-rooms and theatres set apart for amusement; (3) churches and places of public worship. In each case a separate unit of area for every person may be allowed. Thus, for the first class of accommodation the minimum might be fixed at 2ft. 6in. superficial per person standing, exclusive of passageways, and 3ft. for seating; for concert rooms and theatres, not less than 3ft. superficial for standing, and 4ft. 6in. superficial for seating per person; and for churches and chapels a minimum of 5ft. superficial per person for seating. Taking the sizes usually recommended for theatres, 18in. is generally allowed for each person in length of seat, and a minimum distance between backs of 2ft. in the pit and gallery, and in the better parts of the theatre an area of not less than 30in. by 20in. For standing room 3ft. superficial is the minimum recommended, and these dimensions substantially agree with the figures we have suggested above.

Other units of area are required, about which authorities are silent. We allude to the accommodation necessary in schools, in picture-galleries, museums and reading-rooms, in public offices, committee-rooms, and council-chambers. Even in our private drawing and dining-rooms we can fix a limit to number, beyond which the room becomes unpleasantly close and uncomfortable to visitors. What superficial area per person should be allowed in each of these buildings is a question that can and should be determined. Not till it is settled can any rule be applied by the architect in calculating the areas required in any of these cases. The Committee of Council on Education have stated certain dimensions for schoolrooms, the length of desks and benches, and these are followed by architects in the design of schools. Quite as precise are the regulations of the School Board for London. The number of children taught by a certificated teacher and one pupil teacher is limited to sixty; the principal schoolroom is to be large enough to allow 80cu.ft. of space per child. Sizes of dual desk are given at 3ft. 4in. long, and gangways 1ft. 4in. are recommended. For infant-schools a superficial area of 8ft. to each child is provided. A certain number (40) is allowed for a class-room. For senior schools the seat accommodation is the leading guide, which gives roughly 10sq.ft. of floor space per child. One authority on school hygiene says there should be not less than 15sq.ft. of floor area per pupil in each class-room; each pupil should have 25 to 30cu.ft. of fresh air per minute. The space allowed for reading-rooms and public offices might with advantage be calculated on similar data, as readers and students as well as clerks have to remain for a considerable time in one room; though we are not aware of any reading-room having been planned upon any unit of floor area per reader, nor of any public office or council chamber regulated by any such considerations. We have often noticed the oppressive closeness and heat in council-chambers or vestry-halls when filled with its full quantum of members and a few visitors, though architects in planning these apartments seldom take into consideration the amount of floor area or cubic space to be allowed for a fully-attended board meeting.

No definite or maximum number of persons are stated, so that the room is often designed too small for the requirements of the borough or parish, and without any reference to growing requirements.

In some buildings the number of persons at any given time cannot be easily estimated; that is to say, during certain days or seasons the rooms may be almost empty, at other times crowded. Picture-galleries, museums, and some structures destined for recreation and amusements are of this description; the stream of visitors is ever moving—never remaining for any length of time in one place. These conditions render it more difficult to assign any areas as to the galleries. The available wall space for pictures will enable the designer to determine with some degree of approximation the maximum number of persons that ought to be accommodated added to those who pass through the galleries as passage rooms. The proper inspection of the pictures and the freedom of access necessary in passing in and out require, therefore, a somewhat larger unit of standing area per person than is necessary in a hall where people congregate and remain stationary. In a museum the maximum number of visitors should be regulated by the groups or cases, room being required to enable the objects in each case to be examined with convenience and comfort; and probably the same area of floor space to every person, as in a picture-gallery, would be sufficient. 10ft. to 15ft. superficial area to each person that can be accommodated would be the minimum allowance. Even the rooms of a private house, such as the dining-room or drawing-room, ought to be regulated in the dimensions; the larger the house, the greater ought to be the space allowed for guests. The dining-room, for example, should be designed with some reference to the dining-table, and the number of guests that can be conveniently seated round it, in addition to the areas occupied by furniture, the side-board, and the passage of those who wait at table.

It may be said that the architect ought not to be hampered by these considerations; that the number of persons admitted must always be adjusted by the space at command. The argument is plausible, and may be in some degree true, as far as private rooms go; but for public buildings, as those we have been discussing, it is necessary to design with reference to the number of persons that are likely to frequent or occupy the building. It is unjust to the architect to complain of the dimensions of a room after it is built, when he had to design his building according to the means at disposal, and without the slightest idea as to the number of persons it was intended to accommodate. We often hear, for example, complaints made about crowded and uncomfortable lecture-halls, club-rooms, and even churches, as if it were the fault of the architect; but it will be found that in several cases the building is made to do duty for nearly twice the accommodation it was intended to provide for. The maximum number of persons, or the least area of floor space per person, is a condition of building called for, not only on hygienic grounds, but also on those of safety. If we pack our churches and theatres with hundreds more people than they ought to comfortably hold, we must be prepared for those serious risks to life and limb that are constantly being brought to our notice during the panic caused by fire or the fall of a gallery. In concluding these observations we may also say that the study of requirements by the architect ought to be more complete than it usually is. Accommodation depends in a great measure on the skilful regulation and arrangement of seats and benches, cases and fittings, wall space, planning of entrances, and other details. How often we find wasteful arrangements of corridors and lobbies occupying positions



and areas that make it impossible to utilise to the full extent the available area at disposal.

#### PARTY-WALL REBUILDING.

A RECENT action for trespass for interfering with a neighbour's wall, tried in the Queen's Bench Division the other day, is of interest to those who contemplate erecting new premises, or raising their buildings in the Metropolis. The action was for trespass on the part of the defendant in cutting into the plaintiff's wall and building a house against and upon it. The facts were that the plaintiff, some five or six years ago, gave the usual statutory notice to the defendant that he intended to pull down and rebuild the party-wall between them. He thereupon pulled down the wall and rebuilt it, partly on his own and partly on the defendant's land, to a greater height than before. In the following year the defendant followed his example. After the usual notice, he pulled down his house, and rebuilt it to a greater height than before, and for that purpose cut into and used the external wall which the plaintiff had built. As half the wall was on the land of the defendant, he naturally concluded that it was a party-wall; but this contention the plaintiff disputed, he alleging that the wall so built into and upon was an external wall, and that, therefore, the defendant could not make use of it without paying for the portion of the wall cut into and used. Mr. Justice Matthews gave judgment for the defendant, saying that he could not find any grounds of the defendant's liability. The sections referred to by the earlier statutes of 14 George IV. c. 78, and 7 and 8 Vict. cap. 84, had been repealed, and, under the present Building Act, the only liability was that incurred by the building owner on the requisition of the adjoining owner, the latter being liable for all such expenses.

The facts of the case, apart from the legal points involved, are worthy of note. A., after giving notice, pulls down the party-wall (not a defective one) between his own house and that of B., and rebuilds his house higher than it was before—an operation which is common enough in London and all large towns. Such a wall is acknowledged to be a party-wall, each side having a moiety, and each of the owners having a remedy for any injury done to the portion of the wall standing on his own side. As a matter of common right, B. naturally expects his moiety of the wall to be rebuilt at A.'s expense. A. is obliged to carry the wall up to the roof of his house, and some portion of it overtops B.'s house. B., probably not liking to be overshadowed, raises his house to the same height, and in so doing makes use of the upper portion of the wall on his own land erected by A. Has A. any right to require B. to pay for the use of his moiety? Certainly not: it is unreasonable to expect B. to pay for his own half of the wall rebuilt by A. for his own convenience. After submitting to the inconvenience of one's party-wall being taken down and rebuilt, to be told that you cannot raise your house to the same height, unless you pay your neighbour for the portion built against, is rather a singular notion of justice, that would have accorded with that of the friend of Plato in his celebrated dialogue in the "Republic." But there are individuals who have not yet learned the ethics of party-walls or even party-fences. They imagine if for their own convenience they take down and rebuild, their neighbours have no right to the moiety on their own land after that event. In the case we have cited the plaintiff contended that the wall above the defendant's house was an "external" wall, and not a party-wall, and upon this ground the argument of the plaintiff chiefly rested. His counsel

argued that the wall, so far as it did not separate buildings, was an external wall; that part of 3 of the Metropolitan Building Act did not apply in the absence of a notice by the defendant specifying the wall cut into; that a wall might be a party-wall for some of its height, and above that the property of the adjoining owner—a dictum laid down by James L. J. in "Weston v. Arnold." But it seems unreasonable to make this distinction between a party and an external wall in the present case, for A., when raising the wall the whole thickness above B.'s roof, does so for his own benefit, to prevent the upper story of his house becoming damp. And B. has certainly the right to use the half built on his own land. The argument used by the judge in "Weston v. Arnold" does not support the contention of plaintiff A. In that case there was a wall which was the separate and undisputed property of the plaintiff (Weston), standing on his premises, and, therefore, he had a right to the use of windows in it, which was the contention in that case. Therefore, the reference made by counsel in the recently-tried action does not apply, for in his case the wall for its whole height was half on one neighbour's land and half on the other's, whereas in "Weston v. Arnold" the wall claimed as belonging to plaintiff was his separate property. Furthermore, he had windows in it for which he had acquired a right, and, therefore, it was unreasonable to suppose that his neighbour had a right to raise his building so as to darken those windows.

We have only been discussing the question on the principles of plain reason; under statutory enactments it ought to be clearer still, and the 84th and 93rd sections of the Building Act provide that whenever a building owner proposes to rebuild any party structure, the adjoining owner may require him to build certain chimney jambs, breasts, or flues, or piers for his convenience, and such costs incurred can be charged to the adjoining owner. The question of what is a party, and what a separate or external wall, does not occur in the bulk of the cases in the Metropolis. The third section of the Act, which defines the word "party-wall" as one "used or built in order to be used as a separation of any building from any other with a view to the same being occupied by different persons," clearly defines the term as one not of title or ownership, but of user. The public interests are considered primarily, not that of private owners, so that if the wall is decayed or faulty in construction it may be rebuilt as a separation between the two premises. The right of the owners is therefore limited. Were it otherwise, all kinds of vexatious objections would be made by building and adjoining owners, based on rights of ownership. But parties to litigation do not, or will not, see the intention of the Legislature, and hence the actions that are continually being brought into court, and which absorb a great deal of the time of the courts. When we have a court of appeal for building cases arising out of the requirements of the Building Act in the Metropolis, there will probably be fewer disputes of this kind to settle.

#### CONSTRUCTIONAL DETAILS OF THE LATE PARIS EXHIBITION.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

##### [INTRODUCTORY.]

I DO not propose to say much as an introduction to this report, but rather to leave the report to speak for itself. One of the great lessons that the Exposition teaches is, in my opinion, that iron can be one of the most precious aids to modern architecture. It may be as well to point out here the three ways in which iron has been used in the Exposition. (1) Engineering ironwork, if one may so call it—that is, ironwork in which no attempt at ornamentation is made in the parts

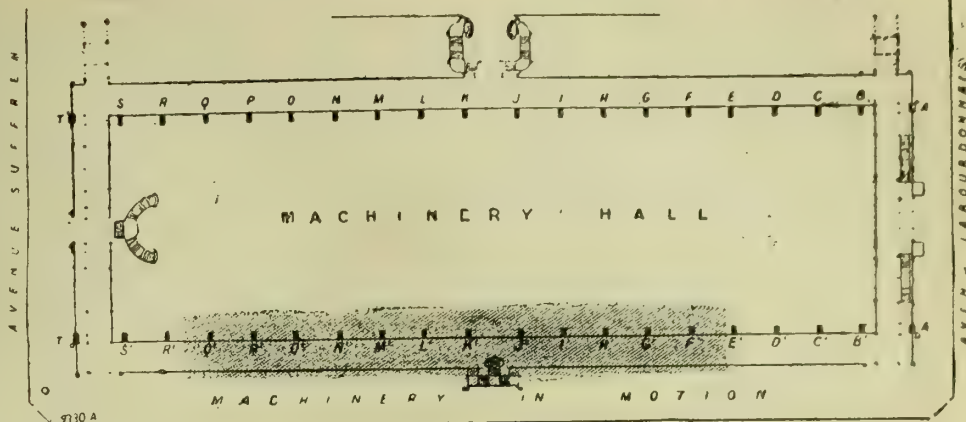
composing the structure, the decoration being applied "après coup," or as an afterthought, and the Tour Eiffel has been pointed out as belonging to this class. (2) Ironwork in which the decoration is worked in the composition itself of the structure, by means of the members forming the structure. The example of this is the Palais des Machines, by M. Dutert, architect, which gained the prize of 100,000 francs. The Palais is a most original and successful building, the decoration being simply worked into the general design by the juxtaposition of voids and solids, as will be seen in the railing to the first-floor gallery, and in other parts: none of the ironwork is in any way concealed, the columns to the galleries being formed of plate and angle-iron, and the caps formed in a very original way. (3) The third way is in the application of a combination of iron and a second substance, such as terracotta, glazed faience, &c., which fits into the iron framework and forms a background. An example, of which there are several, of this, are the two palaces by M. Formigé—viz., the Palais des Beaux-Arts, and Palais des Arts Libéraux. The other methods of construction will be found under their different heads. It only remains for me now to perform a pleasing duty—viz., to thank those gentlemen who have been good enough, by introductions and indications, to help me in the somewhat large undertaking of reporting on this Exposition. And, firstly, I am indebted to Mr. Arthur Cates (V.P.R.I.B.A.), the founder of the prize, for his generosity in doing so, and also for most valuable introductions to M. César Daly and M. Marcel Daly; to Mr. Phené Spiers, F.S.A., I am also indebted for introductions to Parisian architects; and also to Mr. W. H. White (secretary, R.I.B.A.), and to Mr. John Hebb (F.R.I.B.A.); to the foreign architects I should especially mention M. César Daly and M. Marcel Daly, his son, to both of whom I owe an extreme debt of gratitude for the many kindnesses they showed to me in giving hints about the Exposition and in various other ways; to M. Dutert, the distinguished architect of probably the most original building in the Exposition (I refer to the "Palais des Machines") I am extremely indebted for the kindly way he explained his building, and also for a monograph on his work which he presented to me; to M. Formigé, the architect to the two Arts Palaces, I am also indebted for similar information on these two buildings; to M. Bouvard, and principally to his "premier inspecteur," M. Ulysse Gravigny, for diagrams and photographs, &c., of his chef-d'œuvre, the Dôme and Palais des Expositions diverses, I am also obliged, and to the following architects:—M. Bousard, architect to the General Post Office, Paris, and also the "Pavillon des Postes et Télégraphes at the Exposition," for photographs, &c.; M. Foulhoux, architect of the Annam and Tonkin Pavilion for drawings; to M. Ballu, the architect of the Argentine Pavilion, which gained the first prize for the foreign pavilions, for a complete set of plans, the large-scale sections and elevations of this building, and of his other building at the Exposition, the Algerian Palace; to M. Louis Dauvergne (Expert to the Prefecture of the Seine), architect of the Brazil Pavilion, for various information; to M. Hermant, the architect of the Portuguese Pavilion, for similar services; also to M. Contamin, the chief engineer of the Exposition, who very kindly went very fully into their construction, and authorised his "premier inspecteur," M. Grosclaude, to accompany me over the principal iron constructions in the Exposition; to M. Fouquiau, the architect of the Bolivia Pavilion; to M. E. Viollet-le-Duc, fils, for information as to the formation by his father of the celebrated Museum of Comparative Sculpture, and for various pamphlets concerning its foundation; to M. Yvon, for notes, &c., on his building, which contains the "Panorama du Tout Paris," and various others of the French architects for the various buildings in the Exposition. I should like to place on record the kindly way in which I was everywhere greeted as a *confrère*, and the great trouble and inconvenience which so many of the French architects put themselves to, in order to render me service. I should also mention that Mr. Purdon Clarke, C.I.E., F.R.I.B.A., was good enough to send some illustrations, which are embodied in the report, of his Indian Pavilion, for which I was extremely obliged to him. From the following professional papers I have derived much information—namely, *Le*



Science Civil, L'Architecture, and Engineering; and one of the illustrations have been taken from their pages, and will in each case be acknowledged.

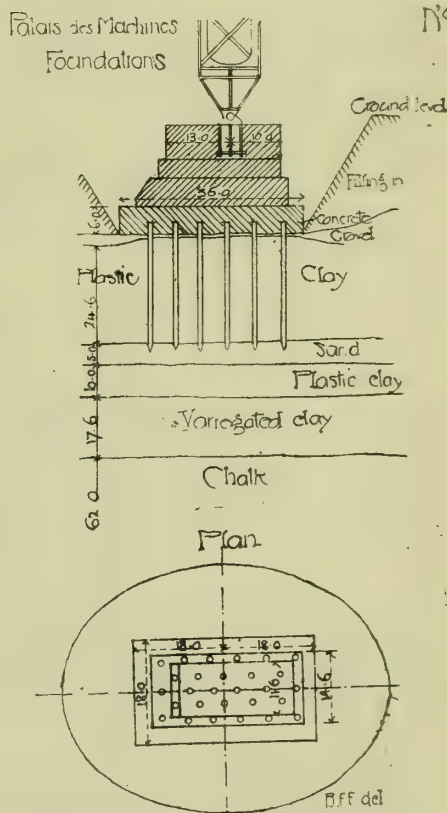
The "Palais des Machines" is probably the most important work in the Exposition, and is the largest building ever roofed in a single span. Before proceeding to consider the building in detail, it may be as well to give the result of interviews, which I had with the architect (M. Dutert) and the engineer (M. Contamin). The roof of the hall, which rests on the solid ground, is constructed in wrought iron in ordinary sections (fer de commerce or fers courants) of T, angle, bar iron, and sheet iron; this was necessitated by the time at the architect's disposal, and also by the cost. The ironwork is painted yellow. M. Dutert, after explaining the trouble he had with the executive to get them to build a structure which was entirely different to anything that had been done before, and which therefore was opposed by the more timid section of the committee, touched upon the fact that he had prepared a design for completely clothing with stone-work bases, the bottoms of the great trusses where they meet the ground, in case he found that this small resting-point for the great trusses caused a feeling of insecurity to the public; but, since he found that the public rather liked, than otherwise, the non-concealment of the construction, he had determined to let it remain exposed. With regard to its being built in iron, it was on account of the expense that it was so built, instead of in steel as primarily intended. The stages which he design went through before the final one was adopted was very similar to that which often takes place in England—viz., with small beginnings. M. Contamin, in a long conversation, gave me these different phases. First of all it was proposed to cover the hall in several spans; but as this would have interfered considerably with the machinery, it was finally abandoned. An elliptically-formed roof was then designed by Monsieur Dutert, having raked ends at its two extremities; but this form, besides being more expensive, was considerably more difficult to calculate for the strains. Finally, a pointed arch, which practically takes somewhat the outline of a Tudor arch, springing from the ground was adopted, and the raked gable ends were done away with, because the engineers foresaw difficulty in their construction. The pointed arch form with an articulation at the centre, made the calculations comparatively easy, because it defined exactly where the strains were to come through. It will be best to study this building under different heads, and to commence with the plan. The plan (No. 1, from "Engineering") consists of one large nave, 1,380ft. long, and of 20 great principals, having a clear span of 375ft., and a height to the ridge of 141ft. 10in. Running along each side are galleries in two heights, of a width of 57ft. 6in. (These galleries continue round the inside of the gable ends.) The 20 principals divide the building into 19 great bays, the two end ones of which are 83ft. 2in. wide, the central one, in consequence of the great entrance vestibule, is 86ft. 7in. wide, and the remaining 60 bays are 70ft. 6in. wide. There is a semicircular staircase at the Avenue de Suffren end, and two straight staircases at the Avenue de la Bourdonnais end, which give access to the gallery on the first floor, access to which is also obtained by the staircase under the dome of the vestibule which connects the machinery hall with the 30-metre gallery. *The Foundations.*—The method of forming the foundations to the huge trusses is singularly instructive. They are formed of blocks of masonry in Portland cement (cement is mixed in the following proportions—one-third of cement to two-thirds of sand), entirely isolated one from another, and coming under the trusses which they are destined to support. Each of these foundations is able to resist a vertical load of 412,000 kilogrammes, or 405 tons 13cwt., and a horizontal thrust of 115,000 kilogrammes, or 113 tons. This is the weight put upon them by the trusses, and also takes into account the amount of pressure allowed for wind and snow (110lb. for snow and 266lb. for wind per square yard). The soil on which the foundations are laid is, generally speaking, bad, in consequence of the numerous excavations which have been made for former exhibitions. The builders were continually coming across old masses of concrete, drains, &c., remnants of former expositions, and to make matters worse, 660ft. by 196ft. of sand had been excavated in 1878 solely for the purposes

## THE MACHINERY HALL.



of building. Borings were made to discover what sort of a foundation there was, and the different borings revealed the following state of the ground on which trusses were to be laid, and which is shown in the section No. 2:—(1) A bed of filling varying 1ft. 9in. to 22ft., which was, of course, no good as a foundation; (2) a gravel bed varying in thickness from 22ft. 6in. to 1ft. 9in.; it was upon this bed that the lower masonry foundations were put; (3) a strata of clay 24ft. 6in.; a sheet of water 10in. thick was found deposited on the top of this bed; (4) a bed of quartz sand 4ft. 6in. thick; (5) another bed of clay 27ft. 6in. deep; (6) a bed of chalk varying in thickness from 65ft. The lower bed of masonry was therefore placed as shown in the section, on the first bed of gravel, or in case this was found to be not thick enough, piles were driven in just above this bed, and according to the difference of the thickness of this gravel bed, different descriptions of piling were used, and the section given above was the one which was used where the bed of sand was reduced to 1ft. 8in. The following is the description:—Twenty-eight piles 13in. diameter (fir wood from Jura), and about 30ft. long, were lowered by the aid of a steam hammer until they reached the quartz sand. On the upper ends of these piles, projecting 2ft. 7in. above the upper bed of sand, was placed a bed of Portland cement concrete (composed of cement mortar in the proportion of 1 of cement to 2 of sand, and the concrete composed of this same mortar and pebbles in the proportion of 2 parts of the mortar to 3 of the pebbles) about 37ft. by 27ft. by 6ft. thick; upon this concrete was placed a bed of hard stone, varying according to the depth of the foundation. Above this bed is placed the pier, formed of a rectangular block of walling 23ft. by 11ft. 6in. by 10ft. high, in which are buried, as it were, the bolts which hold in position the cast-iron shoe, on which the principals rest in position. The resistance to the earth in this case is about 3½lb. to 155sq.in. Ten piers out of the forty are constructed out of this type. When, as in the case of five of the piers, the gravel bed had a thickness of 4ft. 9in., a bed of concrete 36ft. by 19ft. 6in., and a thickness of 4ft. 4in. was put on this and the piles suppressed. The 25 remaining foundations were found to have a bed of virgin soil more than 9ft. 6in. thick; on this was placed a bed of concrete 2ft. 6in. thick, stretching about 10in. beyond the upper block of masonry all round. This upper block of masonry, 23ft. by 11ft. 6in. by 10ft. high, as shown in the section, is the same in all the piers, and receives the cast-iron shoe of the great trusses. In this last type, the pressure on the earth is 3 kilogrammes to the square centimetre (6½lb. to 155sq.in.) By again referring to the section, it will be seen that the excavations are made with sloping sides. This was done to avoid more excavation than was necessary, and also in the case of the pile-driving was necessary to prevent the earth falling in, in consequence of the shaking which took place during the driving of the piles. The size of these excavations can be understood when I say that they contained from 1,300 cubic yards to 1,560 cubic yards. The piles were driven diagonally in five lines, and were made out of fir from Jura. Care was taken that the heads of these timbers, on which the monkey descended, should be the base of the tree, just above the roots, as this part of the tree

was found to have less splitting tendency than any other part. They were bound round with hoop-iron at the top, and shod at the bottom with points in hardened iron. The hammering was stopped when the pile sank only 39in. (or about a little under ½in.) for every ten blows of the monkey weighing 23½cwt. It was found that trying to drive the piles deeper than this caused them to split. It took three days to complete one excavation—i.e., to sink 28 piles. A layer of sand 12in. thick was then placed between the heads of the piles, and on this was placed the bed



of concrete, which contained a cube of 131m. (170 square yards), while the cube of the masonry above averaged 163 square yards. The rods holding the shoe on which the principals rested in position, were inclosed and built up in the masonry as the work proceeded, the exact position of these being determined by a framework of timber to the required position; and in order that the position of the cast-iron shoe could be varied somewhat in fixing, the iron rods holding down the shoe were inclosed in the masonry, just above the lower bolting, in cast-iron pipes for 1ft. 8in. of their height, and then by stoneware pipes up to the level of the top of the piers, where they were bolted to the cast-iron shoe. This allowed sufficient play for the fixing. The side galleries have their foundations formed by sinkings of concrete connected by arches in stonework. (The size of these piers varies according



to the nature of the soil.) The foundations to these side galleries are not built with Portland cement, as are those to the main piers, but in hydraulic lime from Beffes, mixed in the following proportions—two of lime to five of sand. I have thought this outline description would be interesting, because there were many real difficulties to contend with, in that the ground had been very much disturbed in former exhibition times, and therefore especial care had to be taken in forming the foundations. The excavation, pile-driving (to the ten excavations which required it), and building of the foundations to the level of the shoe to take the principals were performed in six months.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A GENERAL meeting of the Institute was held on Monday evening, Mr. Arthur Cates, vice-president, in the chair.

#### THE INSTITUTE AND ARCHITECTS' REGISTRATION.

The following memorial was read by the Secretary, who mentioned that it was received without any accompanying letter:—

TO THE COUNCIL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

GENTLEMEN,—We, the undersigned, being of opinion that it would be of advantage to the profession and the public also, if all hereafter seeking to practise as architects were compelled by statute to pass a similar examination or examinations to those recently established by the Institute with such signal success, desire to test, at as early a date as possible, the opinion of the whole body of professional members of this Institute.

We, therefore, send this recommendation under By-law 60 for a special general meeting to be held to consider the subject, and to propose the following resolutions:—

1. That at as early a date as possible statutory powers should be sought to establish, as in all other professions, a system of compulsory examinations to be held by the Institute, and to be extended to all architects hereafter entering the profession, whether as members of the Institute or not.

2. That when such compulsory examination comes into force, the position of all existing architects shall be completely respected.

Whether these be carried or not, we desire, under By-law 62—or, if that Rule not be operative, then by resolution—to propose:—

That a poll be taken by voting papers in order that, under any circumstances, the opinion of the entire body of professional members may be ascertained.

We have the honour to be, Gentlemen,

Your obedient servants,

GEO. GORDON HOSKINS, Fellow.  
ARTHUR B. PLUMMER, Fellow.  
EDWARD NEWBOLD, Fellow.  
THOMAS TILTMAN, Fellow.  
JOHN TILTMAN, F.R.I.B.A.  
EDWARD J. HANSON, Fellow.  
J. H. MORTON, Fellow.  
HUGH ROUMIEU GOUGH, Fellow.  
JOHN WREGHITT CONNOR, Fellow.  
CHARLES ROBERT CHORLEY, Fellow.  
STEPHEN ERNEST SMITH, Fellow.  
JOHN TWEEDALE, Fellow.  
SIDNEY GEORGE GOSS, Associate.  
W. H. HARRISON, Fellow.  
W. GILBEE SCOTT, Associate.  
OSWALD CANE WYLLSON, Fellow.  
CHARLES LONG, Associate.  
JAMES W. FRAZER, Associate.  
G. A. T. MIDDLETON, Associate.  
J. WILLIAM STEVENS, Associate.  
EDWIN SEWARD, Associate.

The CHAIRMAN stated that a special business meeting of members would be convened for that day fortnight, Monday, March 31st, to consider this memorial, and also the proposal that the Institute purchase the premises in which they meet, No. 9, Conduit-street, W.

#### BRICK BUILDINGS IN NORTH GERMANY.

Mr. ALFRED STRONG, Fellow, read a paper descriptive of the use of moulded and glazed bricks in North Germany. It was illustrated by a collection of ninety-nine drawings and eleven photographs, all to large scale, and all representing a series of twenty buildings, designed by Professor Otzen, of Berlin. Fifteen of these designs have been executed, and the others are either in course of construction or in contemplation. Among the completed ones were the Church of the Holy Cross at Berlin, which has cost £30,750, and is executed in red brickwork, with brown, green, and yellow glazing, and roof with glazed tiles, the upper part of dome being in yellow glaze; St. Gertrude's Church at Hamburg, executed in 1881-5, at a cost of £20,000, also in red brickwork, with stone dressings and glazed bricks: the spires are of stone, and the interior is plastered, with sgraffito and fresco; St. John's Church at Altona, where the red brickwork is carried inside and without, green and glazed bricks being used externally, and rich painting on coloured stone within. It was built in

1868-73, and cost £18,000. Other large red-brick churches were shown at Plagwitz, near Leipsic (cost £15,500); Eimsbüttel, near Hamburg (of similar cost); St. Jacob's, Kiel; the Mountain, Wiesbaden; St. Peter's, Altona; a design for a Lutheran Church at Berlin to cost £24,000, and also working drawings of Professor Otzen's private residence, a villa faced with red brickwork, interspersed with yellow glazed bricks and glazed tiles. Mr. Strong also showed some enlargements of his own sketches of old brickwork in Lübeck and other towns, showing the mode in which the effect was gained by rendering the ground between the moulded bricks, and the patterns were obtained by the use of a few moulds repeated. Stone is, and always was, Mr. Strong explained, a luxury in the North of Germany, and the architecture of the districts far away from the quarries of Saxon Switzerland and the Hartz Mountains is naturally developed out of the material readiest to hand. That, in the Late Gothic straining after effect, the limits of sound construction were often passed could not be denied—as, for instance, at St. Mary's, Lübeck, where brick mullions about 6in. wide were carried up to 60ft. or more, apparently only kept in their place by the saddle-bars to which the lead lights were attached. Still, in spite of these drawbacks, there were many examples of good work scattered up and down the North of Germany, and the student might, with advantage, examine both the ecclesiastical and the secular buildings from Hanover to well up the Baltic, and from its shores southward and westward. Professor Otzen's works showed, the lecturer thought, that he had carefully and exhaustively studied the works of his ancestors, as also the manner in which he had followed in their steps. Mr. Otzen was the first German architect to revive the free use of ornamental bricks in church architecture, and, the lecturer remarked, his first church in this style made sensation in 1880, architects being struck with the rich effect, not dark and gloomy, but rich and warm, which the use of well-blended colours and judicious glaze here and there produced; the example thus set had since found a certain amount of following, chiefly in the old Hanse Towns, where a limited use of moulded and coloured and glazed bricks had been made in warehouses and private buildings, adding life and interest to what otherwise appear somewhat prosaic compositions. Mr. Strong concluded by quoting the following remarks from a paper read before the Institute in November, 1873, by Mr. J. Tavenor Perry:—"I trust you will see that there are many points of excellence to be noted in these buildings, erected as they are of materials so similar to those at our own command, and that English architects may learn something from the Mediaeval brickwork of" the North of Germany.

Mr. HUGH McLACHLAN, in seconding the vote of thanks, which was proposed by Mr. CHARLES FOWLER, remarked that his own impression of Prof. Otzen's use of colour in brickwork was that it was too intense for English susceptibilities. In their use of terra cotta, the Germans employed a fineness of detail and brilliance of effect of which we had no idea.

Mr. J. M. BRYDON supported the vote of thanks, observing that the use of brickwork had awakened an immense deal of attention of recent years in this country. His impression of Herr Otzen's churches had been that the colours were very glaring, and the treatment was hardly Gothic to our eyes. For his own part he did not think that the specimens of Prof. Otzen's work on the walls could be compared with that executed by William Butterfield five-and-twenty years ago. He thought the use of colour upon brickwork was going the wrong way to work, and he thought ornaments upon bricks should be cut after they were burnt rather than be introduced as mouldings. There was one church in Hamburg, of the 17th century, in which the brickwork was cut, and the effect was more refined and reliable than the older moulded treatment in the churches of the same district, for those earlier mouldings were never true. As to the scheme of colour employed by Prof. Otzen, he felt that the greens were very strong, not to say crude, and he thought we had gone far beyond North Germany in any works of the kind.

Colonel LENNOX PRENDERGAST proposed a vote of thanks to Professor Otzen for lending so interesting and complete a series of illustrations. Owing to the labour movement, and the consequent increased cost of working stone, the use of

brick was, he remarked, becoming more general, while the expense and difficulty of carriage was being lessened, and the machinery and appliances for brickmaking were being developed and improved.

Mr. WILLIAM WHITE, F.S.A., seconded the motion, remarking that a definite and progressive style was apparent in the long series of drawings exhibited that evening. At the same time, he thought English architects had given a more correct treatment to brickwork than anything he had seen in North Germany. The subject divided itself into moulded arch and the finer cutting of bricks already burnt, and he had found that many clients preferred the more precise lines given by cut brickwork more pleasing than the irregular effects of moulded work. In the use of moulded brickwork, there were great practical difficulties arising from the different extent of shrinkage in large and small bricks.

Mr. ASTON WEBB said the use of brick was essentially an English question, for alike in the Tudor, the Elizabethan, and Queen Anne periods English brickwork was equal to anything that could be seen elsewhere.

Mr. BLASHILL having referred to the bond used in German brickwork, Mr. STRONG briefly acknowledged the vote of thanks.

#### THE GALILEE OF DURHAM CATHEDRAL.

Mr. WILLIAM WHITE, F.S.A., read a paper on the "Galilee of Durham Cathedral," which, he said, was a perfectly unique structure. The name of the Galilee was as well known as the cathedral, but not so its true meaning, or the purposes for which it was originally erected and used. The several and diverse traditions respecting it were not only at variance with each other, but no one of them accounted for certain architectural features found in it, or for its name. In many instances it had been called the Galilee porch, the Galilee chapel, or the Lady-chapel. The prevailing idea was that it had been built for a chapel; but the author considered that view untenable. Having given quotations from Canon Greenwell's history of the cathedral, and Davies's History, referring considerably to Hugo Pudsey's connection with the cathedral, the late Joseph Gwilt's opinion was alluded to, as was also a paper by Longstaffe, in the *Transactions* of the Archaeological Society of Durham. The alleged separation of the Galilee from the church for the first 200 years militated against the idea of its being recognised as a Lady-chapel. The word Galilee, which signified "Circuit," was originally applied to the circuit of the country around Kedesh Nathali, occupied chiefly by strangers, and Mr. White considered that the Galilee at Durham took its rise from that association of ideas and circumstances, it being the Court for causes extra-ecclesiastical. He believed Pudsey built the Galilee as a court external to the cathedral, though in contiguity to it, to serve not only as his Palatine court, but also for his regal court of justice. Although there existed in England several so-called Galilee porches, there was but one besides Durham, that at Ely; and Ely had also been the See of a Prince Bishop also Chief Justiciary. The recess within the great central portal of the Galilee at Durham was the prominent feature, architecturally, which first led the author to the opinion that the Galilee was erected as a court. The arch was of Pudsey's date, and its treatment such as was consistent with forming a recess for a tribune. The central division of the reredos was left with its rough plaster uncoloured to receive a dorsal hanging or canopied seat, which was not the treatment of an altar reredos at that period. Traces of similar treatment in the church of Old St. James at Dover were rendered visible 12 or 14 years ago; but they have since been covered with compositum and completely obliterated. The term Galilee had been applied in several instances to a building attached on the west of a cathedral, as at Lincoln and Peterborough, and at the New Chapel, Windsor, and St. Stephen's, Westminster. In several village churches in England there was at the west end a porch or small chamber external to the church which had by some been called a Galilee. These he considered might likewise have been built for the purposes of a court, as the manorial courts to which submission was made and fealties paid by the tenants must have required some recognised public place. As examples were mentioned: Melton Mowbray Church; Snettisham, Norfolk; Wigginton, Bucks; and Croyland Abbey. At Chuny and Vézelay it was very probable the 13th-



century tribune was for some such purpose as had been indicated at Durham. Whatever differences of opinion might exist as to the origin and uses of the Durham Galilee, all would agree that there was yet enough interest about it, both archaeologically and architecturally, to justify a record of its history.

Mr. BLASHILL proposed a vote of thanks to Mr. White for his paper, but could not concur in the conclusions at which he had arrived. He believed that originally a small chapel was built at the east end of Durham Cathedral, as in other cathedral churches, for the service of the Virgin Mary, and that as the service grew increasingly popular in the 12th century, especially amongst women, it was not found large enough nor sufficiently accessible, and, therefore, the chapel was added at the west end. This Galilee was therefore first a Lady-chapel, and while it might for convenience have been used as a consistory court, he did not think it was used for other purposes. He confessed he could not explain the meaning of the name "Galilee" for such an adjunct, but he believed this would account for the similar position of chapels of nearly the same date at Glastonbury and Ely, while at Worcester provision was made in the 13th century to gain access to the Lady-chapel by proceeding along the north gallery. The north transept at St. James's, Dover, evidently was not built as a court for the lord wardens, and was only so used by them in comparatively modern times.

Mr. WILSON seconded the motion, which was carried by acclamation, and was acknowledged by Mr. White.

#### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS assemblage of portraits represents some eight architects who have filled the position of President to the Architectural Association, including the present occupant of the chair. The sheet is the eighth of our series.

Mr. Leonard Aloysius Scott Stokes, A.R.I.B.A., was a pupil of Mr. S. J. Nicholl in 1874, and was born in 1858. In 1880 he was Pugin student, and two years later he obtained a silver medal in the Soane Medallion competition. For some year or more Mr. Stokes assisted Mr. T. Gandy, the well-known surveyor, after which Mr. G. E. Street, R.A., employed him as clerk of the works at Christ Church, Dublin, and he was then engaged for a time in this architect's office in London. Mr. Stokes has carried out the following works:—The Church of the Sacred Heart, Exeter (with Mr. C. E. Ware, M.I.C.E., as joint-architect); St. Joseph's Church, Maidenhead; schools at Woolston, near Southampton, and at Lynton; additions to Weyburn and Royal, both houses near Godalming; presbytery at Southend-on-Sea; Nazareth House, Southsea, and also two wings to the Head House at Hammersmith; the nave of St. Joseph's Church, Southampton; St. Michael's Home, Waterloo Ville, Hants; House at Palace Court, Bayswater Hill, W.; Church of Our Lady Help of Christians, with presbytery, at Folkestone (the original design for which obtained a silver medal at the late Paris Exhibition); St. George's Schools, Westminster Bridge-road, and schools at Northampton-place, Walworth; also St. Clare's Church, presbytery, and schools, Sefton Park, Liverpool, now rapidly approaching completion. Mr. Stokes's design for the Roman Catholic Church in Spanish-place was one of the most original designs submitted, as we remarked at the time the drawings were publicly exhibited. His photograph is by Mr. Barraud, of Oxford-street, W.

Mr. Herbert D. Appleton, F.R.I.B.A., was predecessor of the present President of the Architectural Association, which he now represents on the Council of the Royal Institute of British Architects. He is architect for the new buildings for the Epsom Union; St. Paul's Church, Forest Hill; chapels at Sutton and Beckenham; the bank at Sutton; Board Schools at Banstead and Sutton; factories at Clerkenwell; St. Paul's Vicarage, Forest Hill; Benfleet Hall, Haslegrave, and Sherwood, at Sutton; Branksomean, Beckenham; Bryer Heillog and Mannamend, Forest Hill; Shirleigh, Ewell; Anglesey, Warrington; stables, &c., Heath House, Banstead, &c. He was till within the last three months the editor of "A.A. Notes," which he originated, and is the hon. sec. of the A.A. Excursions Committee. The photograph is by Mr. Bassano, Bond-street.

Mr. Alfred Gotch, F.R.I.B.A., past-President of the Architectural Association, is well known as the author of "The Buildings of Sir Thomas Tresham," published a few years ago. He has also written a little guide to Haddon Hall, and another pamphlet of his is entitled "Holiday Journeys in Northamptonshire." He likewise is familiar to our readers as the author of papers read before the Architectural and Archaeological Societies on "Art and Costume," "Elizabethan Architecture," &c. He commenced practice at Kettering, and has built, among other works—British School at Bradninch, Devon; National School at Little Ilford, Essex (enlargement). In Northamptonshire we may name—Board School at Rothwell; Fuller Chapel School, Kettering (in conjunction with J. Gale); school at Corby (enlargement); school at Burton Latimer; farmhouse at Armston; houses at Kettering; shoe factories at Kettering; farm buildings at Slip-ton; lodge at Thorpe Underwood; Isolation Hospital at Kettering; Co-operative Stores at Desborough; shops at Kettering; drinking fountain at Burley-in-Wharfedale, Yorks; shop at Wimbledon, Surrey. Since entering into partnership with Mr. Saunders the firm have done—Victoria Hall, Kettering, North Hants; Liberal Club, Kettering, North Hants; Victoria Coffee Tavern, Kettering, North Hants; shops for Grammar School Estate, Kettering, North Hants; other shops in Kettering, several large shoe factories and various houses, and the Dairy Co.'s premises in the same town. They carried out the enlargement of Brigstock Manor House; a shoe factory at Rothwell; Oddfellows' Hall at Desborough; Salvation Army Barracks, Kettering; farmhouse at Slip-ton; and enlargement of Barwell Castle. The portrait is by Mr. Van der Weyde, of Regent-street.

Mr. Cole A. Adams, F.R.I.B.A., Past-President of the A.A., was honorary secretary to the Competitions Memorial presented to the President and Council of the R.I.B.A. by the late George Edmund Street, R.A., in May, 1880, and when the Council appointed a special committee to carry out the objects of the memorialists, Mr. Adams, in conjunction with Mr. Aston Webb, who has since retired, was appointed honorary secretary of it, and has done his best to promote the reform so urgently needed. Since the committee was appointed, some 1,450 adherents to the undertaking have enrolled themselves, and a large measure of reform has been secured. Mr. Adams has for many years been an active member of the A.A. In the year 1883 he was elected President, and again re-elected to that office in the following session, and was the first President to sit in that capacity on the Council of the R.I.B.A., which he did during two sessions. Whilst President of the A.A., Mr. Adams obtained the appointment of a special committee to consider how the work of that body might be revised and extended, and several important alterations and improvements were the result of their labours. During the past three sessions Mr. Adams has acted as Chairman of the Elementary Class for the study of ornament and colour decoration. Though quite a new class, it has proved a useful one, and the work of the students has attracted much attention. Mr. Adams's practice has been chiefly of a private character, and, among many other works, includes several houses and stabling at Wargrave, alterations and additions to other mansions and houses in the neighbourhood of Henley-on-Thames, mansion and stables near Maidenhead House, near Presteign, and various houses in different parts of London. Special internal fittings and colour decoration too have been designed by him for other residences. In conjunction with Mr. J. S. Westmacott, sculptor, Mr. Adams designed various houses. He has also devoted much time and attention to the study of the ornamental art of all nations, and thus finds much interest in illustrating his class lectures at the A.A. from original studies made from ancient examples. His portrait was taken by Mr. E. Smorthwaite, of Regent-street, W.

Mr. Richard Phené Spiers, F.S.A., F.R.I.B.A., Past President of the Architectural Association, is the Master to the Architectural School at the Royal Academy of Arts, which appointment he obtained in 1870. He studied at King's College School, and was elected an Associate of the College in 1857. A year later he entered the atelier of M. Questel, of Paris, and in 1861 he became a student at the Ecole des Beaux Arts. In 1862 Mr. Spiers entered Sir Digby Wyatt's office as an improver, and the same year carried

off Professor Cockerell's prize, given as President of the R.I.B.A. In 1863 he passed the first voluntary examination in Class of Proficiency. The same year he took Sir William Tite's prize and Medal of Merit at the Institute. In 1863 also he obtained the first-class Medal for Measured drawings at the Royal Academy, and also the Gold Medal and scholarship of £25 for two years. In 1864 Mr. Spiers passed the first voluntary examination in the Class of Distinction, and travelled through Sicily, and he was the Royal Academy Travelling Student. The following season he was awarded the Soane Medallion of the R.I.B.A. and Travelling Studentship, when he travelled through Germany, and wrote a report to the Academy on the various schools there; in 1866 through North of France, Egypt (and up the Nile to the second cataract), Syria, Constantinople, and Athens, returning home to work for the late William Burges, A.R.A., in his design for the new Law Courts, and for Sir Digby Wyatt on the National Gallery competition. In 1872 he obtained in competition and carried out two of the schools first built for the London School Board, after which he was engaged in carrying out a large mansion in Worcestershire for Mr. J. Corbett, M.P., in conjunction with M. Tronquois, a Paris architect. In 1877 Mr. Spiers was appointed Surveyor of the Royal Academy. Among his other buildings are a studio and residence for Mr. Thos. Faed, R.A., in Cavendish-road, St. John's Wood; various works in Barnsley, Yorkshire, including the laying-out of Lock Park and buildings therein, and additions to the hospital. Mr. Spiers was also architect of a large mansion on Chelsea Embankment built for the late Lord Justice Collier, who was raised to the peerage as Baron Monkswell. In 1882 he was elected Hon. and Corr. Member of the Sociedad Central de Arquitectos, Madrid, and in 1887 Hon. and Corr. Member of the Société Centrale des Architectes, Paris, and was Vice-President of the Conference of Architects at Paris in 1889. He is a member of the Council of the Royal Institute of British Architects. At the meetings of the Architectural Association Mr. Spiers has read the following papers, most of which have been reported in the BUILDING NEWS:—1862, "Architecture of Normandy"; 1863, "Architecture of Napoleon III."; 1867, "Egyptian Architecture"; 1868, "Study of History of Architecture"; 1869, "Belgian Architecture"; 1873, "Palace of Scaurus"; 1877, "The Roman Thermæ"; 1881, "Holland"; 1887, "Saracenic Architecture"; and at the R.I.B.A.: 1876, "The Restoration of the Chateau of Pierrefonds"; 1877, "Notes on the Condemned City Churches," a notice on the origin of the stalactite or honeycomb vault, and a notice of the French Diplôme d'Architecte. In 1874 he edited a second edition of Pugin's "Normandy," to which he added several chapters; and in 1887 he wrote a work on Architectural Drawing. His photograph is the work of Messrs. Fradelle and Marshall, of Regent-street.

Mr. Lacy William Ridge, F.R.I.B.A., Past-President of the Architectural Association, is well known also in connection with the Artists' Corps of the London Volunteers, in which regiment he is now Senior Major with the honorary rank of Lieutenant-Colonel. In 1871 Mr. Ridge was appointed surveyor under the Ecclesiastical Dilapidations Act for the Diocese of Chichester. He has erected or remodelled a considerable number of the parsonages of the diocese, while many of the churches have been intrusted to him for restoration, carried out in a conservative spirit, as at Pevensey Church; though in such cases as Midhurst and Lynch the works have amounted to a practical rebuilding. He has erected churches at Hurst Green and Ashurst Wood. Schools erected at Chichester in commemoration of the Queen's Jubilee were intrusted to Mr. Ridge, and he has carried out many similar works, as well as gentlemen's houses, in Sussex and the adjoining counties. He obtained, in the early competitions promoted by the School Board for London, schools at Bromley and Hol-loway, which, as well as the Dispensary at Islington, Mission-buildings at Camden-town, and works for private clients, have been carried out under his supervision. Mr. Ridge has read papers before the Architectural Association on "Rectory Houses and Parsonages," &c., &c. His portrait is from the studio of Mr. W. N. Malby, of Chichester.

Mr. Henry Cowell Boyes, F.R.I.B.A., is the Surveyor to the Grocers' Company, the Girdlers'



Company, and the Holborn Estate, in connection with which appointments he has carried out many important works. He has also been the architect for numerous blocks of offices and warehouses in the City; for Messrs. Seeley's publishing offices in Essex-street, Strand; Mr. Mocatta's house, at Englefield-green, and other country houses; and the swimming-bath and gymnasium at the Grocers' Schools, Hackney Downs. He is at present engaged on the rebuilding of Grocers' Hall, and the new church of St. Paul, Homerton. Mr. Boyes was President of the Architectural Association in 1876. He has been an active member, and is a Major in the London Rifle Brigade. He was born in 1846. His portrait was prepared by Mr. Barraud, of Oxford-street, W.

Mr. Thomas Henry Watson is a Fellow of the Royal Institute of British Architects, and was President of the Architectural Association in 1870-71. He is also district surveyor of St. George, Hanover-square, North, and surveyor to the Pentonville Estate. He commenced the study of architecture at an early age, under his father, the late Mr. John Burges Watson, and obtained three silver medals at the Royal Academy in 1860, the Gold Medal in 1861, and Travelling Studentship in 1863; the Medal of Merit and President's Prize, R.I.B.A., 1862, and Soane Medallion 1864. He graduated at the Institute in the Class of Proficiency in 1863, and in the Class of Distinction, 1866. His principal works are the north court and stable quadrangle to mansion "Somerhill," Kent (visited by the A.A. on their excursion to Tunbridge), and other buildings for Sir Julian Goldsmid, Bart., M.P.; Crowe Hall, Bath, for Mr. H. W. Tugwell; work at Dunraven Castle, &c., for the Earl of Dunraven; Rickmansworth Park, for Mr. J. W. Birch, Governor of the Bank of England; Newton Park, Somerset, for the Earl Temple; Höl-landen, Kent, for the late Mr. John Bald; house and studio, for Mr. Henry Corbould; studio, &c., for Mr. Phil Morris, A.R.A.; "Redstone," for the late Mr. John Linnell; lodge, &c., at Redhill, for Mr. William Linnell; churches of St. Mary, Loughton, and St. Luke, Deptford; and also the Villa Aurelia, Rome, for Major Heyland. Mr. Watson designed a house at Alexandria for Mr. Charles Royle; some new schools at Northaw, Poplar, and Loughton; vicarages at Kemsing and Nackington; and rectory house, Eltham; alterations and additions to "Knebworth," for the late Lord Lytton; to mansion, Belvoir, Ireland, for Sir Thos. Bateson, Bart.; Wressell Lodge, Wimbledon, for the late Sir H. Bartle Frere; Kent and Canterbury Hospital. Mr. Watson designed and carried out the water supply to Sir Julian Goldsmid's mansion, with tanks, &c., for storage, and system of fire hydrants; and also carried out special drainage and sanitary work for Lord Thurlow, the Earl of Dunraven, Sir J. Goldsmid, the late Marquis of Tweedale, the late Sir Geo. Burrows, and the Earl Temple. Amongst his smaller works are No. 10, New Bond-street, No. 25 in the same street, house and shop, Great Portland-street, and the loggia and studios at No. 164, Regent-street, for the Count Ostrog, "Walery." Mr. Watson's portrait is from a photograph by Messrs. Elliott and Fry, of Baker-street, W.

#### GOTHIC ARCHITECTURE.\*

PROFESSOR MOORE, of Cambridge, Mass., has just written a most able and clever book on the "Development and Character of Gothic Architecture," replete with diagrams and illustrations, which add very greatly to its interest and permanent value. The volume, though the work of an American author, has been printed in London, and is published by Messrs. Macmillan and Co., both here and in New York. By the courtesy of the publishers, we are enabled to present our readers to-day with a selection of the engravings from its pages. While thus unhesitatingly acknowledging at once the ability and brilliant character of the author's style, besides recognising him as a thoroughly-qualified student of the best period of Gothic art in Europe, who has evidently a personal knowledge of the buildings he more particularly describes, we cannot agree with many of his conclusions, and indeed must go so far as to say that the greater part of his deductions,

\* Development and Character of Gothic Architecture. By CHARLES HERBERT MOORE. (London and New York: Macmillan and Co.)

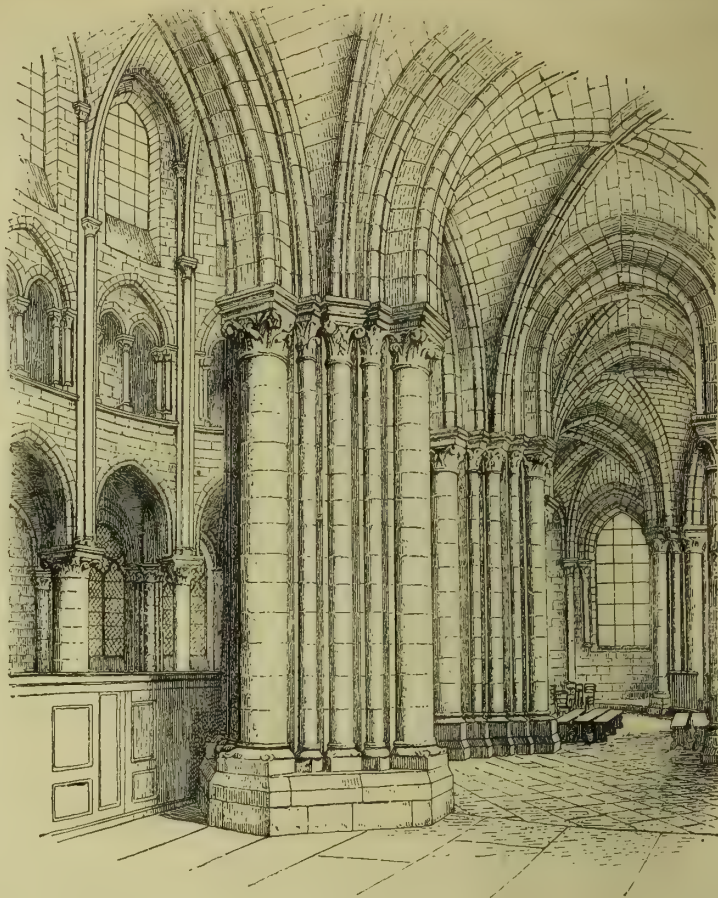


FIG. 7.

"if true, are not new, and if new, are not true." To sum up the whole matter, Professor Moore claims that there is no true Gothic but in France, and that all other architecture, in so far as it departs in style or falls short in scale from the Early French Gothic cathedrals, correspondingly ceases to deserve the name of Gothic. The leading English authorities on the development of Mediaeval architecture, such as Rickman, Edmund Sharpe, and Sir Gilbert Scott, are mentioned in very qualified terms, and even a French writer like De Caumont is stated to have equally misconceived the nature of Gothic art with the authors already named. The writer quotes Viollet-le-Duc for a profound and exhaustive illustration of Gothic, which he says is necessary in the midst of such imperfect apprehension as has thus far generally prevailed. The clear and unmistakable definition afforded by the *Dictionnaire Raisonné de l'Architecture*, whereby we may have a standard to estimate the degrees of Gothic quality that may appear in the Pointed architecture of different countries and at different epochs, is without doubt one of the most masterful ever produced by any writer; but our own authorities have equally recognised the constructive principles and growth of the arch style of buildings, and if English architects of the Gothic school have advocated our own national development of the Mediaeval type of design as being more suited to the scale and requirements of English architecture, it is equally true that a just recognition has always been accorded of the grandeur and magnificence of thirteenth century French Gothic work as the acknowledged parent of our own Pointed architecture. Thus Sir Gilbert Scott says of the Cathedral of Sens, after visiting it for the first time: "I had unconsciously entertained a certain feeling of jealousy towards it, arising from the exaggerated opinions constantly expressed as to the entire dependence upon it of our Pointed style; but my first exclamation on entering its noble nave was: 'Well, if our Gothic churches are all derived from this, they had, to say the least, a glorious parentage!'" And again he says, in his Royal Academy lectures, more than once, that precedence, without doubt, must be given to France among the nations in taking the initiative step which was necessary to generating a perfect form of arcuated architecture, though he further insists with historical truth that

Romanesque architecture went on uniformly and through its transition into the Pointed style in as distinctly national a method in England and Germany as in France, always acknowledging that precedence, as to the time at which the grand advance was made, must be awarded "not to France (for some parts of it were particularly tardy), but to that district of France round Paris, the focus of the royal power," "which seems to be the heart from which Gothic architecture diffused itself throughout Europe." The 13th-century buildings there erected are described as "the great standard and type of the style, demanding the closest and the most diligent study, and without a knowledge of these all architectural study of Gothic would be not only incomplete, but defective at the most vital part." "When you go abroad, begin with France; it is the great centre of Mediaeval art." Thus spoke Sir Gilbert Scott, with all his predilections for English work, and we quote his words because, if we read Mr. Moore rightly, he supposes English architects have never done justice to French Mediaeval building. We notice no mention in his pages of Wm. Burges, and his famous advocacy of the claims of the Gothic of France, while the drawings he published, and those by Mr. R. J. Johnson, in his celebrated folio, are not even alluded to.

The prepossession of one idea renders all the author's arguments and logical conclusions open to the charge of prejudice, thus rendering his otherwise admirable work, to this extent at least, unreliable as a textbook for the elementary student, which we can but mention with regret, seeing how thoroughly well he has brought together his information and illustrated his analysis. Indeed, perhaps, never before have the leading characteristics of Gothic building been more tersely set forth, and we give the writer every credit for his convictions, while we cannot fail to admire his manner of expression, even though we notice also an amount of self-consciousness peculiar to the American, which does not enhance the value of his remarks. We cannot quote from his pages so fully as they deserve for lack of space, but we may repeat his concluding definition of the style on which he treats:—"In fine, then, Gothic Architecture may be shortly defined as a system of construction in which vaulting on an independent system of ribs is sustained by piers and buttresses, whose equi-



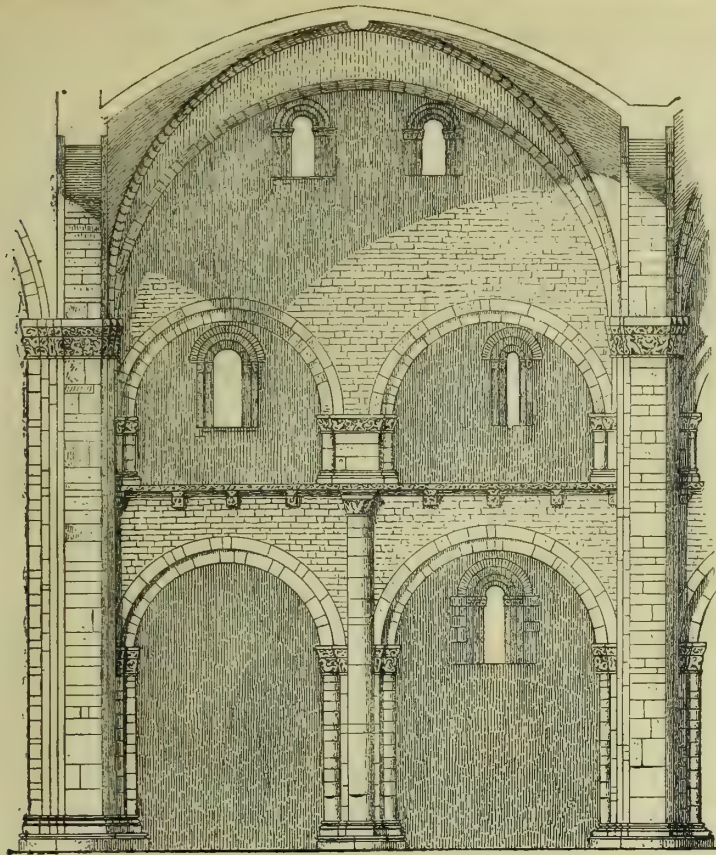


FIG. 8.

librium is maintained by the opposing action of thrust and counter-thrust. This system is adorned by sculpture whose motives are drawn from organic nature, conventionalised in obedience to architectural conditions, and governed by the appropriate forms established by ancient art, supplemented by colour design on opaque ground, and more largely in glass. It is a popular church architecture, the products of secular craftsmen working under the stimulus of national and municipal aspiration, and inspired by religious faith." "This architecture in all its distinctive characteristics is native to France and to France only." We deny, of course, that Gothic is only adapted to church-building: the remains of Mediæval architecture refute the statement, and we cannot for a moment admit the truth of the concluding opinion which we have just quoted, in spite of all that Professor Moore has said in his treatise before us. We have also to remark that it is a mistake to so far underestimate the importance and essential value of inclosing walls in Gothic building, thus reducing its idea to a mere skeleton of balanced construction. He devotes a chapter to the "Gothic of France," one to "Pointed Construction in England," and then another to Germany, Italy, and Spain, coming back in the following one to "Gothic Profiles in France," while the next chapter treats of them in other countries. "Sculptures in France" are next dealt with, and then the same subject in England and elsewhere. The same method as to painting and stained glass is also adopted, and the work finishes with a general chapter of "Conclusions." Our choice from the illustrations herewith given has been made, not so much with an idea of necessarily showing how the author argues his case—for that would occupy more space than we can just now devote to the matter—but rather with a view of enabling our readers to judge of the style and thorough character of the drawings which enrich its pages. Fig. 1, though not so crisply delineated as many others, represents a notable piece of work—viz., the spire of the Cathedral of Senlis, erected early in the 13th century. Mr. Moore says it "marks the culmination of pure Gothic design in this feature. In constructive principle it presents all the excellences of the spire of Chartres; while for beauty of proportions, grace of outline, and refinement of details it is hardly equalled by any other spire of the 13th century." Fig. 2 is from a drawing by M. Boesviswald, a French Government architect, and represents one of the vaults of the aisle round the very early and interesting

apse of the Abbey Church of Morienvall, near Crépy-en-Valois. This rudimentary apsidal aisle has diagonal ribs to the vaults, pointed archivolts,



FIG. 10.

and even rudely-pointed transverse arches, though of these last arches one has no rib, while the other has a rudely adjusted and very heavy

round-arched one. The interest of this example lies chiefly in what it exhibits of experiment in the application of new principles as yet but feebly apprehended, and we have here a form of vault-construction hitherto, probably, unknown at that time—a form which, though imperfectly carried out, already contains some of the most characteristic structural features, and involves some of the most important principles of the Gothic vault. Fig. 3 shows a flying buttress and clerestory of Burgos Cathedral from Street's "Gothic Architecture in Spain." It is given by Mr. Moore as an undeveloped example of Gothic, and the opinion of Street that this church was designed by a Frenchman is objected to, the reasons for which the reader will do well to consult in the book itself. Fig. 4 gives the east end of Lincoln Cathedral, drawn by Mr. H. W. Brewer. The same artist did the next illustration, Fig. 5, a general view of Rheims Cathedral, "which presents a striking consistency and harmony of parts which is equalled by that of few other French cathedrals." Fig. 6 shows the earlier abbey church of St. Leu d'Esserent, in which we have the apse, the apsidal chapels, the eastern towers, and the choir, all of which date probably from about 1170. It is "one of the best remaining examples of the simple grandeur and purity of style of the Gothic monuments of the 12th century." Fig. 7 is the interior of the apsidal aisle of the same church. The combination of apse, apsidal aisle, and apsidal chapels called for a wonderful degree of structural ingenuity, and led to some of the most charming interior effects. This is an eminently typical example. Fig. 8, elevation of one bay of St. Michele of Pavia, exhibiting an alternate arrangement of piers. The central shaft finishing with a cap at the string level is hardly a feature worthy of being imitated. It should have been continued up, as in the Abbaye aux Hommes, to carry the groining rib of a sex-partite vault, or not introduced at all if a quadripartite arrangement, as here shown, was originally intended. Fig. 9, from the end of Mr. Moore's book, is a figure from the great Jesse window of Chartres Cathedral, and is a good example of the typical drawing in Early French pure pot-metal glass.

## CHIPS.

The annual dinner of old King's College students will be held on the 28th April, at the Holborn Restaurant, when the Right Rev. Bishop Barry will preside.

At a meeting of the Walton-le-Dale local board held on the 3rd inst., Mr. F. E. Dixon, P.A.S.I., was unanimously appointed to prepare plans for the sewerage and the disposal of the sewage of the district of the board, comprising an area of nearly 5,000 acres, and having a population of over 11,000 persons. Mr. Dixon, who acts as surveyor to the board, won the ten-guinea prize of the Surveyors' Institution, being placed second in order of merit at their annual examination.

At the monthly meeting of the Cardiff Union Rural Sanitary on the 12th inst., it was unanimously resolved to increase the salary of their surveyor, Mr. Wm. Fraser, to £250 a year.

The course of lectures in Modern Practice having been completed, the usual examination has been held, with the result that Mr. A. L. Jacob has gained the prize of the classes in architecture, University College, London, and he and Mr. Dendy Watney will receive first-class certificates, and Mr. H. R. Applebee and Mr. H. Helsdon will receive second-class certificates.

Col. Henry Luard, R.E., held an inquiry on Friday at Jarrow-on-Tyne into the application of the Town Council to borrow £500 for the works in connection with the recreation ground, and £3,868 for private street improvements and sewerage. The proposed works in connection with the recreation ground are to extend the lake, and to inclose an additional piece of ground. There was no opposition.

The Crystal Palace collection of casts and statues has just been enriched by the presentation by the Duke of Westminster of the original model, by Mr. G. F. Watts, R.A., of the colossal statue of the ancestor of the Grosvenor family, Hugh Lupus, first Earl of Chester. The statue, in bronze, is erected in front of Eaton Hall.

A stained-glass window in memory of the late Archdeacon Iles was unveiled on Monday by the Bishop of Lichfield at St. Peter's Collegiate Church, Wolverhampton. The window represents the four saints, Jerome, Ambrose, Augustine, and Gregory, and is situate in the eastern portion of the south aisle.



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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS—ST. THOMAS OF CANTERBURY—THE PROVIDENT LIFE AND COUNTY FIRE OFFICE, BRISTOL—DESIGNS FOR A CABMEN'S SHELTER AND NEWSPAPER KIOSK—EXAMPLES OF GOTHIC ARCHITECTURE.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

## CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 405.)

## ST. THOMAS OF CANTERBURY.

A CARTOON designed by Geo. S. Fayers, for the Maison Helbrunner, Ltd. One of a series of chancel wall-hangings, to be used on the great festivals of the Church. The original is very nearly life-size, and was hung at the recent exhibition of the Arts and Crafts Society.

## NEW BUILDING FOR THE PROVIDENT LIFE AND COUNTY FIRE OFFICES, BRISTOL.

THIS building occupies a corner site, upon which up till a short while ago stood a jeweller's shop, at the corner of Clare-street and St. Stephen's avenue. The building consists of basement and ground-floor, with three floors over. The ground-floor is occupied by the Provident Life Office and County Fire Office, whose headquarters are at 50, Regent-street, London. The building is a lofty and striking one, and there is about it an originality of treatment which is striking. The basement and first and second floors are arranged as offices. There are four good, well-lighted rooms with fireproof safes and separate lavatory and w.c. Accommodation is provided for each floor. These are arranged (although in the centre of the building) practically in the open air, as will be seen by reference to the plans. The floors throughout are of iron and concrete. The top floor is arranged for caretaker, &c. Outside the rooms there is a loggia or balcony. The work has been carried out by Mr. A. J. Beaven, Bedminster, Bristol; and Mr. F. Metjen has acted as clerk of the works. Mr. E. Henry Edwards, of 5, Clare-street, Bristol, was the architect.

"BUILDING NEWS" DESIGNING CLUB.  
CABMEN'S SHELTER AND NEWSPAPER KIOSK.

(For description, see p. 429.)

## WAYSIDE NOTES.

THERE is always a glorious uncertainty about the time at which Parliament will take in hand the reading of Bills set down for the order of the day. Although one looks forward in a hopeful frame of mind to the reading of the Architects' Registration Bill for the second time, which is now set down for April 19, one is equally prepared to face the contingency of its defeat. It would be a rare thing if a measure of the nature of that dealt with by the present Bill passed successfully through Parliament at only the second attempt. That it deserves to do so the Registrationist cannot have the shadow of a doubt, since the Bill that has risen with Phoenix-like persistency from the ashes of the Architects', Engineers', and Sur-

veyors' Registration Bill has had the features that proved objectionable to certain parties, expunged and as at present constituted, seems to have given satisfaction to all except those who quibble at details which it may reasonably be believed would have to appear in any Bill framed on the principles upon which we most of us hold a Registration Bill should be framed.

One feels, anyhow, a certain amount of confidence that what opposition the Institute Council may offer to the measure, will be rendered far less effective than it would otherwise have been, by the fact that on Monday evening last a number of its members, including many Fellows, and one representative of Societies allied to the Institute, presented a memorial to that body touching upon the Registration question. Although the number who, at the time of presenting, had signed this memorial was but small, the incident is yet of considerable moment, for it is difficult to see how, in the face of the memorial, the Council can possibly claim and aver through its Parliamentary advocates anything like a unanimous voice on the part of the members in whose interest it is supposed to act. The amount of discussion matters little, though, as a fact, we know that the few who on Monday had signed the memorial are only a fragment of the whole number who have in one way or another shown themselves to be in favour of the movement for once and all closing the ranks of the architectural profession.

I was particularly glad to hear of the action of the gentlemen who presented the memorial to the Council of the Institute, for, until it is correctly found what proportion of the members are in favour of Registration, I shall be devoured, it must be confessed, by much curiosity on the point. Whatever may be the result of the Parliamentary debate on the proposal to read the Bill a second time, I trust, with the memorialists, that a poll may be taken by voting papers, and the opinions of the entire body of professional members of the Institute ascertained. The subject is to receive attention, it is said, on Monday evening next, and I do not see how the council can refuse the request of the memorialists. Should the poll be taken, and the majority of members act according to secret conviction, and not on party considerations, the result would, I feel convinced, be very different from what the rabid anti-Registrationist imagines. And the matter stands on a different footing to that which it would do if the memorial had anything to do with the labours of the Registration Committee, or the Architects' Registration Bill. No reference was, I believe, made in the memorial to anything of the kind. Seeing that such is the case, there can be no excuse either for opposition to the memorialists' wish by the Council, or for the members not voting according to private conviction. If asked to support a Bill promoted by the Registration Committee, one can imagine that many would refuse so to do because the Bill was not fathered by the Institute; but as the request has been made in a general way, and in connection with no committee or Bill whatsoever, it will be impossible for any member to act honestly unless he regards it in an unbiased manner and gives his own opinion, and not that which he thinks would be the opinion of the majority of his fellow-members.

The matter is simple enough. The memorialists wish the Council to take steps to ascertain the views of every professional member of the Institute on the Registration question. Should the poll asked for be allowed, each member has to forget any of the unfortunate pettinesses that have been observable in connection with the subject, and putting out of his head any thoughts of Registration Bills, Registration Committees, and the like, simply to ask himself this question:—Is it desirable that the profession of the architect should be made close like that of the lawyer and physician? If so, then vote accordingly. If it be thought that it is desirable to preserve things as heretofore, act up to the conviction also; but when in a position to reflect upon the action, endeavour to put down in black-and-white the why and wherefore of the decision. If compelled, by some means or another, to substantiate one's opinion by logical reasoning, I rather fancy that there would be a very small minority bold enough to declare that Registration is undesirable.

The County Council got into hot water over its "London County Council Bill" when that measure was brought forward in Parliament for its second reading. The sandwiching of the objectionable clauses, upon which Mr. Ritchie fastened "tooth-and-nail," has aroused general indignation, and one may expect a general slating of the L.C.C. all round. Some of us, perhaps, would not object to the clause dealing presumably with sky-scrapers. I only wish that Sir Edward Watkins's proposed Eiffelian monstrosity could be brought under some such law. Notwithstanding the paragraph that appeared in the newspapers towards the commencement of the week, stating that many of the authors of the designs submitted had "contrived to combine beauty of outline with stability of structure," I still hold antagonistic views of the proposed tower. I believe a suggestion was made to Sir Edward, or for his benefit, that, having purchased Snowdon, he should erect on the summit thereof his iron observatory tower, and thus obtain a breezy elevation indeed. We certainly do not want the monster in London, however successfully its architect, or engineer, may have combined "beauty of outline with stability of structure."

If this is to be the only good point about any design that may be selected, it is nothing new. The most that people, viewing the structure as generously as they were able, can say of the Eiffel Tower is that it possesses "beauty of outline with stability of structure." A certain dignity has, in the Paris tower, been gained by the bold, sweeping lines of the angles of the building. But any beauty of this nature is a poor compensation for spoiling the outlook of a city for miles around. I doubt not but that there will be a petition against the Watkin Tower, as there was against the erection of M. Eiffel's design. Seeing the futility of the petition in a land where they are supposed to "manage these things better," one cannot hold out much hope in matter-of-fact England. The tower will probably be erected, and form the second specimen of the new genus "Eiffel." I did read, some time back, that great novelty characterised some of the designs, of which there was a kind of preliminary sampling last Saturday; but it may be predicted that nine out of ten start away on Eiffel principles. It is understood that the public will be admitted to view the designs as soon as the jurors have awarded the premiums, of which we should be glad; for, objectionable as the scheme may be in other ways, there cannot but be great interest attaching to the exhibition of the work of the "engineers and architects of the highest professional status in the United Kingdom, the Continent, America, Canada, and Australia."

The Strand Improvement scheme has been referred for consideration to a Select Committee of the House of Commons. The task before the Select Committee is not an enviable one. So much has been written about betterment and "worsement"—which I trust will not become a dictionary word—that the whole thing seems to have got into a hopeless muddle. From this condition of things the Select Committee will have to rescue the Improvement scheme. It will be no light task, and involve a good deal of painstaking inquiry and marshalling of facts. I followed the discussions and correspondence on the subject till it became wearying to a degree, what with equally positive assertions and arguments *pro* and *con*, the betterment clause, and the involved statements of legal gentlemen anxious to bring out some abstruse points of law. This lengthy discussion of the subject, however, has served a good purpose, drawing attention to the fact that there was something in the measures proposed to be taken by the County Council that did not give general satisfaction. For my own part, I feel less inclined to put faith in the betterment principle than at first, as the improvement, so far as widening the Strand is concerned, is evidently of such a nature as will be to the advantage of the general public. Betterment, or no betterment, however, in our corner of London, we shall all be glad when the improvement is effected; and for that reason I trust that, though involved in some difficulty, Parliament will quickly dispose of the questions that are now hindering further progress. **GOTH.**

Chiswick has decided to adopt the provisions of the Free Libraries Act.







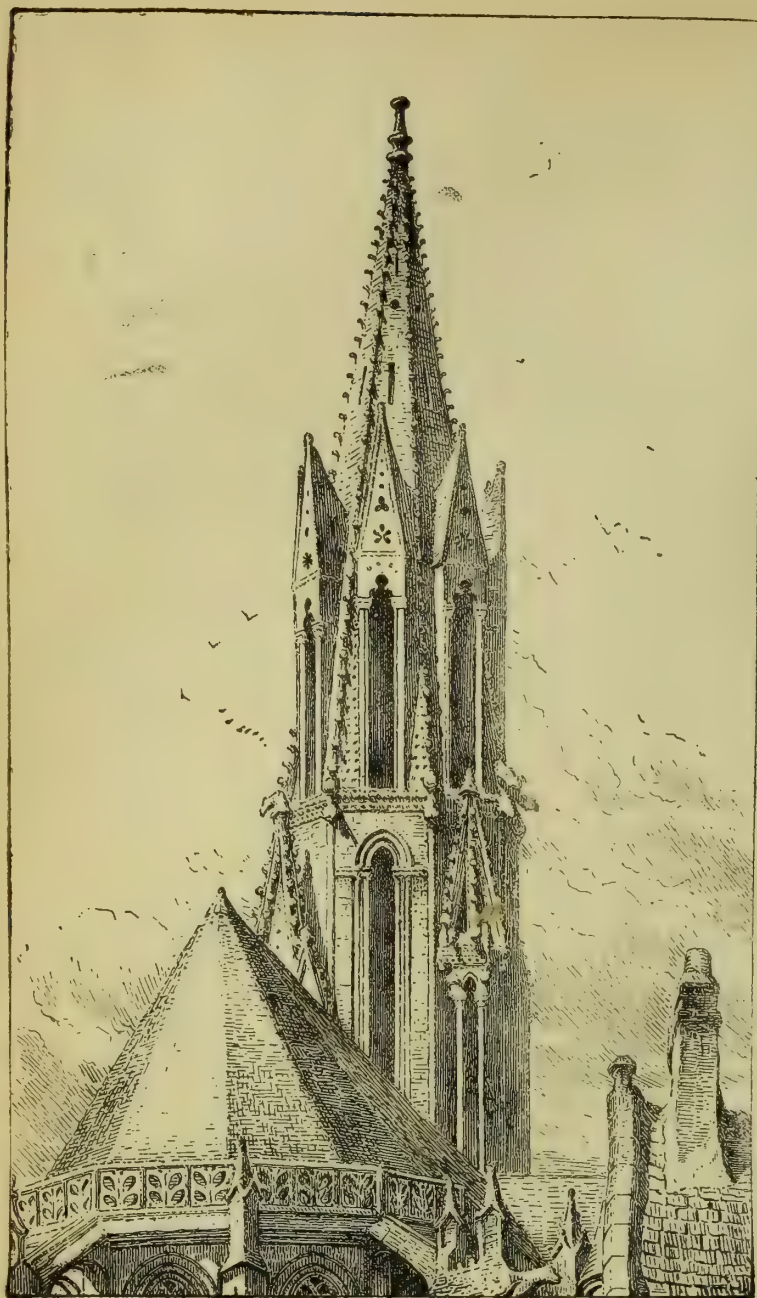


FIG. 1.]



FIG. 2.

# DEVELOPMENT AND CHARA

By CHARL

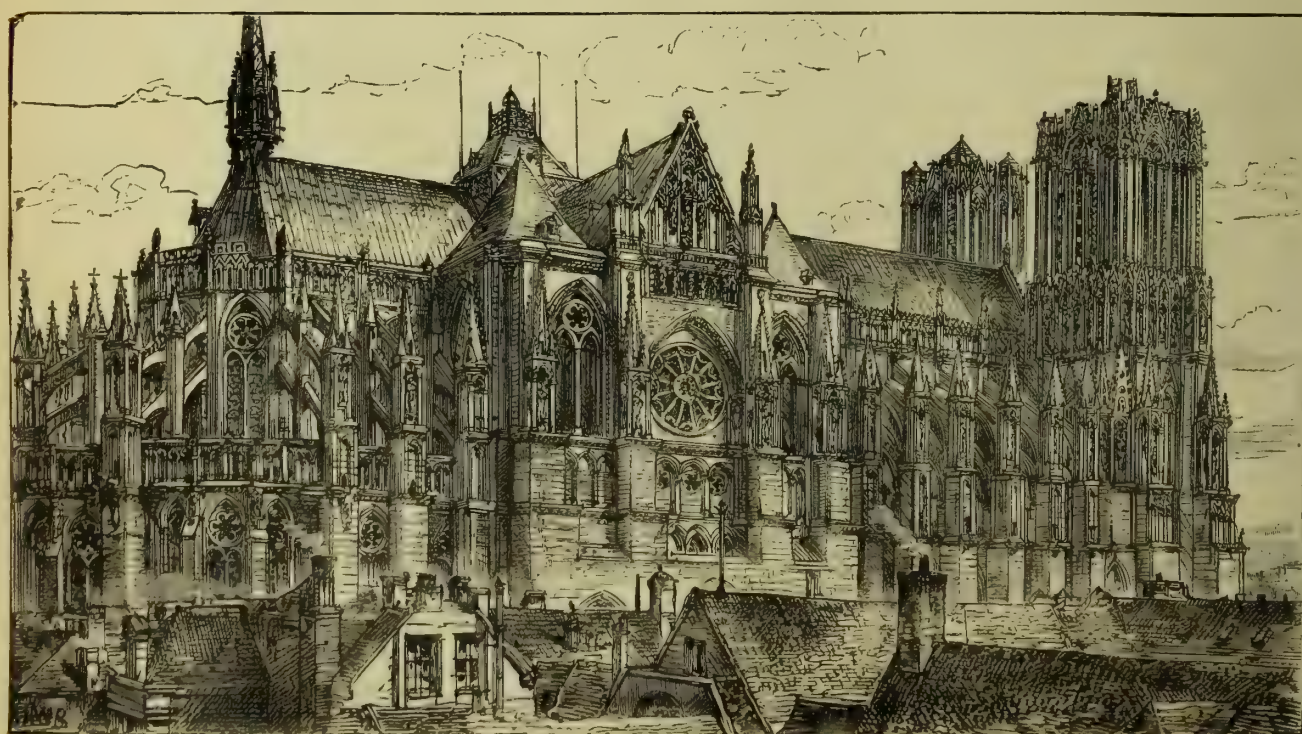


FIG. 5.



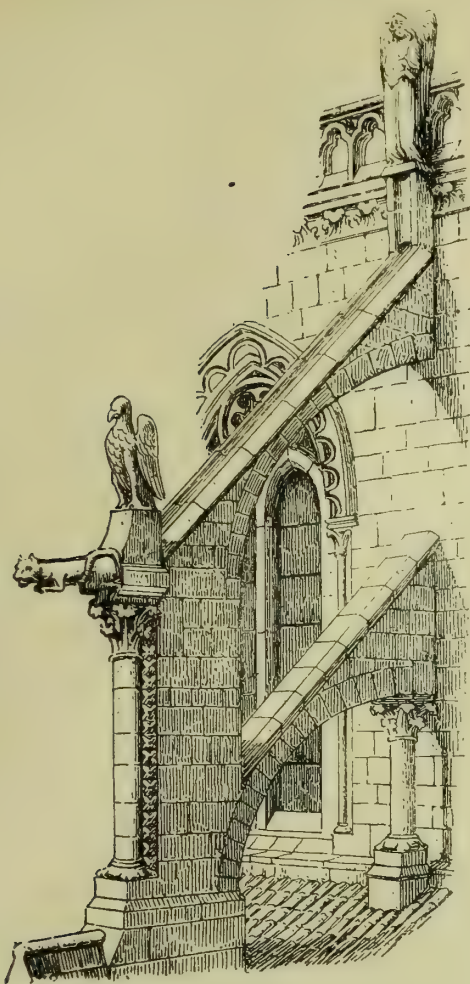


FIG. 3.

ER OF GOTHIC ARCHITECTURE.

HERBERT MOORE.

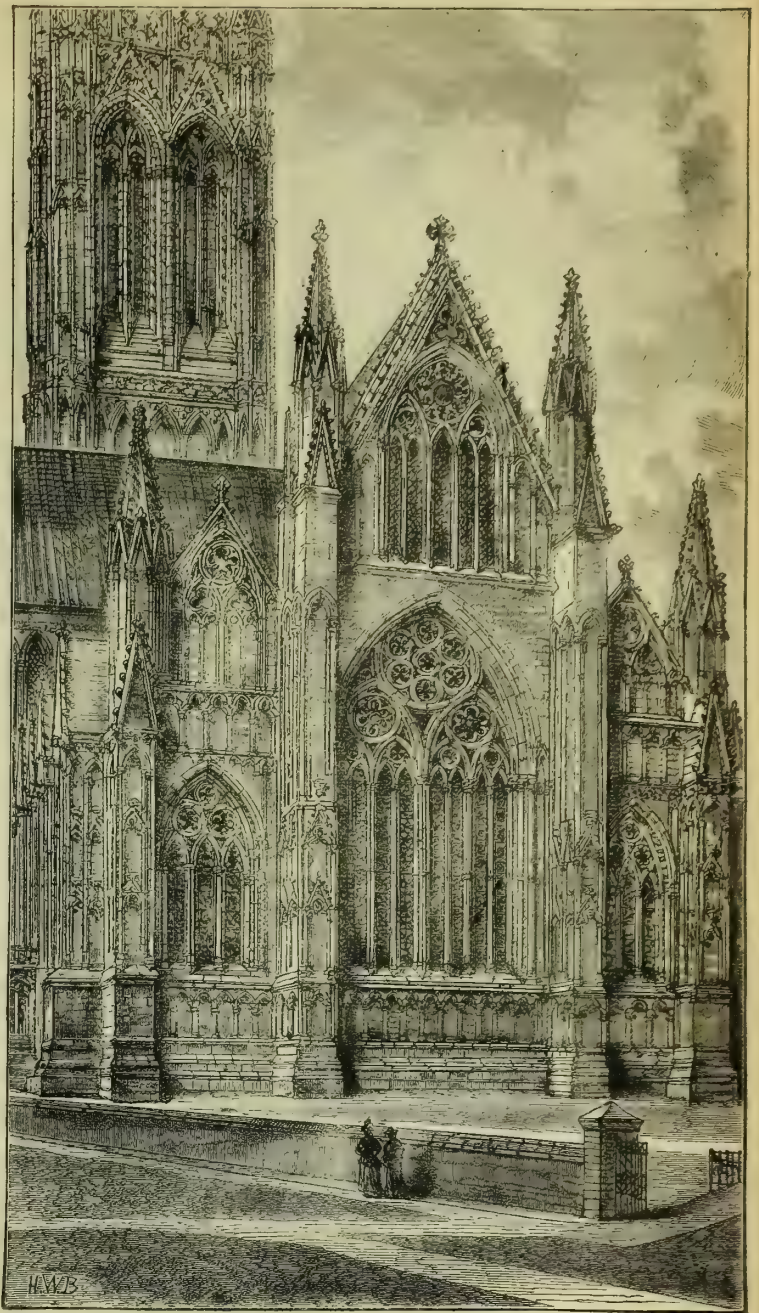


FIG. 4.

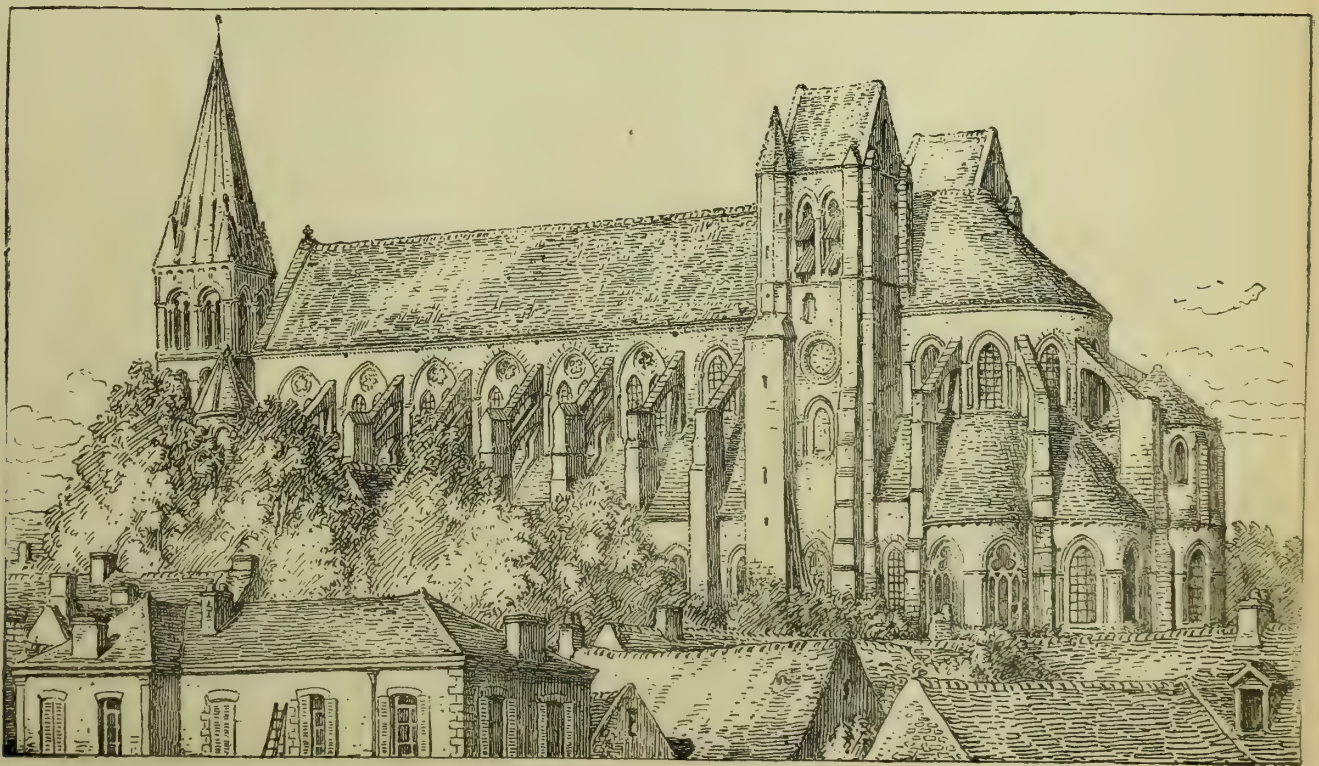


FIG. 6.







**"BUILDING NEWS" DESIGNING CLUB.**

A CABMEN'S SHELTER AND NEWSPAPER KIOSK.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THIS is a style of building about which, in reviewing the designs submitted in the competition we set for last month, little need be said by way of description. The subject is, however, essentially useful and decidedly a good one, capable of considerable ingenuity and display of taste; but it is a "skanderlus fact," as Artemus Ward would say, that whenever anything out of the ordinary-beaten track of villas, schools, stables, and the like every-day class of buildings is set for our competitions, many members of the Designing Club fight shy of the problem, leaving the task of solving the difficulty to others, quite forgetting that by so doing they are neglecting an opportunity of self-improvement not likely to be afforded by any other means. We have always noted this in days gone by and we note it now, but at the same time we accord our praise to those students who have risen to the occasion and contributed the designs before us, most of which do considerable credit to their authors, while all show a serious endeavour to meet our wishes in the matter. The following is the text of the instructions printed for the guidance of members of our club:—

**Subject E.—A Cabmen's Shelter and Newspaper Kiosk with Illuminated Clock Tower between.** This building is for a site in the middle of a main thoroughfare of a large town adjoining a cabstand, and situated on a paved island or street refuge, 43ft. long by 13ft. wide. At one end of this site, in front of the kiosk, the paving is to be rounded, and the other end left square, next cabstand, the building being so placed on the island as to allow ample space for foot-passengers in front of the paper-kiosk. The shelter, which is to be of timber, filled in with panelling or V-jointed boarding, is to measure inside 20ft. long by 8ft. wide. Out of this a little kitchen place, 6ft. by 8ft., is to be formed, with a glazed screen dividing it off from the main part. The two entrance doors (2ft. wide, made sliding) are to be situated, one on either side, between the kitchen and the main refreshment place. A seat, 1ft. 6in. wide, is ranged along the sides, but not at the end, and the table is to be in the centre. A small American cooking stove is to be placed in the kitchen, with flue in tower wall, and a sink with plate-rack and cupboard for cups, &c. The shelter is to stand on a brick, or stone, plinth, 14in. high above pavement, and the floor is to be finished in cement or concrete. Provision for a dust-box outside to be made. Roof covered with red tiles. Ventilation to be provided for. The clock tower, 39ft. total height to finial, is to be of brick or stone, 9ft. square outside, on plan at base; upper part may be of timber, like the roof, which is to be covered with lead. Clock faces on all four sides. The kiosk for sale of newspapers is to be of timber, like the shelter, and to project from the other side of the tower, 4ft. 6in. inside by 6ft. wide, and rounded on plan to follow line of pavement. The base of the tower is to be open into kiosk, to be used by the vendor of papers, and his doorway into the kiosk to be in one of the flank external sides of the tower. Plan, three elevations and section; scale, 4ft. to the inch. Sketch and small-block plan showing position on island. Style optional.—"North Star" we place first, "Wallaby" deserves the second place, and we accord "Tyne" the third place of honour. Most of the designs fail because their authors are far too ambitious in their ideas, and many quite regardless of the object, evident by the site being on an island of narrow proportions, design a building suitable for the centre of a great square or market place, whereas, of course, the dimensions given in the conditions make it manifest that the shelter is intended for a restricted site in a crowded thoroughfare, such as may be seen in any large town. Others, again, have drawn their perspectives as if cabmen's shelters were wanted out in the country, with rural cottages and groups of trees evidently grown miles away from any centre of city activity. The great absurdity too of a newspaper kiosk out in a deserted village does not seem to have occurred to these competitors. Nearly all have made too much of the clock tower, and "Wallaby" is one of these. He also is among those who have shown their cabmen's shelter standing isolated in a sort of market-square. The crossing indicated in his perspective cutting through the circular-ended pavement is really too foolish to need pointing out, and were it not for the merits in the design itself, we should have been

inclined to take off more marks from "Wallaby" than we already have done; for this want of thought on his part is due to carelessness. Turning now to "North Star," whose design we give the post of honour, and illustrate herewith today, we think the perspective shows a very suitable building. The view of the tower is hardly warranted by the elevations, and its roof as there shown is scarcely in accord with the perspective, which is the more pleasing rendering of the two. The treatment of the shelter and kiosk part is not so fetching as in "Wallaby's" design; but the general effect of the whole is much better and more unassuming. His plan is convenient, and follows our instructions. "Wallaby," for that matter, leaves little to complain of in this respect, while by placing his doorway to the kiosk on one side he makes room for the vendor of papers to place a seat in, a point quite overlooked by "North Star." The dust place, too, in the second design is more practical than in the one ranked first, and the coal-bunker below the floor shows thought. The ambitious gabled tower is more fitted to a town hall, and, nice as the design is acknowledged to be, the shaped gables and general proportions are out of accord with so small a building as a cabmen's shelter. Further description 'is unnecessary, as the illustrations given herewith afford full details of both compositions. "Tyne's" tower is squat and square, in bands of stone and red brick, with an octagonal stage above, having round turrets with no roofs at the corners to mask the splay above the angles of the main structure below. A lead-capped ogee roof rises quaintly, but the whole thing is open to the objections enumerated above for the benefit of "Wallaby." The shelter by "Tyne," is simple, and fairly effective, though linen panels are not the best treatment for the outsides of such a building. The doorway to the tower is too pinched up and narrow, and the fireplace takes up too much room in the cookery part of the shelter, the kitchen being evidently big enough for a good-sized house for roasting joints. Such meals are not usually served in cabmen's shelters. The plaster gable end is not bad, but hardly agrees with the rest, and seems to have been suggested by some of Mr. Ernest George's work—a good model to follow if working in the same class of buildings. "Fiddler" is not "first fiddle" this time. His design, however, is marked by reserve and an endeavour to be quiet, an attempt which we praise him for, but his design is not a happy one. It looks like a village fire-brigade station, or an old lock-up, done in wood for a change. The country houses shown in the distance complete this effect, and give flat contradiction to the suggestion that a cabman's shelter is intended. The tower, all of timber, treated in a manner associated with the days of England's Four Georges, is covered with a domical roof of lead, rising above a regulation cornice. Inside is a regular staircase leading to the clock chamber, and the kiosk is treated like a shop, with a counter inside, and space for customers in front. The author has quite mistaken the object of the whole thing, in spite of the fact that he is a London student. "West Anglian" "piles on the agony" by making four dormers to his tower, cutting up the main roof into slips between them, and, for effect's sake like-wise, makes another "feature" of a cove above the kiosk windows under the eaves, and thus renders the upper part needlessly dark inside. The doors at the end of the cabman's shelter are contrary to the instructions. The kitchen arrangements are good, and the drawings are fairly well done. So are those by "Y" in a circle: but we cannot understand how anyone who can draw so nicely should select such a strange type of design, so overlaid, and so wanting in repose. The shelter itself and the kiosk are not so bad—indeed, these parts are, in the main, good architecturally; but the clock-tower! The entrance to the kiosk is in the wrong place, and should, according to the conditions, have been in the tower. The building is intended to be situated in the country, according to the view. "Glaucus" is more suitable in the matter of the clock-tower, and the upper part is constructed of timber with plaster panels. The door to the shelter is at the end, which is a mistake. The eaves oversail very much all round the building, and along the flanks are three gables with louvre boards in them, intended, no doubt, for ventilation. This arrangement would insure a very complicated piece of roofing on a very small scale, with a needless number of valleys. "Nox" builds up a tower in what we suppose he would call

a Renaissance mode, with a square flèche of timber in the centre, and turrets on either side of the pedimented and elaborate clock-face. This would cut the little tower terribly into tit-bits, well enough in their way done to a bigger scale, but toy-like in the extreme to such a scale as this. The woodwork of the shelter and kiosk is fairly satisfactory, and shows clearly that "Y," in a circle knows what good work is, in spite of his tower, which we are obliged to condemn. "Menelaus" is quieter than some others, and simplifies the tower; but he throws out bay windows to the shelter, and puts an open brick-built fireplace at the end, placing the table in the centre more like a parlour, and indicates by these and other details that he hardly knows to what uses such a building is actually put. His perspective is a very poor performance. "So and So," bent on the grandiose, introduces turned work in every odd corner, and bristles up his skyline with standard lamps carried by the main posts at the ends being run through the roofs! The one good feature in this design is the blank, plain base of the tower; but this is more than compensated for by the wonderful arrangement above with open square niches inclosed with turned posts, each having a bell suspended between, hung diagonally, we presume, judging from the elevations. The big bell for the hours has a crowning central turret all to itself. There is at least some originality in this composition. We can only enumerate the other designs in their order of merit. "K. W. T.," "Streona," with an Indian design having Turkish features, the tower with minarets at the angles, each one built with a column resting on the hip of the central roof; "Grafton," who has no knowledge, evidently, of perspective; "Mercury," having a rather better tower, and design more in keeping with the objects in view; "Coombe," "Finem Respite," with statues in niches round the tower; "Renaissance," "Attempt"—do not attempt such a tower again; "Lycidas," "Niger," bald, but somewhat suitable. Tower very commonplace. "Reference," carefully delineated plans, but tower looks as if it belonged to a timber-built railway station, designed by a mechanical engineer. The set-offs in brick at the angles of the tower are meaningless. "Horseshoe" tries hard, but wastes too much time copying figures from previously-published illustrations. His tower is very ugly, and his kiosk is not in agreement with our instructions. His drawings, however, are improving; but he will do well to study good men's work more. "Nightlight" has some useful points, and we have fully recognised them; but his tower is rather high-shouldered, so to speak, and heavy. The Pointed Gothic arch is out of place in such a structure, and the belvedere at top is not wanted. "White Star," "I Try," oh, what a roof to the tower, and what a chimney—big enough for a blow-hole to the underground railway! "Cleopatra," "Mac," "A. G." in a circle, "Pepper Arden," nicely drawn, with spirit and "go," but shows a poor design; "Serpa," with a circular tower; "X. Y. Z." in a circle; "Parenchyma," and "White Wings," whose design is quite unlike anything we have ever seen, particularly in perspective.

## ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair. Messrs. L. C. T. Moore, E. O. Cummins, W. H. Brown, J. J. Wilson, W. A. Sugden, A. Borisson, and H. M. Brown were elected as members.

The President announced that the Committee had prepared a petition against the Architects' Registration Bill, on the ground that it was not suitably drafted.

## MODERNISM IN ART.

Mr. HENRY HOLIDAY read a paper on this subject. The "modernism" dealt with was another name for pedantry, which, the lecturer urged, was enervating and depressing art in all its forms. What, he asked, is the true cause of pedantry in art? The proximate cause is obvious. It is the lack of vitality in our artistic powers, the paucity and poverty of our ideas. No one borrows ideas who has a wealth of them within himself clamouring for utterance. But this answer merely leads us to the next stage. What is the cause of this low vitality? Is man going irrecoverably down-hill? Is the deadly monotony



and hideousness of our streets, our costume, our furniture inevitable and permanent, or is there some assignable and sufficient cause? And, if so—finally—Is the ultimate cause one which we can reach? Can we, by getting at the root, restore health to the tree? Till these questions have been answered, all others seem by comparison to be academical. The lecturer saw no reason to despond as to an ultimate solution; no reason to suppose that the destitution, the vulgarity, and the squalor which desolate the everyday life of this age must endure and are without remedy. So long as we are aware of the evil and chafe under it, there is hope. There are many who deplore the ugliness of our life, and some who attempt to improve our condition. This discontent, this struggle against the haunting finery, the graceless luxury of our rich, and the crushing, brutalising misery of our poor, is the one string to our lyre, the still, small voice which must ultimately prevail. Let us, then, face the evils that beset us; let us see what they are, and whence they arise, for only so shall we be prepared to overthrow them. First, let them contemplate this pedantry, this substitute for art which is the resource of those who have nothing to offer of their own. How came men to utter this base coin, and how came men to accept it when offered? The Pugin movement in ecclesiastical architecture indicates how and why a course which may be necessary though regrettable in one case is followed in other cases where it is wholly objectionable. There can be no doubt that the movement originated in a sincere love of beauty; but when we come to figure decoration the whole question is altered. On this the movement had a most baneful influence. The revived admiration of Mediaeval, and particularly 13th-century, architecture, having become general, it was swallowed whole with all its accompaniments with a total absence of thought and discrimination that speaks volumes for the prevalent tastelessness of the time. A 13th-century stained-glass window or missal exhibits commonly a power of design, a splendour of colour, and a vigour of imagination and symbolism which may well excite our wonder and envy. What effect had these windows on the commercial decorators in the early days of the Gothic revival? They saw nothing of the beauty of colour, of design, or of imagination. One thing alone they aimed at (to judge by their results). Draughtsmanship in the 13th century was in its childhood. The figures in the best works of that period possessed a surprising vigour and spirit, but the technique was imperfect. Here was the thing to be imitated: Colour was of no consequence, the rawest and crudest that could be found would do; but a splay foot and a goggle eye would place the work at once on a par with an Early English window. The extraordinary fact is that notwithstanding all the great advance which has since been made in the quality and colour of the material, there are still respectable decorative houses who imitate the decorative works of the 13th, 14th, and 16th centuries, and seem to think they are producing works of art. Not only so, but there are people who treat these travesties of genuine work as if they had anything genuine about them. Happily, they are exclusively commercial productions. Art has not got so low even in this age that artists will descend to servile, avowed imitation of other men's ideas, designs, and even mannerisms, still less to imitate those of other ages. Nor is it expected that he should do so—outside a church. His powers may be great or small, his range of thought and conception high or low, but he is expected to give us the best has of his own, expressed in the most perfect manner of which he is capable. In the true work of art, where the *technique* is but the means of expressing ideas which had insisted on utterance, we respond to the influence of a master. In the hollow substitute for art, where the *technique* is but a mechanical imitation of something else, we find nothing but the drudgery of a slave tied down to a dull routine, on whom we can hardly even bestow compassion, for he parades his servitude with evident satisfaction. Surely it ought to be a truism to say that all genuine art was modern when it was produced; in no past age did men try to make their work appear to have been produced in an earlier age, and, except in decorative art, it is rarely done now. If this pedantry is absolutely indefensible on any rational artistic principle, how comes it, Mr. Holiday asked, to be permitted in any branch of art? If modernism is the characteristic of all the best art of other ages,

if we are most moved by the Giotto's, the Botticelli's, the Signorelli's, the Veroneses of the past, by all those, in fact, who expressed and led the sentiment of their respective ages, why do any of us now regard childish imitations of a past age with anything but the contempt which they deserve, and which they would have received at any other period—if such follies can be conceived as existing in any other period? Unhappily, the cause is only too obvious: the *cause*, not the justification. The poverty of the art of to-day is the reason why we pilfer from that of the past. It is only in our artistic poverty that I can account for the prevalence of that which is the greatest of artistic crimes; for under this vicious system we are training young draughtsmen into systematic deceit, and crushing every better impulse, every genuine faculty which they may have possessed when starting. Men who as students were doing hopeful work, go to one of these commercial houses, and there by degrees every faculty has gradually been blighted till no trace of any artistic perception remained. The method which originated in poverty ends in the destruction of what little we possess. If our artistic vitality is weak, this is the laziest and the most demoralising course we can adopt. So much I must say in strenuous protest against the demoralising principle that pedantry is justified by the feeble vitality of the artistic sense under which our age suffers; but now as to that weakness itself, what are its nature and extent? Is it merely that our decorative sense is imperfect? Is it merely that we are in the trough of the artistic wave, and may in another generation or so be on the crest? Is this all that is the matter with us? That genius is not so plentiful as in some other periods, but may become so again in the near future? Our case is much worse than this. It is not that geniuses are few—they may or may not be—but that society is corrupt, that the conditions under which we live are conditions under which art cannot possibly thrive. What we are concerned with is not paucity of geniuses, but the almost total absence of art in our present daily life, and the question we have to answer is, "What is there in our present condition which so stunts and suppresses that love of beauty which in every other age has been one of our dominant impulses?" I fear, with John Stuart Mill, that "the silly desire for the appearance of a large expenditure," on account of the consequence it gives us in society, causes us to surround ourselves with finery for the sake of display, instead of seeking beauty for the sake of enjoyment. The almost total absence of art in our present daily life is admitted on all hands. Outside certain isolated cases, where is the art of our daily life, the art in our houses, in our furniture, in our dress, in all our utensils, and in nineteen-twentieths of our pictures and statues and buildings? Whence arises that deadly uniformity, that depressing, all-prevailing greyness—that all-prevailing dinginess which fills our life, so far as its external conditions are concerned, and has filled it throughout this century? As a spontaneous growth taste is gone. If we walk down Gower-street, Westbourne-terrace, or Cromwell-road, we look in vain for a gleam of taste, for a glimpse of anything that can charm the eye or refresh the mind. Interminable rows of identical houses all cut down to one common type—mindless, joyless. Ornament there is, ghastly ornament, all done to order under heavy penalties, all alike, all representing—what?—the pleasure of the worker in fashioning it? Good heavens, no! It is done by machinery. It represents what is expected of the class of society to which the owners of the houses belong, or wish to be thought to belong. The same applies to the modern dress of the man of business. Gloom and the total absence of individuality are the characteristics of our system. Men are slaves, all working in chains crushed under the tyranny of two relentless Molochs, the great god Profit and the great god Snob. These two have chained up individuality and trampled her under foot. Beauty they have expelled from society. Each have their own weapons and instruments of torture. Some of the victims of Profit suffer so grievously that they dare even to make a show of resistance. But it is futile and short-lived. He has two clubs, called Supply and Demand, and these he swings about mercilessly, and the wretched slaves are soon cowed. Occasionally a feeble protest is made by those who groan under the rule of the god Snob; but

he also has two clubs—Respectability and Social Status. At the mere sight of them down go the slaves prostrate before their relentless idol. And meantime poor Individuality is wasting away in her prison. Alas! what can art do without individuality? They are inseparable, each without the other must languish. Society has taken up that liveried drudge, Ostentation and Art must keep her lonely state in a National Gallery while we are the slaves of slaves. The jerry builders and the fashion-books are the slaves of the gods Profit and Snob, and we are the slaves of the jerry builders and the fashion-books. But still we have got half-way in our inquiry into the ultimate cause of our almost extinct love of art. If the views advanced are so far sound, we have attributed the decay in our love of beauty to the growth of our love of social status, our "silly desire for the appearance of a large expenditure." So far we have only shifted the inquiry one step further back. If this degradation is the effect of external conditions, what are the conditions which affect us and which did not affect our ancestors? This differentiating factor is the intensity of the struggle for existence in our present crowded populations. Now, the pressure, instead of being, as in the past, just sufficient to produce a healthy emulation and to spur men on to distinguish themselves, has degenerated into a fierce competition for the highest profits—a struggle in which each man's one object is to get to the front and thrust his neighbour aside, and none has time to think of such frivolities as grace and beauty. In place of an inspiring emulation, we have a fierce struggle for life and death. This can only be avoided by substituting order for the present anarchy in our industrial systems. Our mistake has been in supposing that the haphazard system which did fairly well in thinly-populated countries can possibly succeed in the dense crowds of to-day. When feudalism died out and men obtained the right to compete freely in the industrial market, they believed that they possessed all that was necessary; that industry and ability would in the long run meet with its due reward, and that this principle would prove the surest incentive to the development of the best characters and the production of the best work. With some very serious qualifications it did something like this for a time. Inequalities not arising from greater or less industry existed, but these were partly the remains of feudalism. Time gradually, however, developed unjust inequalities arising from the system itself of so-called free competition—at first gradually, but, since the great development of machine power, with frightful rapidity, with the result that we have now reached the maximum of injustice. This, a monstrous condition of things, is intolerable to all humane and justice-loving persons, and thoughtful men perceive that unless we can remedy it in time, it must lead to some appalling catastrophe. It is not, however, the question of justice and humanity that concerns us directly to-night, but the influence of this industrial anarchy upon art. What has been the effect of the free fight for existence on art? This, that people have enough to do to live, they have no time for enjoyment of life. Their energies are exhausted in the struggle for food, clothing, and a roof over their heads. Having, some of them, got this, they then begin the struggle to have more than their neighbour; there is still no time to think of enjoying life: they have got to imitate the class above them. Snobbery is in every class the guiding impulse, profit-making the efficient machine. Sordid struggle for the necessities of life at the bottom of the scale, far more sordid struggle to outdo one's neighbour at the upper end of the scale. There is no time for either art or beauty. Will it pay? is the one question—not "Do I love doing it?" Is it worth having when done? Can art live in such an atmosphere? Now, if it is proposed to reform these crying evils, to liberate art from the stifling, noxious atmosphere which is all but destroying her, one is met with the cynical objection that you must regenerate human nature before you can alter these things, the objection being accompanied with a sneering scepticism as to the improbability of our nature. How do these objectors on their theory of the unredeemable baseness of human nature explain the past? Whence comes all the beauty bequeathed to us by our ancestors which we treasure in our museums, if it is an ineradicable part of our nature to prefer vulgar display to true beauty, the heaping-up



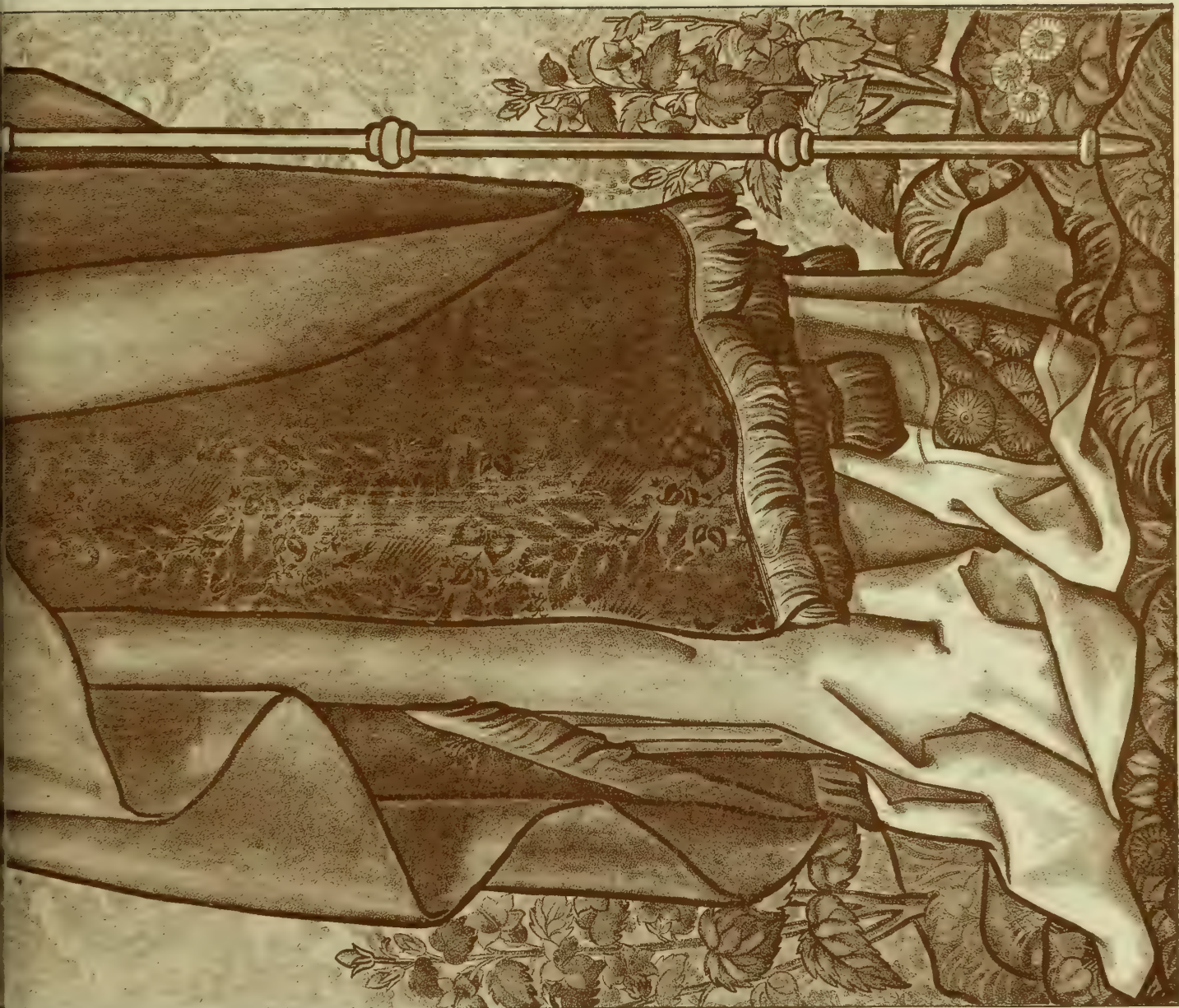




THE BUILDING NEWS, MAR. 21, 1890.







"PHOTO-TINT" by James Akenman 8 Queen Square London W.C.

S. THOMAS OF CANTERBURY  
CARTOON FOR EMBROIDERED HANGING DESIGNED BY GEO. S. FAYERS  
EXECUTED BY MAISON HELBRONNER, L<sup>rs</sup>

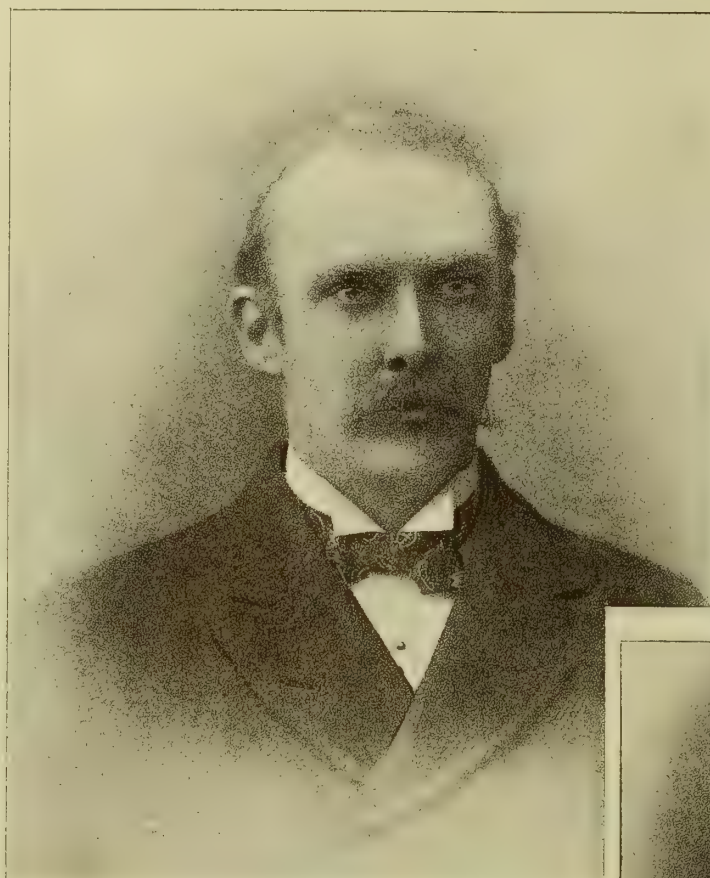












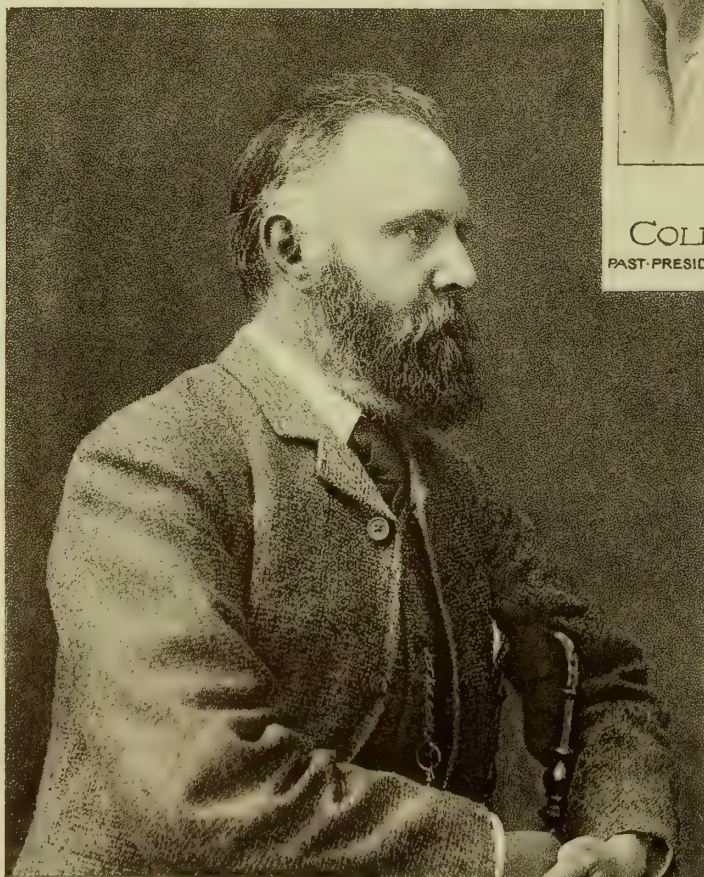
*Leonard Stokes*

LEONARD A. S. STOKES · A.R.I.B.A.  
PRESIDENT OF THE ARCHITECTURAL ASSOCIATION



*Cole Adams*

COLE A. ADAMS · F.R.I.B.A.  
PAST-PRESIDENT OF THE ARCHITECTURAL ASSOCIATION



*Lacy W. Ridge*

LACY W. RIDGE · F.R.I.B.A.  
PAST-PRESIDENT OF THE ARCHITECTURAL ASSOCIATION



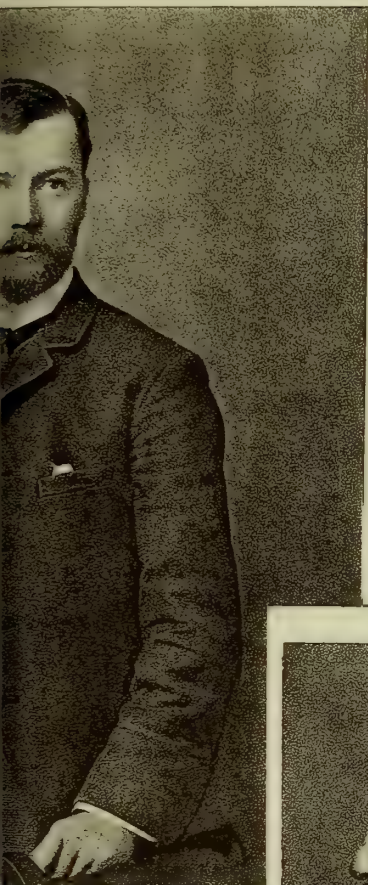
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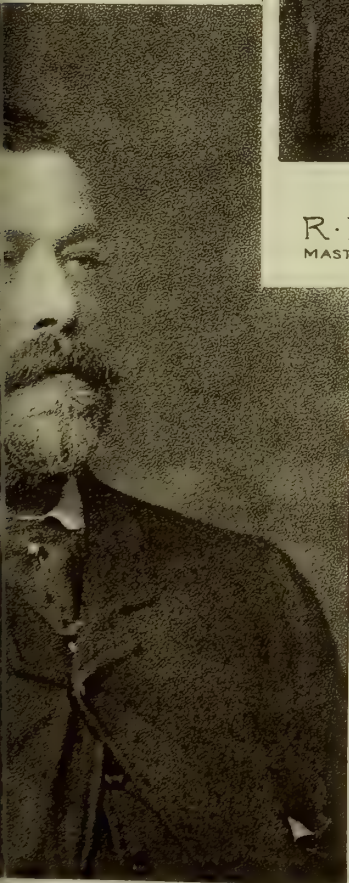


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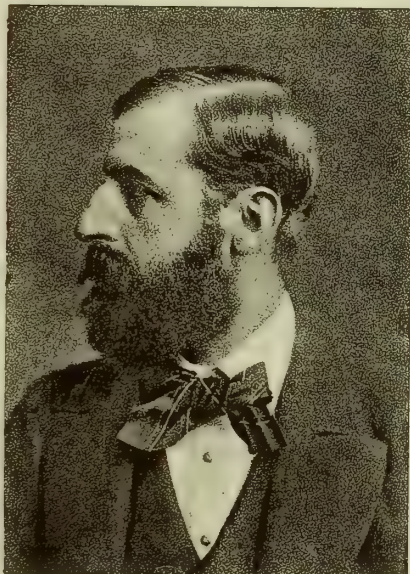
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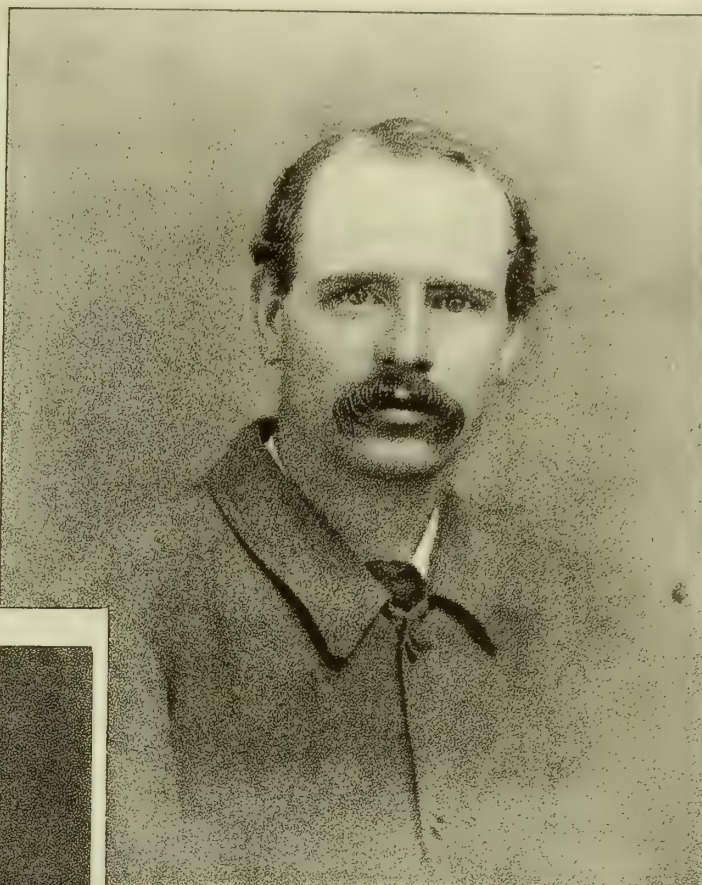


*Henry. J. Smith*

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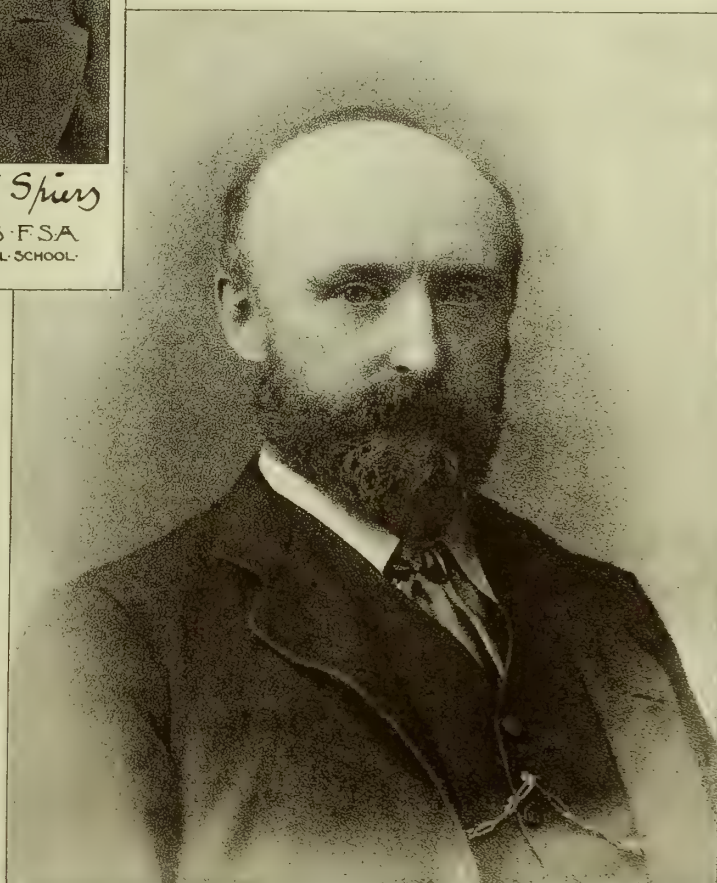


*R. Phéné Spiers*  
R. PHÉNÉ SPIERS F.S.A.  
MASTER OF THE ARCHITECTURAL SCHOOL  
OF THE ROYAL ACADEMY



*J. Alfred Gotch*

J. A. GOTCH FRIBA.  
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*Thomas. H. Watson*

T. H. WATSON FRIBA.  
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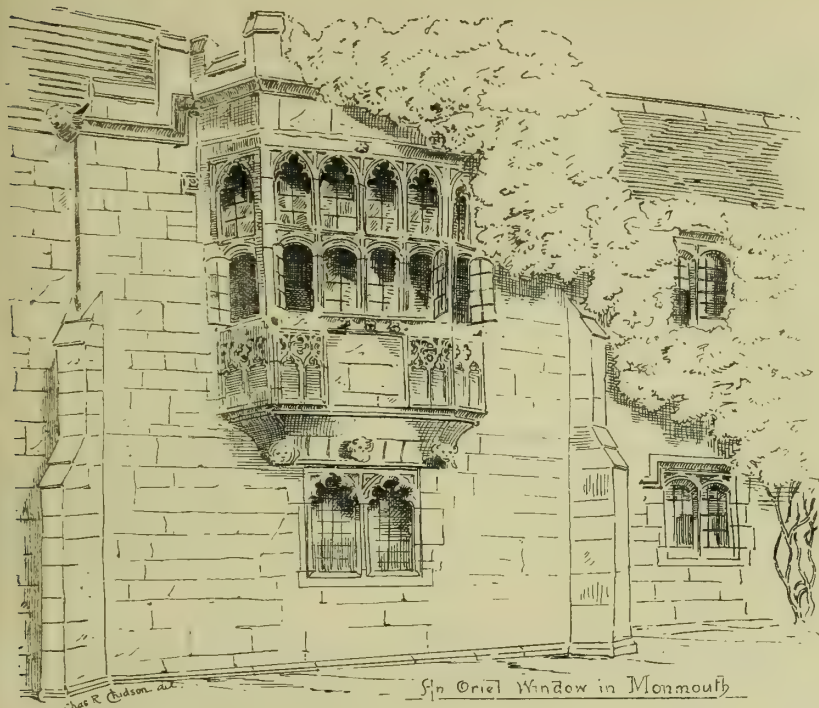
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BRITISH ARCHITECTS

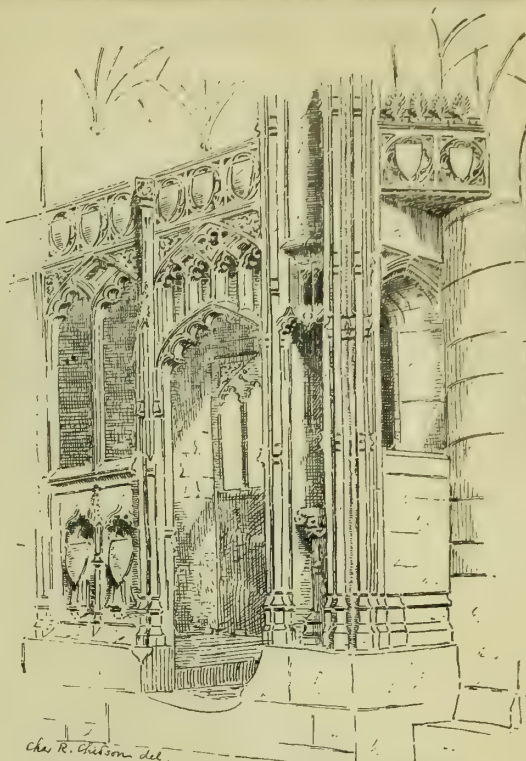








St. Oriel Window in Monmouth



The Chantry Chapel Tewkesbury Abbey

of profit to the doing of good work. We find in all parts of the world, and in every period of its existence, a prevailing love of beauty so strong that it has triumphed over the defects of our nature and the imperfect conditions of society. The sense of beauty varied much with place and time, but the love of it predominated everywhere. Scores of centuries teach us one great lesson: that human nature loves beauty rather than ugliness as surely as it loves health rather than disease, joy rather than sorrow. Against this vast mass of evidence we have one century offering a partial exception to the otherwise universal rule; and yet there are people so blind to all the teaching of history that they speak of beauty as if it were an acquired taste foreign to our nature, and that this nature must be wholly changed before we can attach any value to it. Is it not more rational to conclude that the spirit which prevailed for thousands of years is that which truly pertains to our real human nature, and that the partial exception exhibited by this century is a temporary aberration—a disease? What we have to do is to change this rotten, oppressive system, to substitute order for anarchy, and then, when men are not exhausted by the mere struggle to live, they will have freedom for the expansion of their natural faculties. How to get rid of this industrial chaos and to establish order in its place is the great problem which is engaging the earnest attention of many of our best thinkers, and which is rapidly becoming the most prominent subject of social interest. What we need is a righteously and wisely re-modelled industrial system, which shall insure to all the fruits of their labour, and leave to each the opportunity to assert his own individuality; which shall make worthy distinction and the gratitude of one's fellows the incentive to good work, instead of the debasing attraction of piling up more money and exhibiting a more vulgar display of brainless and graceless luxury than our neighbour. Some of us have probably read Mr. William Morris's "Signs of Change." Some years ago Mr. Morris's views appeared to the lecturer to lead to destruction with no principle of reconstruction to follow. Such a course as this is, in his opinion, worse than no solution at all. A revolution of violence, without even a clear scheme of just industrial reform in view, could only end in the re-establishment of the old tyranny on a firmer basis. He was very glad to note a totally different tone prevailing in this recent publication. It is largely constructive, and it deals chiefly with social reform in relation to industrial arts. The "Fabian Essays" published in January is a collection of most thought-

ful papers, wholly constructive in their aim, and these also deal ably with questions of taste and art. But the most popular, and the most daring, attempt to solve the great problem is that contained in Mr. Edward Bellamy's "Looking Backward." The main principles advocated in the book are not new, but they are exhibited and applied with extraordinary ability, and evince a most rare capacity for organisation. Mill has given us an emphatic opinion as to the practicability of the scheme propounded in the book as to the greater incentive to work it would provide, and its enormous superiority to our present system. A system such as that sketched in "Looking Backward," where all contribute to the production, and all receive their share in the distribution, is not a wild Utopian idea unworthy the notice of a political economist. Mr. Holiday had discussed the book with Mr. G. F. Watts, who is not merely a profound believer in the wisdom and justice of the social and industrial system advocated in "Looking Backward," but in the immensely favourable influence it would exert on art. The quick response of our sentient nature to the great mother Nature is love of beauty, and nothing can utterly destroy it. It has been universal, and is so still, where the foul monsters Profit and Snobbery have not established their corrupting rule. Remove these, let men work in comfort, and without sordid cares or corrupting motives, and they will naturally prefer to work well than ill. Add to this the powerful incentive of public esteem, and they will work with zest and vigour. What people call a routine in Mr. Bellamy's system is a simple series of inducements which, by insuring that each worker gets the full credit of his work, gives him the most powerful incentive to distinguish himself, by the excellence of his work or by the improvements he can effect. Moreover, the growth of brotherhood will give a great impetus to public spirit, and the system will exert an equally wholesome influence on its training and its ethics. In conclusion, Mr. Holiday observed:—I have feebly indicated the benefits which would be conferred on art by the substitution of a just system of production and distribution for the vicious one which now stifles it; but I hope I have said enough to show that the subject is one worthy of our careful study. I would go further, and say that the view is one the promotion of which is worthy of our most earnest efforts if we would see art recover from the paralysis which now afflicts it.

A short discussion followed, in which Messrs. E. C. Robins, F.S.A., Hugh Stannus, H. O. Cresswell, and F. R. Farrow took part, and a hearty vote of thanks was accorded to Mr. Holiday for his lecture.

#### SKETCHES AT TEWKESBURY AND MONMOUTH.

THE beautiful chantry chapel of which we give a sketch this week, is one of several surrounding the choir at Tewkesbury Abbey, and though much mutilated, is the finest of them. It contains the tomb of Richard Beauchamp, Earl of Abergavenny, and the chapel was erected to his memory by his young widow Isabel, the last of the Despencers. He was killed at the siege of Meaux in 1421. In 1423 she married the Fifth Earl of Warwick. Hence the chapel came to be called the Warwick Chantry, but erroneously so, as it should be more correctly described as the Beauchamp Chantry. We published illustrations of Tewkesbury Abbey in May 11, 1877, and August 12, 1881. The oriel window of Perpendicular work is a fragment of the old priory at Monmouth, which formed a portion of the apartment known as Geoffrey of Monmouth's study. It has of late been used as a schoolroom. We would refer our readers to a somewhat similar and beautiful window at Tewkesbury, of which we gave an illustration in the "B. N.," August 12, 1881.

A new Free Church at Fort William, N.B., was opened on Sunday. The church consists of a nave and aisle, and measures internally 71ft. by 56ft., the aisle being separated from the nave by an arcade carried by octagonal pillars, with traceried spandrels. There is a tower at the north-west angle, forming the vestibule and staircase to the gallery. The church is seated for 460. The architects were Messrs. Sydney Mitchell and Wilson, Edinburgh.

A recital was given in St. John's Parish Church, Victoria-street, Edinburgh, on Friday night, to inaugurate an organ which has just been introduced into the church. The instrument has been built by Messrs. Harrison and Harrison, of Durham. The case, designed by Messrs. Blanc and Gordon, architects, is constructed of yellow pine wood, carried out in panel and carved work.

The Mersey Docks and Harbour Board had under discussion on Friday a scheme, submitted by the Works Committee, for the improvement of the Canada Basin Dock and Lock, the construction of a new branch dock out of the Canada Dock, and of a new deep water vestibule or half-tide dock on the present site of the Sandon basin and the Wellington half-tide dock. The scheme is calculated to cost a million of money. It was decided that that portion of the scheme which related to the Canada Basin Dock and Lock be carried out forthwith at an estimated cost of £470,000.

The London County Council have declined to purchase the Hilly Fields, Brockley, containing 57½ acres, as an open space, on the ground that the price asked, £43,675, is too high.



## Building Intelligence.

**CHARING CROSS-ROAD.**—The memorial stone of the new municipal buildings for St. Martin's-in-the-Fields was laid on Tuesday by the Prince of Wales. The buildings will include a town hall, free public library and reading-room, and are situated at the south-east corner of Charing Cross-road, next the Garrick Theatre, and facing the site of Mr. Ewan Christian's projected National Gallery. The town hall buildings will contain, on the ground floor, offices for the vestry clerk and surveyor's department, entrance hall, vestibule, committee-room, medical officer's, sanitary inspector's, and analyst's rooms. On the first floor will be placed the vestry hall and public rooms, waiting and retiring rooms, and large committee-room. Additional accommodation will be provided in the basement for public meetings, &c. The free library is placed on that part of the site facing St. Martin's-lane. The style adopted is Classic Renaissance; all the elevations are being built in Portland stone, and the total cost is estimated at £30,000. Mr. Robert Walker, F.R.I.B.A., of St. Martin's-place, W.C., is the architect, and the builders are Messrs. John Mowlem and Co.

**NEW THEATRE FOR WALSALL.**—Mr. W. H. Westwood, of the Gaiety, is about to demolish his present premises, and those occupied by Mr. J. Greenslade, outfitter, adjoining, and to erect a more commodious theatre at the corner of Station and Park streets. The new building will be fitted up with the most modern requirements for the comfort of the public, and in the best practical and convenient manner for professionals and employés. The structure will be of substantial character, and one of the safest theatres in the Midlands. Every precaution for the protection of the audience has been adopted in the provision of a fireproof drop curtain, fireproof and spacious staircases, and commodious entrances and exits; the lighting, heating, and ventilation also have been fully considered, with a view to make the building worthy of its purpose. The auditorium comprises stalls, pit, dress-circle, private boxes, and gallery. The exterior of the building is in the Romanesque style of architecture. The wallings will be principally of red brick, relieved with stone and sculptured Shakespearean figures. At the circular angle of Station and Park streets will be a turret, partly covered with lead and copper, with lunettes for electric lights, and finished on the top with gilded figures. The side next Station-street is to be of a plainer character. The ground floor of the building will be occupied principally by bars and smoke-rooms. The total cost of the buildings and fittings complete it is estimated will be about £14,000. The architect is Mr. Daniel Arkell, of Temple-road West, Birmingham.

**SCARBOROUGH.**—There have just been presented to the Holy Trinity Church, Westbourne-grove, three stained-glass windows, each containing two subjects. The windows have been presented by the family of the late Joseph Padbury, the contractor for the church. The windows are placed in the circular apsidal east end. The centre one represents "The Crucifixion," and "The Ascent to Calvary." The window on the left side is entitled "The Judgment Hall of Pilate," and "The Agony of Our Lord in Gethsemane," while the window on the right hand is "The Descent from the Cross," and "Christ Preaching to the Spirits in Prison." The windows were designed and painted by Mr. C. E. Kempe, and are in the 15th-century style. The church was built about 10 years ago, with the exception of the tower and spire, from the design of Mr. Ewan Christian, in the style of the middle 13th century, and is fitted to the irregular and sloping nature of the site. The tower and spire were added last year, and dedicated by the Archbishop of York at Christmas. The spire is upwards of 50ft. high, of square design, of timber construction, with four pierced dormers, and the whole is covered with cast lead with welted rolls forming diminishing continuous zigzag panels all round it, all points radiating towards the gilded vane which surmounts the cap of the spire. The whole of the works in connection with the church, with the exception of the foundations, have been carried out by Messrs. Jos. Padbury and Sons, of Scarborough.

Canon Argles has offered to give a marble floor for the choir of Peterborough Cathedral.

### COMPETITIONS.

**LEITH.**—The Edinburgh Architectural Association have addressed a letter to the School Board for Leith with reference to an advertisement, which recently appeared in the local papers, inviting designs from architects for a new Board School at Craighall-road, Trinity. The Association draws attention to certain features of the conditions, which, if adhered to, will necessarily prevent many members of the profession from responding to the invitation. The first point is the reservation by the Board of the power of final selection, thus neutralising the excellent intention of consulting a professional referee. A second is that no guarantee is afforded that the author of the first premiated design will be engaged as architect for the erection of the building, the condition implying an entire reservation in this matter. A third point is that the sum offered as an inclusive fee is not only totally inadequate as remuneration for the labour which will be involved in carrying out a work which, at the usual rate per head of scholar, and taking into account also the conspicuous position of the site, will range between the sums of £12,000 and £13,000; but it amounts also to less than one half the rate of commission laid down by the Royal Institute of British Architects, and recognised by all professional and public bodies throughout the country.

### CHIPS.

The new hospital, Rosario, Argentine Republic, is being warmed and ventilated by means of Shorland's patent open fireplace Manchester stoves, with descending smoke-flues, the same being supplied by Mr. E. H. Shorland, of Manchester.

A new Liberal Club is being built in Quebec-street, Leeds, from designs by Messrs. Chorley and Connon, of that town. It will be Renaissance in style, the external walls being of red or buff brick-work, and the dressings of terracotta. Accommodation will be provided for 1,600 members. The contracts have all been let to local firms.

At a special meeting of Dundee Police Commission on Monday, a long discussion took place in regard to the litigation by Mr. Will, contractor for the Esplanade. By a large majority it was resolved to offer to take the contract off Mr. Will's hands, paying him contract rates for the work he has done, and taking over at valuation the materials he has prepared for the work.

A new cemetery chapel has been built at Camborne, from plans by Mr. Sampson Hill, of Redruth. The builder was Mr. Arthur Carkeek, also of Redruth.

While excavating for sewerage purposes in Bedford-square, Tavistock, on Monday, workmen brought to light a number of encaustic tiles, which evidently formed part of the flooring and mural decorations of the former Abbey Church, and also what appeared to be the keystone and other pointed stones of a small arch. They likewise unearthed a quantity of human bones.

Mr. Browne, the surveyor and architect of the Bellaggio Estate, who is leaving East Grinstead, has, the local newspaper reports, been made the recipient of several gifts.

The Duke of Westminster has given Mr. William Haswell, mason, of Chester, instructions to carry out, from designs by Mr. R. W. Edis, F.S.A., a memorial tablet in dove and statuary marbles, to be erected in Halkyn Church, near Chester, and to bear the following inscription:—"To the memory of George Hughes, friend of the Marquis and of the Duke of Westminster, agent of the Halkyn estate from 1848 to 1889. Died August 7, 1889, aged 74 years."

The great tower of the Cathedral of Ulm is at last on the eve of completion, together with the other repairs and works of restoration. The tower when finished will be 524ft. high, which exceeds the height of St. Paul's in Hamburg. The celebration of the completion of the restoration will take place on the 30th of June next.

Mr. Wm. Chatham, Assoc. Mem. Inst. C.E., of the dock engineer's office, Bristol, has been appointed executive engineer to the colony of Hong Kong by the Crown agents for the colonies, at a salary of £750 a year. This is the second responsible and lucrative appointment secured by members of his staff during the last few months.

The organ of Eccles parish church is now being taken down prior to its removal to the parish church of West Leigh, Lancs. A new organ, which is to occupy both the north and south sides of the chancel at Eccles, is being built by Messrs. Binns, of Leeds. It is proposed to seat the present organ-chamber, which adjoins St. Katherine's Chapel.

### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**MANCHESTER ARCHITECTURAL ASSOCIATION.**—The last ordinary meeting was held at the Diocesan Buildings on Tuesday, Mr. T. Chadwick in the chair. The following gentlemen were elected as officers for the next session:—President, T. Chadwick, A.R.I.B.A.; vice-presidents, E. Hewitt, A.R.I.B.A., and J. D. Mould, A.R.I.B.A.; treasurer, A. H. Davies Colley, F.R.I.B.A.; librarian, J. S. Hodgson; registrar, J. H. Woodhouse; secretary, J. D. Mould, A.R.I.B.A. Committee: P. E. Barker, A.R.I.B.A.; P. Hesketh, A.R.I.B.A.; E. P. Hinde, A.R.I.B.A.; J. Horsfall, F. W. Mee, W. E. Potts, A.R.I.B.A.; F. B. Smith, E. H. Stelfox, A.R.I.B.A.; and G. H. Willoughby. Mr. W. E. Potts read a paper entitled "Creeds in Architecture." He contended that architects voluntarily fettered themselves, and limited the possibilities of their achievements by subscribing to certain traditions which, in course of time, had crystallised into creeds. This resulted in the perpetuity of some traditions, as, for instance, the cruciform plan in churches, which in many cases was not now suitable to the present form of worship. The paper pleaded for wider sympathies, a cultivation of an open-minded ability to discover merit wherever it might exist, and a struggle against prejudices. Messrs. Mee, Colley, Ross, and Hodgson took part in the discussion which followed.

Mr. P. A. Muntz, M.P., last October promised to present a mayoral chain to the borough of Tamworth. The chain has just been completed by Messrs. T. and J. Bragg, of Birmingham. It is in 18-carat gold, and designed in the Renaissance style. Every alternate link is arranged to receive a mayoral record; the others are filled with enamelled shields representing the historical associations of the borough, which date back to the grant of civic privileges by King Canute; the centre link of the chain bearing the arms of the donor, and from this depends a suitable badge.

A stained-glass window has been placed in Mold Church to the memory of Richard Wilson, R.A., the famous artist, whose remains were interred in Mold churchyard, of which parish his father became vicar soon after the birth of his talented son. The design of the memorial window is that of the four patron saints of Wales, England, Scotland, and Ireland, with the arms of the countries below, and in the tracery angels and Tudor badges, to harmonise with the architecture of the church. The work has been carried out by Messrs. Burlison and Grylls, of London.

A bakery and suitable accessory buildings is about to be erected at Woolwich for supplying the garrison (reckoned at about 7,000 men) with bread made by soldiers of the Army Service Corps. The buildings were designed last year by Mr. A. O. Giles, R.E., and will be erected by Messrs. G. E. Wallis and Sons, of Maidstone, whose accepted tender amounts to £2,625. Messrs. Johnson and Co., 10, Balloon-street, Manchester, have been selected to supply and fix the steam ovens, some of the latest improvements in which have been patented by that firm. Mr. W. Menzies, R.E., will be the clerk of the works, under Capt. Leslie, R.E., the officer in charge of the division in which the work lies.

Mr. Bonney, surveyor to the Rugeley local board of health, died last week at the age of 49. He was the fourth son of the Rev. T. Bonney, a former master of the grammar-school at Rugeley, and was employed in early life on railway construction in Leicestershire and Staffordshire. He afterwards commenced practice as an architect and surveyor, and was until his death one of the diocesan surveyors for the archdeaconry of Stafford. He was buried on Friday with military honours, being a major in the local volunteer corps, in Rugeley Cemetery, which was laid out from his designs as surveyor to the burial board.

The mausoleum of the Emperor Frederick, next to the Friedenskirche in Potsdam, is completed externally, with the exception of the copper roof of the cupola. In the interior the stonemasons and sculptors are briskly at work. The decorations of the interior are carried out entirely in light grey Silesian sandstone, with dark green Syenite pillars. Over the opening of the altar niche an escutcheon has been placed, over which the Imperial eagle soars with outspread wings. This is flanked on both sides by figures of angels holding religious symbols in their hands. The spandrels of the upper gallery are adorned with cherubs. The mosaics in the cupola and on the ceiling of the altar space are about to be carried out from designs by Professor Ewald, after Early Christian works. The cupola will have figures of angels on a gold ground between palms.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

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## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and SIXPENCE for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. A.—R. F. V.—L. and D.—J. T.—W. O.—S. L. B.

## Correspondence.

## LOW SIDE WINDOWS IN CHURCHES.

To the Editor of the BUILDING NEWS.

SIR,—Adverting to some interesting disquisitions on low-side windows, quoted in your issue of the 7th inst., I conclude that the very charming example of such windows existing in the chapel or oratory of Prior Crauden, within the precincts of Ely Cathedral, was at least not forgotten by some of those who took part in the discussion. The chapel, a little gem of the Edwardian period, is abundantly lighted by large eastern and western windows, as well as by two tall windows of two lights each on the north and south sides. In addition to this ample provision for the admission of light, however, the architect (probably the illustrious Alan de Walsingham) has introduced two lovely low windows, one on each side, west of the tall side windows just mentioned. They are under ogival canopies, profusely enriched with delicate sculptured leafage. [See two illustrations in Murray's "Hand-book to the English Cathedrals."] The interior sills of these low windows are about 2ft. 6in. from the floor of the chapel, and each of them has a stone ledge, not a seat, within its recess; but the external sills are some 10 or 12ft. from the ground, the chapel being built upon a large undercroft or crypt, and occupying the "first floor" (to borrow a secular term) of an edifice with two stories. This fact disposes at once of the explanatory hypothesis suggested in the conference quoted from the *Antiquary*. There could be no looking in from the outside by lepers, penitents, or ordinary witnesses of the sacred rites; and it is most unlikely that a sanctus-bell would be rung at an open window of this private oratory, an appendage of the residence of the Prior, attended, doubtless, only by himself and his household, and within a stone's-cast of the vast church of the abbey. For my own part, I suspect that we must fall back upon a very prosaic explanation of these

low windows—namely, that the Prior, elderly and dim-sighted, wished for light thrown directly upon his Breviary, when he heard Mass said by his chaplains; and that his friend Alan the Sacrist, met his wishes by the insertion of these exquisite windows.—I am, &c.,

W. E. DICKSON,  
Sacrist of Ely Cathedral.

## PROVISIONAL AMOUNTS.

SIR,—So much unpleasantness frequently arises in the adjustment of these amounts in modern contracts that the question naturally suggests itself, Why is some combined effort not made to place the matter on a more satisfactory footing?

The remarks made by Mr. Gough in his paper reported in your last week's issue show the way some architects look at the matter, but there is also a builder's view to be considered. The whole question seems to turn upon the proper interpretation of the terms "prime cost" and "nett" when applied to these amounts. Some architects maintain that the terms mean the exact out-of-pocket cost to the builder, though they generally omit to say so in their specifications; while the builder maintains that they mean prime cost or nett amount the client would have to pay, supposing he went to the showrooms or warehouse and purchased the goods on his own account.

To show that the latter is the proper view, let us examine the theory of these amounts. In the first place, it will be noted that they are only applied to goods the value of which cannot adequately be described in any other way—viz., stoves, chimney-pieces, wall-papers, &c., or special work of any description; the theory being, that if the value of these goods was left to the builder to price, he, in his anxiety to get the job, would provide a totally inadequate amount for the kind of goods the client required. Hence the client, through his agent the architect, instead of saying the number of chimney-pieces or stoves he requires, puts also a value to them as a guide to the builder in making up his estimate.

Now suppose the client consulting the architect as to these prices, or *vice versa*, a manufacturer's or trade catalogue is naturally referred to, and the several prices agreed—i.e., the catalogue prices, or prices to the general public, of which he (the client) is one; the trade discount or builder's profit does not concern the client any more than the manufacturer's profit. Why then should his agent, the architect, wish to interfere with it?

Taking the illustration advanced by Mr. Gough, that if 500 locks were specified, the builder would be bound to supply them, and that, therefore, if 500 sovereigns are specified, he should be made to supply them also, the fallacy of this argument is in supposing sovereigns to be mere goods to be supplied, whereas they imply £500 worth of goods, a totally different thing, for the amount is put in to guide the builder—in fact to price it for him. In the case of the locks, the builder puts his own value, which is the value to the client or general public; but in the case of the other goods, which the builder has no means of knowing what is required, the architect puts the value at £500 in a lump sum for a quantity of them, and this value should be the same as the builder's—i.e., include his profit. All that the architect can rightly insist on is the vouchers showing the amount which would have been expended supposing the client had bought them; the out-of-pocket expense to the builder cannot concern him in the least, unless he is jealous of the profit which is made.

If the principle is once conceded that an architect has a right to know the exact prime cost to the builder of any article supplied by him, in order that he judge whether his client has been overcharged, then, according to the ordinary rule of logic, he could claim the right to know the prime cost of the whole job for a similar reason; and this shows the absurdity of the claim.

The terms "prime cost," or "nett," having two different interpretations, are therefore best left alone, and their place should be taken by the word "value," which expresses in a far better manner what the provisional amount is intended to be.—I am, &c., A BUILDER'S MANAGER.

## THE BRICKS AT WOODFORD ASYLUM, &amp;c.

SIR,—The letter of "Enquirer" in your last issue directs attention to a subject of far greater

interest than may be supposed by those unacquainted with the extensive nature of asylum works.

He asks "Whether it is not a fact that the specification for the bricks says 'London stock bricks?' Whether instead of London stock Bricks, bricks are not being sent from Peterborough? And whether the architect for the works at Woodford, under the London County Council, is not at the same time largely interested in the manufacture of Peterborough bricks?"

Now, in the first place, it has been stated recently that between five and six millions of bricks have been used in the foundations and subways of the Woodford Asylum, and that twenty-two millions of bricks are to be used in the construction of the superstructure; therefore your correspondent may well desire to ask Lord Rosebery and the London County Council why bricks are being brought from so great a distance to the presumable disadvantage of brickmakers nearer to Woodford, especially as the latter are so very badly circumstanced as to find it worth their while to "lock out" their employés, to the detriment of London ratepayers.

With your kind permission, I propose, at some length, to supply your readers with particulars possibly not known to many of the London County Councillors, who had nothing to do with these asylum works until the foundations were nearly complete. At the same time, the London County Council is responsible, for the selection of twenty-two millions of bricks for the superstructure.

Early in 1887 the architect of this asylum estimated that the total cost thereof would amount to the sum of £290,000, or thereabouts: the total accommodation he gave at 2,025 patients, and the average cost per bed at about £143. In his report to the magistrates of the old county of Middlesex, he stated:—"I have not attempted to cut down my estimate for the sake of making it a feature in the design; at the same time I quite believe it would be possible to complete all the buildings shown on my plan for less than the sum named."

Now the following appeared in a publication of November 23 last respecting this Woodford Asylum:—"The original design made two years ago is, in respect of its general arrangement and accommodation, almost identical with the ground plan to which we devote one of our illustrations; but some of the blocks occupied by patients were somewhat amended in point of detail, when submitted to the approval of the Lunacy Commissioners."

I therefore ask, How is it that the cost of the foundations and superstructure of these "almost identical" buildings has been recently stated at nearly £390,000, of which amount £337,945 has been sanctioned by the London County Council? the total excess so far being about £100,000, and the cost per patient being raised (so far) from £143 per bed to about £200?

What the final cost per bed will be it is useless to surmise upon such data as the foregoing, and it must be remembered that the foundations and other sundry works were to cost (according to the estimate given to the magistrates of the old county of Middlesex) the sum of £28,000, and not £50,000. The first-named sum was also to include for sewerage-tanks and main drains. Have these works been carried out within the £50,000?

We will assume that the total cost will only be £100,000 in excess of the original estimate, or, say, not more than £200 per bed, and will compare the prices with what the same architect has recently promised to do at Dorchester.

This architect has just been appointed to carry out asylum extensions at Dorchester, for 400 patients, "together with a new administrative department, a large recreation hall, a detached church in the grounds, new laundry buildings, and various alterations to the old asylum," which latter accommodates 320 patients. All this work is estimated to cost from £40,000 to £50,000, or from £100 to £125 per patient for the 400 patients, or considerably less if the alterations for the benefit of the 320 former patients be taken into account.

The Brookwood Asylum cost (including also architect's commission) only £126 10s. per bed, and not being one of the very large asylums, one would naturally expect that it would have been more costly (in proportion) than Woodford Asylum, particularly in reference to the administrative portions.



Why should it be necessary to expend so much as £200 per bed upon Woodford Asylum and only £100 upon each bed for the asylum near Dorchester, the architect being the same for both buildings?

It is a fact that certain asylums (by reason of mismanagement or ignorance) have in the past cost enormous sums.

Churches are arranged for in connection with the asylums at Woodford, Dorchester, and elsewhere (the first named to cost about £8,500, I believe). Now, is it not very unfair to many of the ratepayers of the counties of London and elsewhere that buildings for the Church of England services should be erected at the cost of persons belonging to other denominations? As an alternative, the recreation halls and day-rooms might be used for the services of those denominations mustering practicable congregations of patients, the attendants arranging for their own places of worship when off duty.

Insanity is too often based upon some religious question or delusion; but patients in asylums do not always become so insane as to forget the creed they were taught to adopt, or cease to appreciate it. For this reason I am of opinion that insane patients should not be compelled to attend Church of England services if these are not what they have been accustomed to, and ratepayers throughout the country might save large sums of money by declining to erect churches or chapels for insane paupers out of the public funds. If provided at all, those should be supplied by each religious body concerned; but probably a majority would prefer to expend money upon a church in some poor neighbourhood, with a view to the consolation of those whose poor homes are in striking contrast to the costly pauper lunatic asylums, and whose responsibilities and troubles have not, as yet, driven them beyond that border-land where reason ceases to be and madness reigns omnipotent.

I have no doubt but that if the London County Council were to appoint an architectural officer, acquainted with asylum works, to regularly examine the plans and papers belonging to the various asylums under the care of the Council, and to periodically visit those asylums, and report accordingly to the Asylums Committee upon the structures, not many "Peterborough bricks" would be found on the new jobs.—I am, &c.,

March 17. A LONDON BRICK.

#### CHARMINSTER ASYLUM COMPETITION.

SIR,—With a view of petitioning the Committee of Visitors to make public the assessors' report and let the premiated designs be on view, will the candidates who think this should be done kindly send their names to me on an early date?

REGINALD PINDER.

Avenue Chambers, Bournemouth, March 19.

The town council of Buckingham have adopted, subject to the sanction of the Local Government Board, a scheme for proposed new sewerage and water supply works, the plans and specifications for which have been prepared by Mr. Baldwin Latham. The estimated outlay is £18,300.

A new reredos, the work of the members of the village carving class, was opened on Sunday in St. Oswald's Church, Burnside, by the Bishop of Carlisle. The reredos is of oak, and is the result of four winters' work by the carvers. The length of the reredos, which is composed of panelling and tracery, is about 12ft., and the top of it reaches to the stained glass of the east window.

The members of the locomotive department upon the South Western Railway at Exeter have just erected a memorial over the remains of Mr. E. A. Towning, of that city, who was killed by a fall from his engine in November last. The stone is of fine-grained yellow magnesian limestone, and has on it a fac-simile in high relief of the engine and tender Towning was driving at the time of the accident, No. 497. The memorial is the handiwork of Mr. Harry Hems, of Exeter, and has been erected in the cemetery at that city.

The Plume of Feathers Inn at Winchester, which adjoins the ancient Westgate, to which it formed the porter's lodge, has just been enlarged, from designs by Mr. A. W. Galbraith. The inn was partially rebuilt in 1685, when the tenant was ordered by the corporation of the city to consult Sir Christopher Wren whether His Majesty (Charles II.) would require the site for his projected (and never executed) Winchester Palace. The new adjunct consists of an assembly-room, and is built in a style to correspond with the Westgate in red Corsehili and blue Robin Hood stone. Mr. John Fielder, also of Winchester, was the builder.

## Intercommunication.

### QUESTIONS.

[10249].—**Beam.**—A beam 9in. by 6in. spans a certain opening. It is supported by two columns, the three spaces being equal. If the columns are taken away, what size must the beam be to carry the same weight?—GILBERT.

[10250].—**Seasoned Timber.**—Is it not a difficult matter to decide by inspection whether woodwork is properly seasoned? Pitch pine especially is often very disappointing. Any hints on the subject useful to an architect would be esteemed.—P. P.

### REPLIES.

[10241].—**Deviation of Compass.**—The readiest way of finding the "deviation of the compass" or the variation of the magnetic north is to take the compass bearing of a distant object, and then compare it with the bearing of the same object on an Ordnance map. The difference is the variation. Ordnance maps are all plotted to the true meridian. Standard textbooks on the subject give many ways of finding the variation by observation of celestial bodies; but they are all difficult or impracticable to the inexperienced. The method described above, which consists simply in using the information supplied to us by experts charged with the National Survey and State map-making, I have not seen referred to or heard described. A short time ago, being suddenly called upon to state the magnetic variation, I found it in two or three minutes with a circumferentor and an Ordnance map from my office window. Failing an Ordnance map, the plainest instructions I know of are in Rankine's "Civil Engineering," article "Finding the Meridian." The method given on p. 399, BUILDING NEWS, March 14, is not quite correct, inasmuch as the North Star (*α Ursæ Minoris*) is due north only when it is midway between its two elongations.—GILES WREXHAM.

[10247].—**Speaking Tubes.**—In reply to Geo. B., perhaps the following, from Hurst's "Architectural Handbook," may give him some information:—"The velocity of sound through tubes is nearly the same as through air. Pipes of copper, alloys of lead and tin and zinc transmit sounds to greater distances than iron. Moisture in a pipe tends to confuse or annihilate sound. Bends diminish the intensity. A wrought-iron pipe 1in. diam. with four quadrant bends, transmitted words distinctly for 250ft., but failed at 420ft. The author says he has spoken through a wrought-iron pipe with two bends 1½in. internal diameter and 450ft. long, but failed to be heard when the pipe was lengthened to 600ft. Lead pipe ½in. diameter can be used up to 250ft., and a tube of gutta-percha 1in. diameter answered satisfactorily when 200ft. long." Lead or composition gas-pipe, say, ½in. diameter, with a suitable mouthpiece, is perfectly satisfactory under any ordinary circumstances.—BUD.

### CHIPS.

The Edinburgh Town Council have adopted plans prepared by Mr. T. Morham, city superintendent of works, for a proposed police station to be erected at the north-west corner of the Waverley Market, with an access from Princes-street.

New stables have been erected at Southampton for the Corporation, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

Works of water-supply for Stone, Staffs, which have been carried out from plans by, and under the direction of, Mr. G. D. Harrison, were formally inaugurated on Tuesday week. The outlay has been £7,000. The reservoir, which holds 3,000,000 gallons, is placed in Stone Park, at an elevation of 300ft. above the level of the Market-place.

A new Bible Christian Chapel is being built in Tregonissey-road, St. Austell, from plans by Mr. F. May, of that town. It is of granite, with Bath-stone dressings, and will cost about £11,300. The contract for masonry has been undertaken by Mr. Samson Hunkin, of St. Austell, and that for carpentry by Mr. W. Blamey, of Veryan.

The annual report of Manchester New College contains a description of the proposed new buildings at Oxford. They will be in the form of a square, surrounding a "quad" of about 96ft. by 60ft. The chapel is planned to contain 253 sittings. The library, on the first floor of the main building, will be 80ft. by 32ft. It is estimated that the buildings, with fittings and furniture, will cost £30,000.

Before leaving Cannes on Saturday the Duke of Cambridge inspected the recumbent figure of the late Duke of Albany, upon which a sculptor, Signor Pelligrini, has been working for two or three years from Sir E. Boehm's model. The Prince of Wales is expected to visit Cannes and unveil the statue in St. George's Memorial Chapel.

The railings surrounding St. Giles's Cathedral Church, Edinburgh, are about to be removed, the three authorities concerned—the Ecclesiastical Commissioners, the City Council, and the session of St. Giles—having given their consent to the alteration.

A new Wesleyan chapel was opened last week at Brentford by the Rev. C. H. Kelly, President of the Conference. The building is a Gothic one of stone, designed by Mr. Charles Bell; it will seat a thousand persons, and has cost, exclusive of site, £4,500.

### LEGAL INTELLIGENCE.

CAN AN ARCHITECT CHARGE FOR TIME?—**HAWARD V. KITCHING.**—The question whether an architect is entitled to charge for time in superintending works at a distance, in addition to commission, was raised in an action heard on Friday by Lord Justice Fry. The plaintiff, an architect in London, sued the defendant, a gentleman residing at Darlington, for a sum of £166 18s. in respect of commission and work done there, and £160 19s. 8d. in respect of railway fares and other travelling expenses and charges for time. The first sum the defendant had paid into Court, and of the second he had paid £72 2s., which he considered sufficient. The only dispute now was as to the plaintiff's right to charge for time occupied in superintending the work at Darlington, in addition to the commission, which was 5 per cent.—Mr. Montague Lush was counsel for the plaintiff, and Mr. C. C. Scott was for the defendant.—Lord Justice Fry asked if the plaintiff was suing under a special contract.—Mr. Lush: No.—Lord Justice Fry: I doubt whether you will get me to give you this amount charged for time.—Mr. Lush hoped he should be able to induce his Lordship to do so. His case was that, according to the rules of the Royal Institute of British Architects, if a member of the profession was required to go a long distance from his home the 5 per cent. commission did not cover the charge for his time.—Lord Justice Fry: Can you say the employer is bound by the rule?—Mr. Lush said he should put his claim on the ground that it was a customary and proper charge, and he should prove it. The contract was made in 1885, and was carried out in that and the three following years, the works consisting of alterations to Bransome Hall, and designs for stables there. The plaintiff went to Darlington in connection with the work 17 times, and stayed there three or four days on each occasion, and he charged only £1 11s. 6d. per day for his time, although the fee named by the Royal Institute of British Architects was three guineas per day.—The plaintiff, in cross-examination, said he was not a member of that Institute.—Mr. White (Secretary R.I.B.A.) proved that three guineas a day was the usual charge for time. Half the 5 per cent. commission was for plans, specifications, &c., and half for superintending the execution of the work. He was not prepared to say whether an architect should charge for the time he was away.—Mr. Charles Barry, architect, said it was the usual custom, though not the universal practice, to charge three guineas a day for time in respect of the days of actual travelling to and fro, but nothing was charged by architects for time in superintending the work.—The defendant said the plaintiff worked for him as a builder, and not as an architect.—Two architects gave evidence for the defendant to the effect that it was not their practice to charge anything for time in respect of work executed at a distance beyond the 5 per cent. commission, except by special agreement.—Lord Justice Fry, without laying down any general rule as to architects' charges, thought the defendant had paid enough into court, and gave the defendant judgment, the plaintiff to have costs down to, and the defendant to have costs subsequent to, the payment into Court.

NOTICES UNDER THE BUILDING ACTS.—**C. F. HAYWARD, DISTRICT SURVEYOR OF ST. GILES AND ST. GEORGE, BLOOMSBURY, V. CULLIS, BUILDER.**—An important decision was given at Bow-street Police-court last week by Mr. Vaughan, on the subject of notice to be given to the district surveyor for "necessary repair (under Clause 9) affecting the construction of any external or party-wall." The necessity for the notice as required by the district surveyor (in accordance with the various clauses of the Act, 31, 38, and 39) was disputed by the builder, the architect of the work being Mr. F. Vincent Stokes, architect, of Great James-street. The work was being done at No. 6, Woburn-place, consisting of repairs to, and partially rebuilding the chimney jambs, breasts, and portions of the party-wall in basement, and also in taking down and rebuilding arch and jamb of kitchen-area entrance, being part of external wall in front. Mr. W. F. Stokes, the solicitor for the defendant, brought Mr. G. Pearson, surveyor, as a witness as well as the architect and builder. The district surveyor called several witnesses, particularly Mr. F. Wallen (the district surveyor for St. Pancras West), and Mr. William Waine, the surveyor to the Duke of Bedford. The matter was adjourned several times; the magistrate went to view the premises. The result was in favour of the contention of the district surveyor, to whom was awarded costs, and a modified penalty of £5 was inflicted on the defendant. It will be noted that special reference was made in the defence to the well-known case of *Badger (D.S.) v. Denn (1858)*, on which it seemed the defendant mainly relied for his contention that no notice was required to be given, though there were admittedly numerous points involved in carrying out the work to which the rules of the Act applied, and to which the duty of the district surveyor was to see that the rules were properly observed. Mr. Vaughan's judgment



was as follows:—This case of Badger v. Denn ought not to be construed to prevent the supervision of any work by the district surveyor as required by the Act, Clause 31, &c., including that of repairs, which in that case were merely superficial, the total being only as described in the report of the case, showing that the work done seemed in the nature of a casing or skin. But in the present case now before him, however, the section requiring notice does certainly apply, and it is not merely repair—even if it were only necessary repair, notice would be required all the same, for otherwise it might be held that the whole wall might be taken down and rebuilt without notice, which would be obviously wrong, as the district surveyor could not carry out his duties of supervision properly. He would not care to extend the judgment of the case of Badger v. Denn to a case where the facts are not compatible, and here the works done to the external wall have been proved to be 4½ in. thick, and 9 ft. 6 in., or more longitudinally. But this is a small part of the case, for there are the chimney breasts and jambs in the kitchen; some of the work is proved to be, from the bottom to within 10 in. of the ceiling, entirely removed, and new brickwork put up. This is not repair, but rebuilding—entire reconstruction. All evidence, even that of the defendant's witnesses, especially Mr. Stokes the architect, shows that the work done did affect the party-wall bonding in the new brickwork to the old. Again, on the left-hand side of the chimney breast, the builder admitted he had built about 3 ft., and, though others proved more, that is enough to show the case does not come within the exemption intended by Clause 9 for work of necessary repair not affecting the construction of the wall. Penalty, £5 and costs, £3 3s.

### WATER SUPPLY AND SANITARY MATTERS.

STAFFORD.—The new waterworks at Stafford were opened with much ceremony on Monday. After 13 years of anxious and fruitless search the corporation of Stafford at last found an ample supply of water at Milford. Three sites were successively tried, but without success, as in two cases the water was found to be impregnated with salt, and in the other there was not a sufficient supply. In these attempts and in the provision of the present works a sum of £12,000 has been spent. About twelve months ago the corporation decided to make another attempt, and a corner of Cannock Chase was the spot selected. A well a few feet deep was sunk, the result being that an ample supply of good water was discovered, and a site for the pumping-station and reservoir was purchased for £600. The work of erecting engine-house, constructing reservoir, and laying the mains was then proceeded with. The buildings at the pumping-station were erected by Mr. Espley, his contract being £3,295; the reservoir was constructed by Mr. A. F. Whitmore, of Stafford, at a cost of £2,692, and is capable of holding 577,575 gallons. It is situated on the top of a hill, just above the pumping-station, and is 468 ft. above sea level and 213 ft. above the level of Stafford Market-square. The distributing mains—about 7½ miles in length—were laid by Mr. C. J. Nevitt, of Stafford, whose contract was £5,962.

### PARLIAMENTARY NOTES.

THE ARCHITECTS' REGISTRATION BILL.—The second reading of this measure should have been moved by Mr. Noble on Wednesday last; but the Bill was not reached, owing to the long discussion on a Bankruptcy Bill and an Irish Leaseholds Bill. It stands second on the list of private measures to be taken on Wednesday, the 15th April.

New Wesleyan Sunday-schools were opened at Liskeard on Friday. They are placed between the chapel and the temperance-hall, and consist of two assembly-rooms, one above the other, with classrooms. The building is of local stone, with granite dressings. Mr. T. Wonnacott, of Falmouth, was the architect, and Mr. John Reed, of Plymouth, the builder.

"Venus and Cupids," a work by Pietro di Cortona, an early 17th-century Italian painter, has this week been presented to the Art Gallery at Leeds by Major Bousfield.

At the last meeting of the Leeds School Board tenders were accepted for a school for 1,400 children, to be built at Harehills, at £14,023, or £9 18s. 10d. per head, exclusive of site, and also for a day industrial school for 260 children. The latter will cost no less than £25 per child; but the chairman of the committee stated that this will be cheaper than similar institutions provided in other large towns. Thus, the industrial school at Bristol, opened 12 months ago, cost £29 16s. 1d. per head; at Liverpool, the cost for the existing school in Queensland-street was £37 18s. 8d. per head, and the cost of a school now building will be £33 6s. 8d. per head; while at Manchester they have spent £26 8s. 4d. per head.

## Our Office Table.

THE Committee acting for the architects of Scotland have published a reply to the memorial recently addressed by the Royal Scottish Academy to the Privy Council in reference to the proposed grant of a supplementary charter to the Academy. The architects maintain that the Academy's answers to the averments in their original petition do not make inquiry into the Academy's administration less of a necessity than it was before, and reassert that, save by the establishment of exhibitions and a life school, the R.S.A. has done little or nothing to promote the fine arts in Scotland. They point out that, as now constituted, the Academy has practically no connection with architecture, and even if this is due to the fact, as alleged on behalf of the Academy, that this is because architects stand aloof from the body and ignore and slight it, the significance of this state of things is by no means lessened. The Architects' Committee, however, contend that the members of their profession take a deep interest in the Academy and in the promotion of art.

SIR JOHN C. ROBINSON, her Majesty's surveyor of pictures, in a letter to the *Times*, strongly advocates the utilisation of Kensington Palace as the site for a comprehensive and complete gathering of works of British art, to include not only painting, but also engravings and sculpture. The National Gallery will, he points out, eventually require every inch of available space for prospective additions in the categories of ancient art, and as the Portrait Gallery is in its nature a constantly increasing gathering, the time will arrive—it is indeed within measurable distance—when the accommodation will not suffice for both. The National Portrait Gallery will then probably be shunted off from the site just acquired, and left to clamour as before for a house of its own. Sir John Robinson despairs of any Government voting an adequate sum of money for realising the proper representation of British art, but suggests that the Academy and kindred institutions might well take up the project. As a nucleus of a fund he states that a wealthy lover of art has offered to give £10,000.

### MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Society of Arts. "Considerations concerning Colour and Colouring." Cantor Lecture No. 2, by Prof. A. H. Church, F.R.S. 8 p.m.

Surveyors' Institution. Discussion on "Betterment." 8 p.m.

TUESDAY.—Society of Architects. "Influence of Material on Design," by G. A. T. Middleton. 7.30 p.m.

Society of Arts. "Engravings in Wood, Old and New," by W. J. Linton. 8 p.m.

Historical Association of Ireland. Papers by Rev. Denis Murphy, Rev. L. Hassé, W. F. Wakeman, and J. Coleman. Lecture Theatre, Kildare-street, Dublin. 8 p.m.

WEDNESDAY.—Society of Arts. "Carriage Building and Street Traffic in England and France," by G. N. Hooper. 8 p.m.

FRIDAY.—Architectural Association. "Hospitals," by Keith D. Young. 7.30 p.m.

Royal Institution. Lecture by Lord Rayleigh, F.R.S. 9 p.m.

Architectural Association, 9, Conduit-street, W.—March 28, paper by Mr. A. E. Bartlett, "A Travelling Student's Notes." 7.30 p.m.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

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Reid, M., 22, Foster-street, Bedford.

MASTER.

Lowe, T., 7, Rue-de-Roses, Cannes, France.

The Marquis of Ripon has presented a copy of Sir Thomas Lawrence's portrait of his father to the Corporation of Ripon, of which the late Earl of Ripon was Mayor, and also its member in Parliament.

## Trade News.

### WAGES MOVEMENTS.

POTTERIES.—In the building trades of the district of the Potteries and Newcastle-under-Lyme the carpenters and joiners gave notice at the close of last year that they should require an increase of wages of ½d. per hour from the 1st of May next, making their wages 7½d. per hour. The bricklayers also requested an advance of ½d. per hour (from 7½d. to 8d.), and a slight reduction of working hours. The master builders declining to grant these demands, the question has been referred to an umpire. Mr. C. Whitwell, of Birmingham (of the firm of Thomason and Whitwell, architects), was asked to undertake the duty of adjudicating, and, after meeting the representatives of the three parties at the Town Hall, Hanley, has issued his award, giving to the carpenters and joiners the advance claimed, and to the bricklayers also an advance of ½d., their hours to continue the same.

### CHIPS.

Mr. William Stevenson, wood broker, surveyor, &c., has removed from Fern Bank House, Scarborough, to 15, John-street, Kingston-square, Hull.

The Accrington Town Council, at their last meeting, advanced the salary of their borough engineer, Mr. Wm. J. Newton, Assoc.M.Inst.C.E., £100, making the total emoluments of the office £360 per annum. Mr. Newton has done a great amount of work since his appointment two years ago, and is now engaged in the construction of public abattoirs, stables, &c., designed by him, and estimated to cost about £15,000. The council spoke very highly of Mr. Newton's services and ability.

Mr. Weinberg has presented to the Dundee Fine Art Gallery a picture by David Murray, A.R.S.A., entitled "Dewy Eve," hung at the recent exhibition. "Kiomet," by Tom Graham, H.R.S.A., and the "Holy Isle, Arran," by the late Sir George Harvey, have also been given to the Gallery by one of the members of the executive committee. The original picture of "The Executive," a group of Dundee citizens of the olden time, by Henry Harwood, has been presented by Mr. Charles Lyell.

Mr. Thomas Beckwith, one of the intended labour candidates for Newcastle-on-Tyne, died in that city on Saturday, aged 50. A joiner by trade, he served his time with Mr. Ronds, of Bradford, but has been widely known in the North of England during recent years as a temperance lecturer.

A new drill-hall has just been erected in St Mary's-road, Southampton, for the 1st Hants A.V., from plans by Mr. W. H. Mitchell, of that town.

The public memorial of the late Lord Napier of Magdala will take the form of an equestrian statue, to be erected in London.

At the last meeting of the Bath City Council considerable discussion arose upon the proposal to increase the salary of Mr. C. R. Fortune, city surveyor, who is now receiving £250 a year, Mr. Parfit, the ex-consulting surveyor, drawing £150. A proposition was made that an addition of £100 a year be made to the surveyor's salary. An amendment that no increase be granted was lost by 22 votes to 14; a subsequent amendment that the salary be increased by £50 was lost by 21 votes to 13, and then the original motion was carried by 19 votes to 16.

The local board of Widnes proceeded on Tuesday to elect a surveyor. A salary of £250 a year was offered, and 167 candidates came forward, from among whom seven were recommended by a committee. Mr. John S. Sinclair, assistant surveyor to the Bootle town council, was elected.

The Bishop of Chichester (Dr. Durnford) was presented with his portrait at the Royal Pavilion, Brighton, on Friday. The painting is by Mr. W. W. Oules, R.A., and depicts his lordship arrayed in his robes, in a sitting posture, with a Bible upon his knees. It cost about £700, and is to be preserved as an heirloom in the palace.

A Primitive Methodist church, situated in Westoe-lane, South Shields, was formally opened on the 13th inst. The building has been designed in the Early Gothic style by Mr. T. E. Davidson, of South Shields, and the contract has been carried out by Messrs. R. Goodwin and Son, of the same town. The site forms the corner of Westoe-lane and Chichester-road, and the block comprises the church, lecture hall, vestry, &c. The church provides sitting accommodation for 450 persons, and a circular gallery affords additional seats for 200 people. The exterior is of Sherburn bricks, with Newbiggin redstone dressings, and the roof is covered with Westmoreland green slates. The seats are open pitch pine benches, and the rostrum is of Oregon pine. The total cost of the building is £3,500.



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### TENDERS.

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**ADDISCOMBE.**—For proposed residence, for Mr. A. Jepps. Mr. R. Peters, 72, Wool Exchange, Coleman-street, E.C., architect:—

Smith and Sons...	£1,330 0 0
Marrage .....	1,035 0 0
Taylor .....	999 0 0
Watson .....	890 0 0
Warman .....	785 0 0
Jones .....	745 0 0
Wheeler (accepted) .....	700 0 0

**ANERLEY.**—For outside painting, &c., at the North Surrey District School, Anerley, S.E. Mr. A. G. Hennell, architect:—

Martin and Barclay ...	£781 10 6
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Prout ...	720 0 0
Pyett ...	680 0 0
Pledge ...	634 0 0
Baker ...	625 0 0
Burman and Sons ...	575 0 0
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Waddington ...	563 0 0
Holloway Bros. (accepted) ...	535 0 0
Mid-Kent Building Co., Ltd. ...	521 0 0
Ackermann ...	513 0 0
Lilly ...	484 7 6
Beadle ...	448 12 0
King Bros. ...	409 0 0
Akers ...	397 0 0

**AUDKORN, S. AFRICA.**—For bungalow residence. Mr. R. Peters, 72, Wool Exchange, Coleman-street, architect: Accepted tender, £5,500.

**BALHAM.**—For the erection of a new police-station in the Cavendish-road, Balham, for the Receiver for the Metropolitan Police District. Mr. J. Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood:—

Garlick and Horton ...	£3,456 0 0
Higgs and Hill ...	3,170 0 0
Dove Bros. ...	3,160 0 0
Chappell, J. T. ...	3,087 0 0
Hart Bros. ...	3,076 0 0
Patman and Fotheringham ...	3,065 0 0
Grover and Son ...	3,040 0 0
Perkins, R. ...	3,017 0 0
Aviss and Co. ...	2,990 0 0
Scrivener and Co. ...	2,975 0 0
Lathey Bros. ...	2,900 0 0
Lorden and Son ...	2,893 0 0

**BERMONDSEY.**—For repairs and alterations to eight houses. Mr. R. Peters, 72, Wool Exchange, Coleman-street, architect:—

Watson ...	£180 0 0
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**BRISTOL.**—For alterations to the Free Methodist Chapel, Hanham, Gloucestershire. Messrs. Foster and La Trobe, architects:—

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Godfrey, W. ...	537 0 0
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Clark, E., Fishponds ...	490 0 0
Moore, F. ...	480 0 0
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Stockport	Camden Road	Finchley Road	Latimer Road	Newton Heath	Stepney	Willesden	Hulme	Clapham	Upton Cross
Birmingham,	Chalk Farm	Firsby	Lea Bridge	North Brentford	Stechford	Wood Green	Knightsbridge	Colchester	Wandsworth
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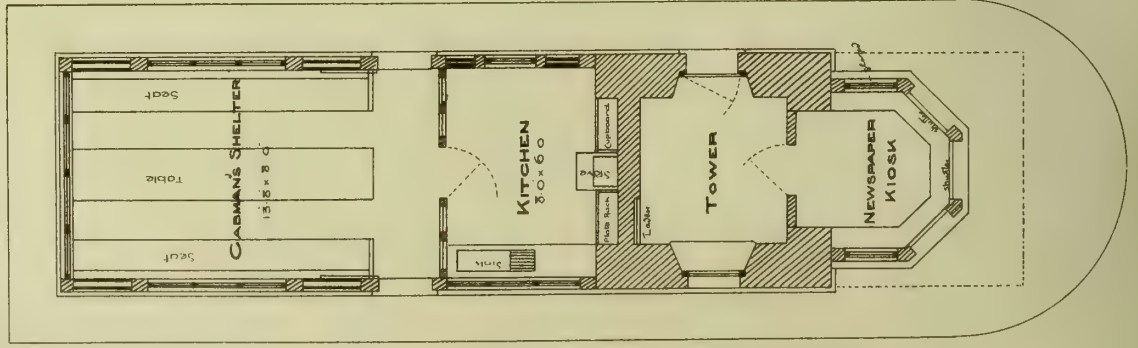




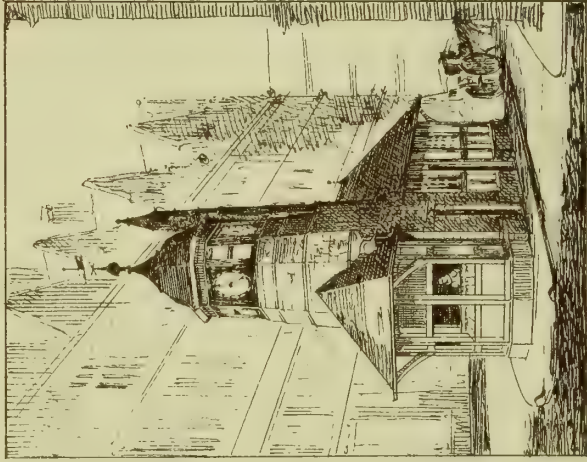
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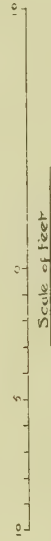
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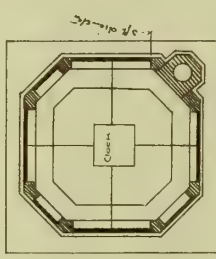
PLAN



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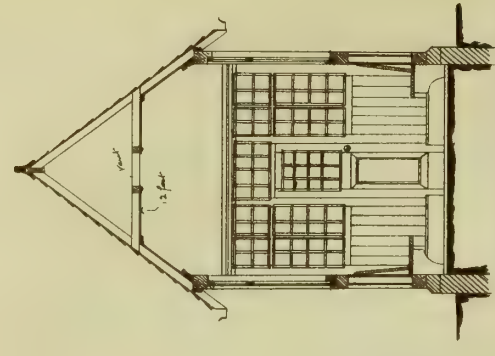


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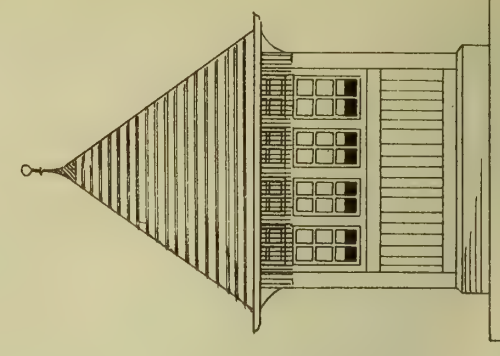


PLAN OF UPPER PART.

DESIGN PLACED FIRST



SECTION THRO' SHELTER.



SIDE ELEVATION

END

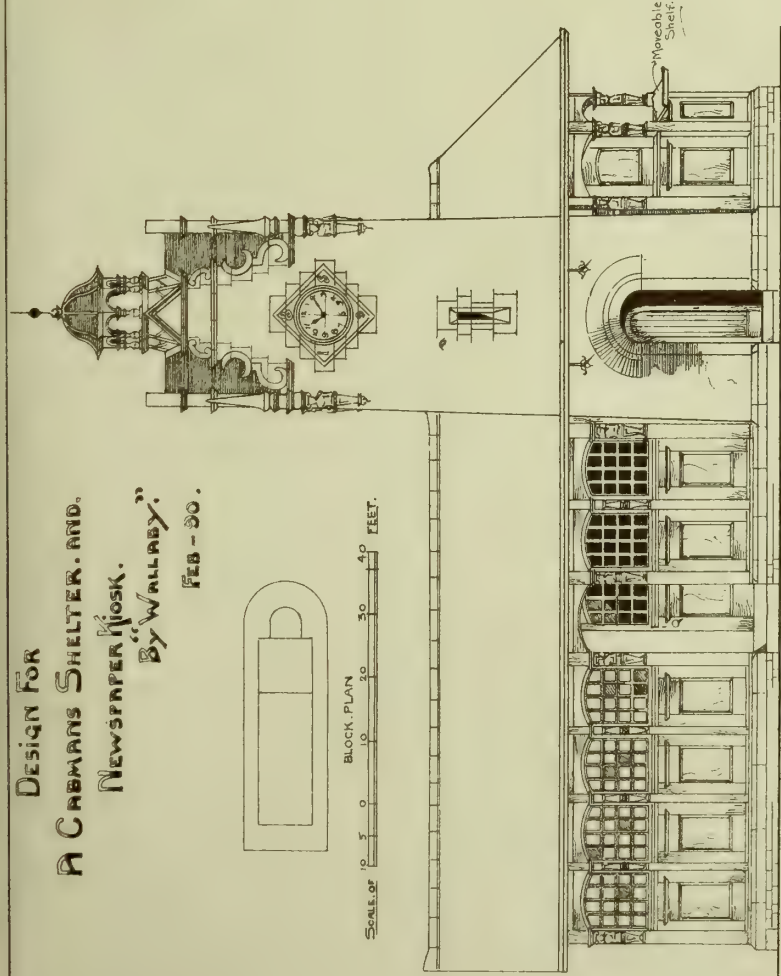


DESIGN FOR  
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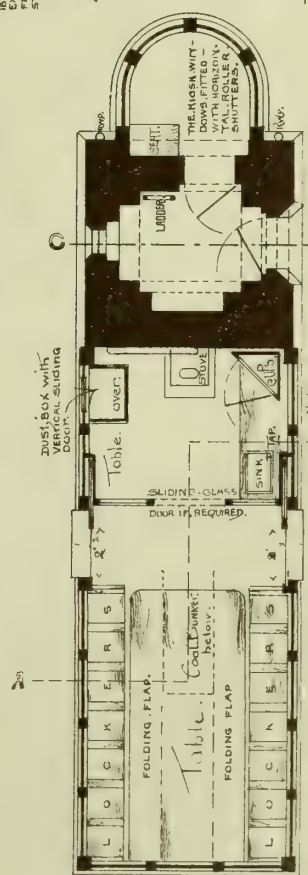
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DESIGN PLACED SECOND

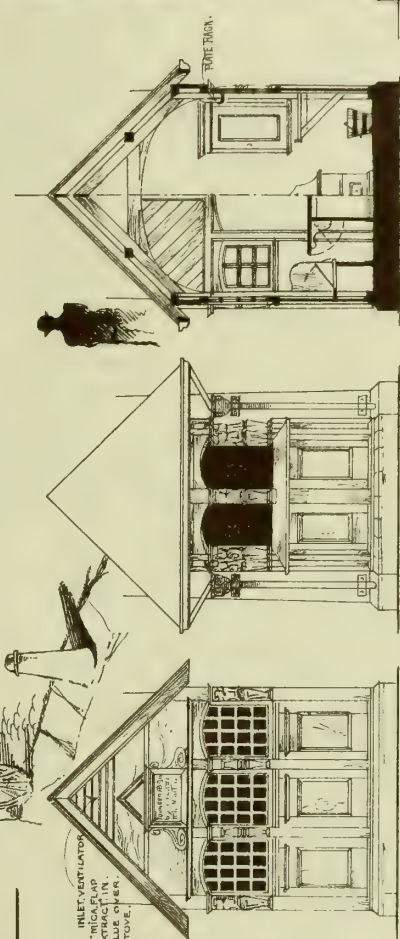
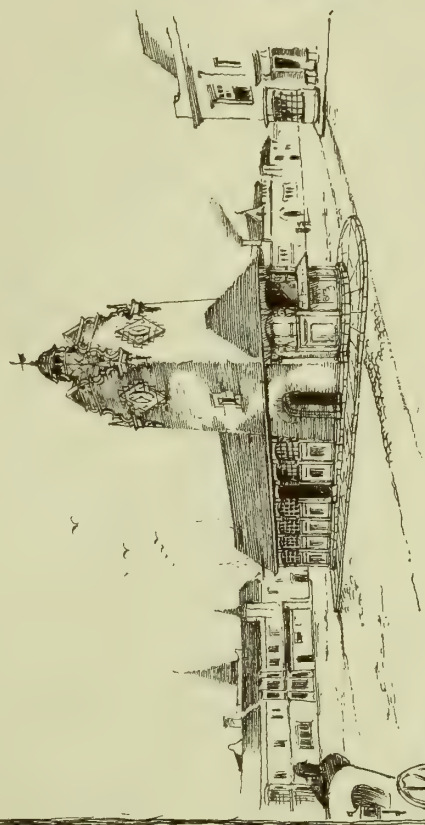


Side Elevation.



Plan.

SCALE OF



End Elevations.

Half Sections.

A. B.

Section C. D.

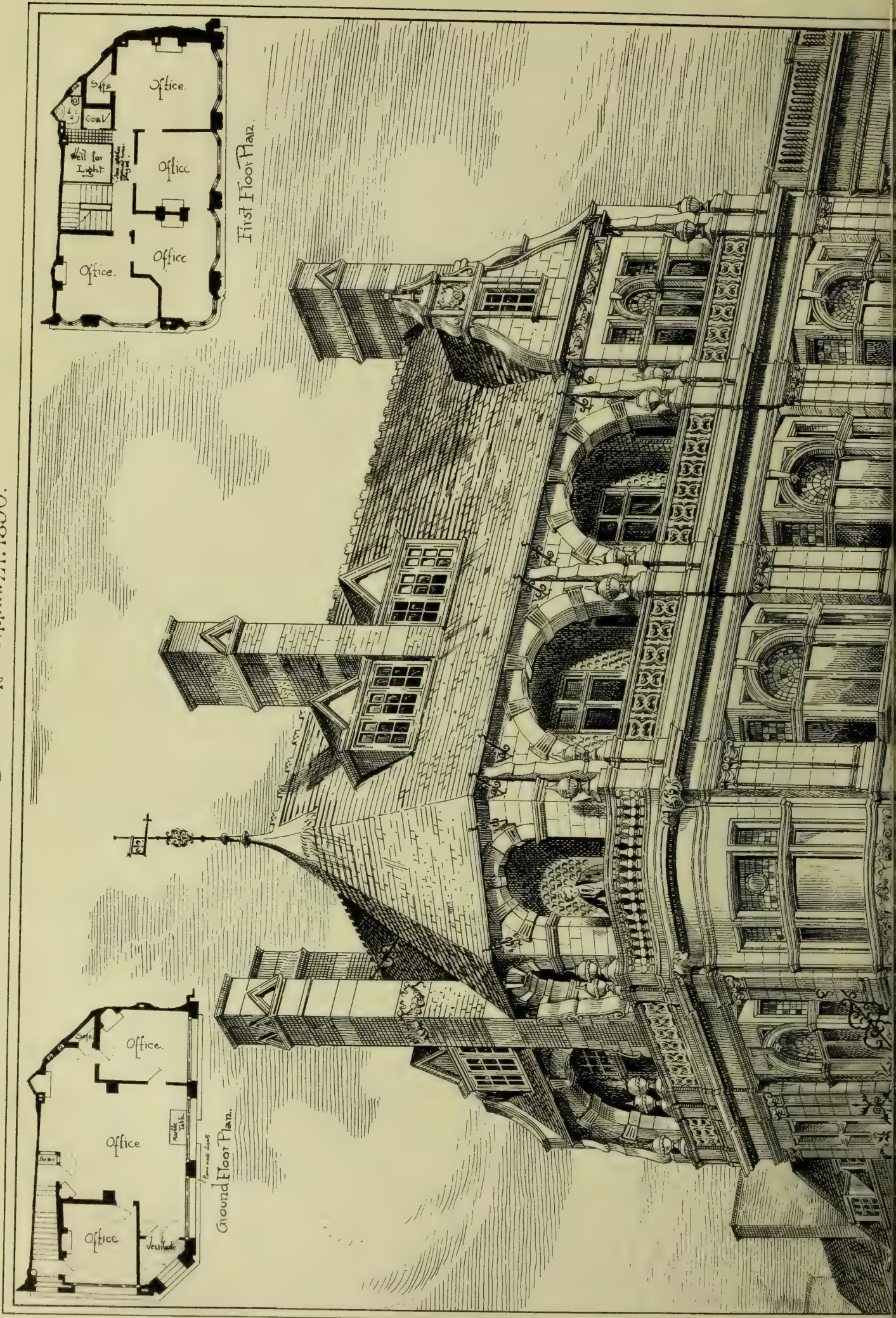




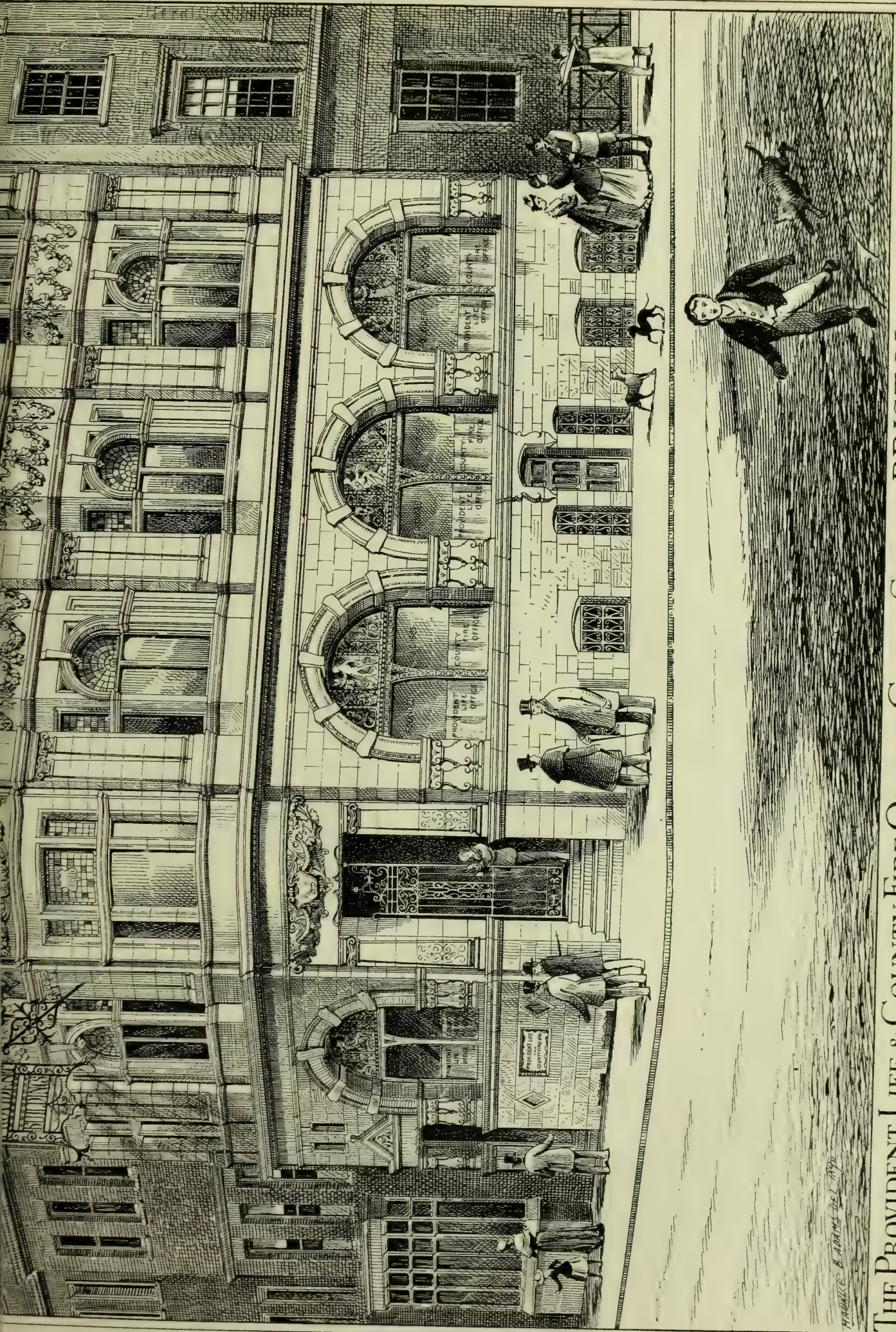












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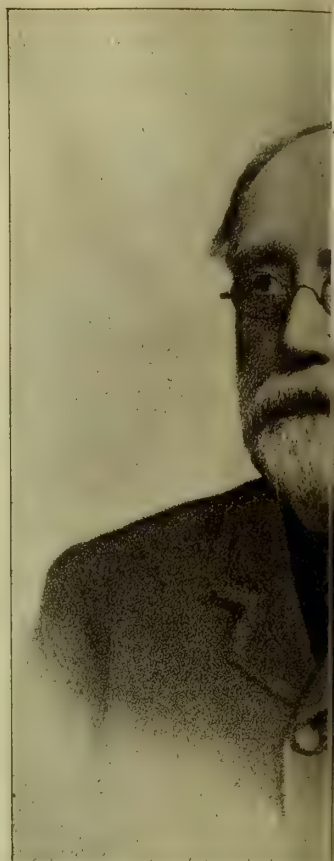




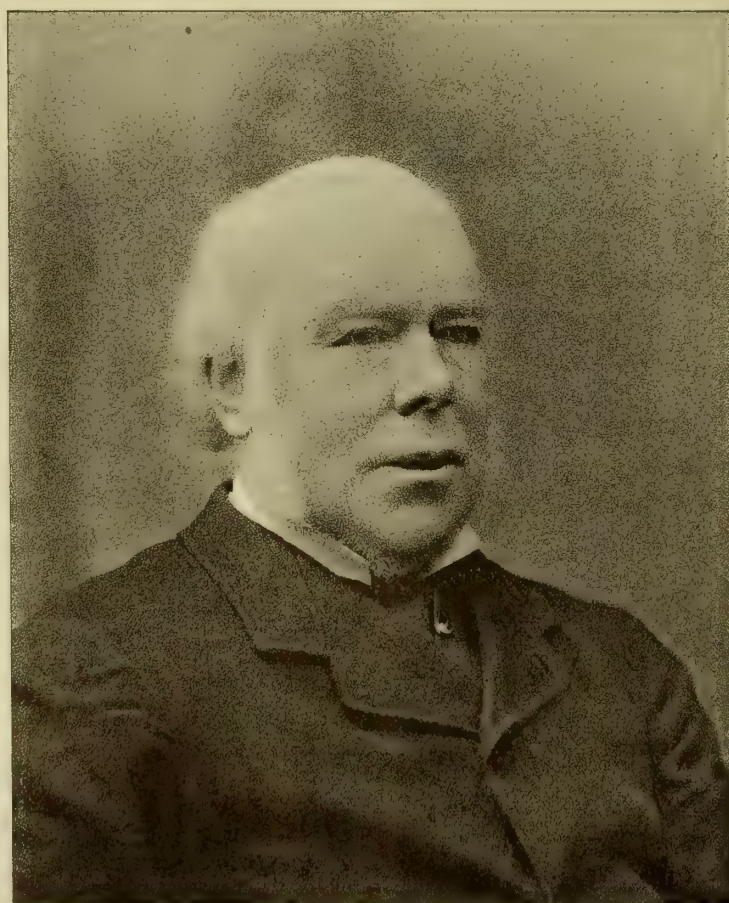


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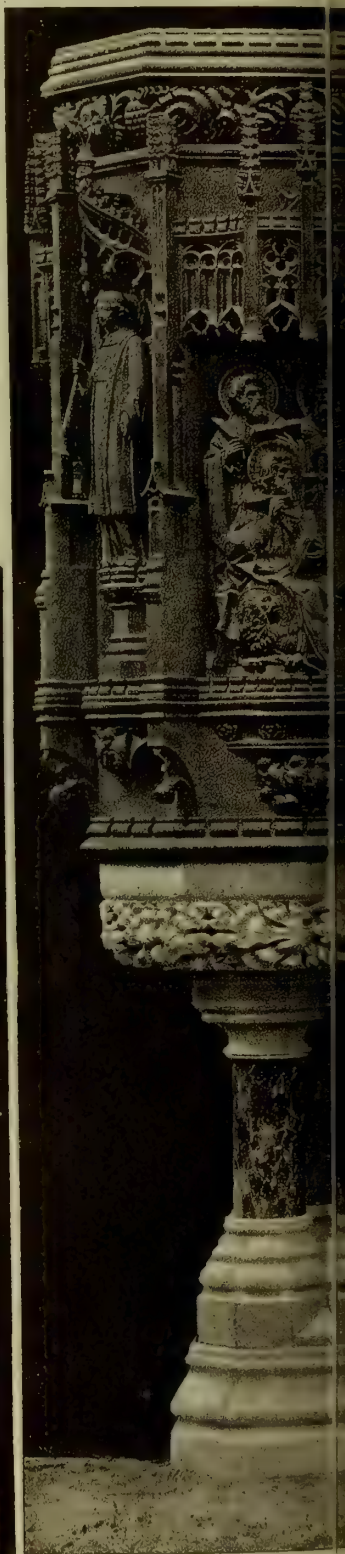
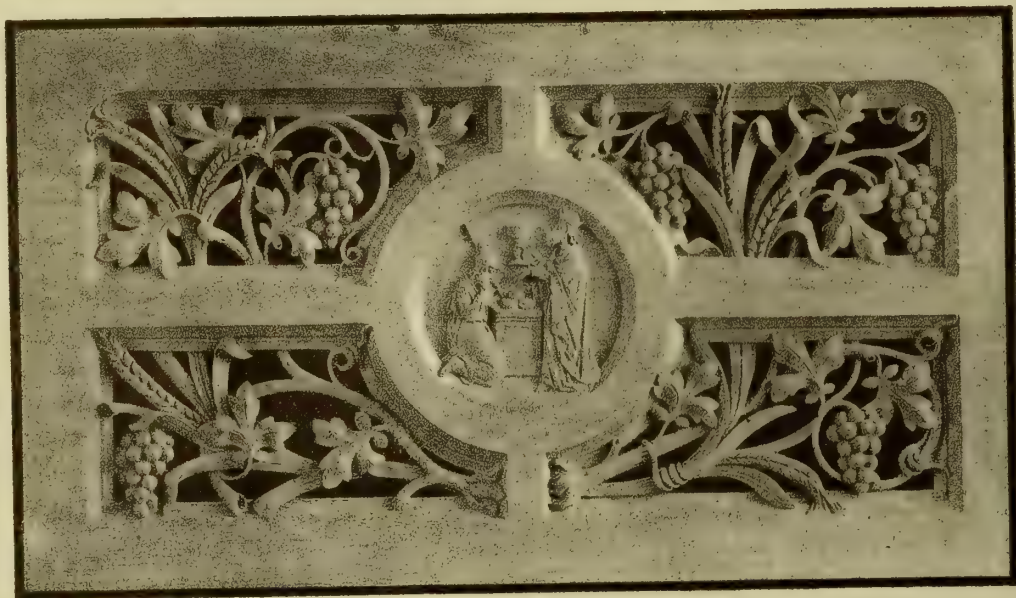








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# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1838.

FRIDAY, MARCH 28, 1890.

## A GOOD TIME COMING—IS IT?

IT appears to us that the question of Registration and the relation of the Institute thereto has entered upon a new, and we earnestly trust a happy phase. Hitherto the battle has most unfortunately been fought between the promoters of the Bill and the Council of the Institute; but, if (and there seems reason to believe it is so) there is a large party within the Institute itself friendly to the cause of Registration, yet not willing to join the promoters of the present Bill, desirous of extending the qualification tests, but still not unnaturally determined to support the Institute, there seems to be no reason why, if any courtesy or consideration is shown next Monday at Conduit-street, the younger of the two representative bodies, which so far has done the work, should not frankly and cordially come to terms with the elder, and give over to its custody the work so well begun.

The requisition for a special general meeting which has been fixed for next Monday at the Institute, and which we published in our last issue, calling upon the Council of that body to consider the subject of a compulsory examination by statute of all architects, whether members of the Institute or not, is a course of action that might profitably have been taken long ago. At last we trust we see the beginnings of wiser counsels, and we hope that the discussion will bring about some mutual arrangement. As our readers will see, the memorial is couched in moderate terms, and asks the Institute that a poll shall be taken of the entire body of professional members. The resolutions proposed are:—1. "That, at as early a date as possible, statutory powers should be sought to establish, as in all other professions, a system of compulsory examinations to be held by the Institute, to be extended to all architects hereafter entering the profession, whether members of the Institute or not." 2. "That, when such compulsory examination comes into force, the position of all existing architects shall be completely respected." The memorial is signed by twenty-one members, fourteen of whom are Fellows, and seven Associates. Those favourable to the movement—and we have good reason to know that they include a considerable number of the provincial members—should at once make known their views. A large number have held back, not because they find fault with the principle of Registration, but only because they do not wish to strengthen the hands of the Society. These grounds of hesitation no longer exist—the memorial is itself a witness to the *bonâ fide* intentions of the promoters. All they ask for is for the body of professional members of the Institute to declare their opinion in the only possible way that they can be recorded by voting papers. It is further an acknowledgment that the memorialists regard the Institute as the properly-constituted body to undertake any measure of this kind, and that, if it is willing to undertake to establish examination by statutory powers applicable to all practising architects, they, the promoters of the Bill, will wisely forego any further efforts as a separate body. Their labours, in fact, will have been accomplished. They will have done good service in bringing the question to the front; they have formulated a Bill which, whatever its faults may be, is framed in the broadest and most comprehensive spirit, and which has been eulogised by all capable of a

dispassionate judgment; they have asked the Institute to undertake the examination. Beyond this point, it appears to us, they cannot go. If the Institute Council decline to undertake the work, the responsibility will not rest with them. On the other hand, if the Institute will undertake to promote a Bill to secure the desired protection for the profession by a system of compulsory examination to be extended to all architects, the *raison d'être* of the promoters of the Registration Bill will have disappeared. The Society of Architects, which has supported it, might in that case be merged in the larger and older body, adding materially to the strength of the profession by uniting their separate forces. As "Member of the Royal College of Surgeons" is the title of all qualified medical practitioners, so every qualified architect ought then to join the Institute as the recognised examining and testing body.

The time has now arrived when the position of affairs has made it evident that only delay can be the result of further contention. The question has been too long fought on party lines, and it is now evident that the members of the profession who have remained neutral are only waiting for some definite action to be taken by the senior body to undertake the statutory protection of architects. The meeting of the Institute on Monday next, if largely attended, which we hope it will be, should certainly arrive at some desirable conclusion that will satisfy the whole profession. We trust it will be so. We hope the Institute will seize the opportunity; it has the matter in its own hands for the moment. If there is any statesmanship—any wisdom among its members, it may within twelve months enjoy the prestige and position it at present lacks; it may unite the profession, blot out the schism of the past six years, and within three years treble its present membership; besides securing for every architect a legal recognition of his status and the exclusion of the miserable pretenders who now distract the public and rob qualified men of the work they alone are fitted to undertake.

## PUPILAGE AND PRACTICE.

RECENT discussions in architectural circles on the future education and training of the architect centre in the pupil. What he is and ought to be? what are his prospects? how he should be taught and his acquirements tested? are questions that have come to the front. The pupil may well turn round and ask his censors and masters what he has done to require all this sudden solicitation on his behalf—when former pupils, who occupy the position of masters and heads of firms of repute, many of whom tack initials to their names as members of architectural societies, have found their way into practice and have reached the highest rank of the profession without any of these tests and safeguards being imposed. To his unsophisticated mind it appears very much as if those who had become successful were endeavouring to close the doors behind them and prevent the younger aspirants from obtaining the chances and loaves of office quite so easily as they have. Why cannot the rising generation of young men, who are more numerous and have fewer chances of promotion open to them than their predecessors, have quite as much, if not more, freedom instead of less?—why called upon to pass qualifying tests which none of their masters underwent? These reflections have already arisen, and no doubt will still arise, in the minds of many who view with some dismay the ordeal of examination or registration. When we look at the very different motives which have induced young men to enter the ranks of the profession—many because success in other professions was less

apparent, or admission was less easy; some because they possessed abilities for art; others because the vocation was more congenial and less arduous than those of law or medicine—we shall find some ground for the division of opinion. A hard and fast line, some say, cannot be drawn between those who should be permitted to enter and those who should not, as in the vocations of law and medicine. As an artistic profession, it would be prejudicial to introduce any test, as artistic faculties cannot be gauged by any process known to examiners. Others maintain, with some reason, that as there are so many different grades of practising architects, some of higher, others of lower degree, any test would be absurd. To these and other objections it is needless here to reply, as they have been answered. The increasing number of branches that an architect is expected to know something about, and the large number of young men who are induced to enter a profession open at present to all comers, are in themselves sufficient reasons for instituting some test. Fifty years ago only a few availed themselves; now the higher qualifications demanded in the learned professions have driven numbers into the only vocation open to them. The consequence is that many unsuitable and unqualified men enter. The "taste-for-drawing" qualification, formerly the incentive, now no longer operates. The antecedents of those who join the ranks are of a very miscellaneous order. Builders' clerks, clerks of works, house-agents swell the number, and add to those who enter the profession by the ordinary channel of apprenticeship. So that, when all these things are taken together, there is more reason to draw a line than is imagined by the pupil, who is content to follow the old régime, and is asking "Why these changes?" Circumstances have quite altered since the days of the elder Barry, Scott, and their contemporaries.

To point to some of the weaknesses and merits of the pupilage system. It cannot be denied that the pupil commences his term of apprenticeship under the idea that at its termination he will be prepared to begin practice on his own account. In most other businesses or trades the apprentice who has served his time is fairly competent to do so; but it is certainly not the case in architecture. After a three or five years' term, a youth whose work has been chiefly confined to the office has only entered the threshold of his profession. Very rarely is he competent to design a decent-sized house, much less able to prepare specifications and working drawings for a contract. His knowledge of practical building is confined to what he has casually learned in visits to buildings in progress and from a few textbooks. He does not know much of materials, and could scarcely perhaps tell the difference between a sandstone and a limestone, or distinguish the characteristics of good Dantzic, and Memel, and Swedish timber or deals. Now it is this want of knowledge of facts which is conspicuous in the architect's pupil. The young man and his parents or guardians imagine that because a premium has been paid for three or five years, the pupil is guaranteed to be turned out a qualified architect. The incompleteness of the training is more evident to the pupil himself after he has learned to know his own shortcomings. His resources fail him directly he gets his first commission. He has not formed any principles upon which to work out his designs; the specification is a task he has few qualifications for. Knowing nothing of the law as it affects buildings, easements of light, and contracts, he cannot accept duties which are profitable. Evidence of this incompetence is known to most architects. A considerable percentage of those who pay premiums and serve their articles fall out of the ranks and seek other



vocations. Not a few of them have found out that architecture is more arduous than they anticipated; others have quite mistaken their vocation. Yet we still find parents and guardians simple enough to think that the deed of apprenticeship secures competency, and binds their charge to a profession which he can follow if he likes. The taking of pupils is unfortunately often found to be in a direct proportion to the slackness of professional work. It is usual to find those who have nothing to do take several pupils—not that there is anything very grievous or dishonest in such a proceeding, as some parents think who have paid a large premium to a man who has no practice, for in many cases the pupil is more likely to be taught and attended to; but it is unfortunate, because he has not the advantage of being taught practically the business, or of seeing works in progress. The experience of many young men who have served their term to a busy architect is that they learn very little, that the paid assistants have the profitable kind of work given them to do, while they are reduced to machines; but in the office of the "briefless" architect the pupil has the undivided time of the principal, he has more time to devote to private study, his one complaint being that he sees very little of buildings. Thus, there are compensating advantages in each case. On the whole it may be thought that the pupil of the busy practitioner is the gainer, no doubt the office routine is of value in after life, yet it is surprising to know how little intelligent knowledge is picked up in the scramble of office work. A test of knowledge at the beginning of the articleship and at the end of the term appears the only way of securing to the pupil that modicum of acquirements that he ought to possess. These examinations must, of course, be binding both on the principal and the pupil, and be provided for in the deed of apprenticeship. A coercive discipline, one sustaining the attention of the pupil during the term is the great requirement. From lack of it English pupilage fails; those who have little to do in the office except trace, copy out valuations, dilapidations, and other sundry documents, lose their interest in the work, and lapse into something else, the master turns his attention to literature or speculation in some undesirable form.

When we compare the system with that in vogue in France, and which our correspondent Mr. Arthur J. Vye Parmenter so thoroughly described in our columns (March 7th), we begin to see the essential difference between the two disciplines. The academical training of the French student is, on the other hand, one of teaching and instruction; the pupil is at once taken in hand, he enters a school, follows a course of lectures on his art, commences to design or draw in one of the "ateliers" on his own account. The entrance examination required in the "École des Beaux Arts," presupposes that the novice has been prepared for his training in the ordinary school; it exacts a knowledge of drawing from the round, modelling, and the rudiments of Classical design. Mathematical studies and the history of architecture follow, after which he is allowed to occupy his time in designing from specially prepared programmes, his atelier work being alternated with lectures on different branches of construction and applied science. Values are assigned to his designs and studies; he passes to a higher stage, and can then enter an architect's office to learn the practical part of his profession. The competition for the Grand Prix de Rome, which entitles the winner to a three years' study at Rome, or preparation for the Government diploma, for which a design and details of an important building are necessary, is the goal of his labours. There is thus a graduated course leading to State recognition; the pupil is taught,

instead of being allowed to shift for himself as a clerk in a very one-sided manner. The diploma enables the possessor to practise; it confers upon him an exclusive right of exercising the profession. The artistic side of the profession is developed, no doubt, at the cost of the practical, yet it must be seen that the student is instructed by the school course, and is only very partially instructed by the office training that he receives in an architect's office.

A young architect ought to pursue both courses, the theoretical and practical, and these should be taken as far as practicable together. It will be conceded that the examination tests as proposed by the Institute are not altogether satisfactory, inasmuch as they are conducted independently of the student's education; a proper course can only be followed when the teaching and examining bodies are united. The French diplomas, as well as the examination tests, are based on the school instruction; the lectures and atelier studies prepare the pupil for the tests; the programmes given for designs enable him to realise mentally the requirements of the examiners. Not so with tests which are independent of them, arbitrarily imposed by the examiners, and which have no reference to the instruction. Life in the studio, contact with painters and sculptors, artists in various materials such as wood, stone, and metal, are necessary conditions to an examination. The apprentice in an architect's office is in like manner unprepared for an examination in the theory of his profession, and any course of book-reading must be of the nature of a "cram." Under the present system of pupilage which leaves the young man entirely to his own resources, there is some reason for his taking badly to a new regime. The establishment of grades is far more likely to give satisfaction under the present system—that is, distinctions conferred on students and practitioners who have made special branches their study, and who desire to pursue a particular branch. Architectural practice is still in a very disorganised state. There are many who think that anyone qualified by experience to superintend buildings is entitled to the designation of architect; those who regard the surveyor's qualifications sufficient for that title; others who think that the expert draughtsman or designer has a proper claim to the distinction. These several views are owing to the varying kinds of training found in the practice of the profession; to the very different grades of men who take pupils; and to the want of recognition of a standard of architectural education.

### ARCHITECTURAL BRICKWORK.— XXXI.

#### GEOMETRICAL CONSTRUCTION OF ARCHES.

WE now give a few examples of the manner of striking and forming arches. The elliptical arch, of which we show an illustration in Fig. 1, can be formed of various proportions and by different methods. The diagram indicates by the dotted arcs and lines one example. The main arc or crown of arch is struck from a centre some distance below the springing line, generally equal to the minor axis; the side arcs form portions of two circles which touch each other in the centre, and the radius of which is equal to one-fourth part of the width of arch. The result is rather a flat curve. The mode of drawing an ellipse by a string with pins in each focus is described in every work on practical geometry, and is by far the most satisfactory method of drawing the curve; here the major and minor axes are given. The trammel is probably the safest and best mode of striking an arch. Approximate means are, however, most useful to the architect in designing his work, and to obtain the curve

of an elliptical arch with arcs and circles, such as in the example, is at least the most convenient method when we employ instruments. A well-proportioned arch is obtained by dividing each half-span into six parts. The fourth division from each end gives the two foci for springing curves. The main upper curve is struck from centre made by taking four parts in compass as radius, and, with foci as centres, describe arcs exactly in point. Another pleasing curve is obtained by intersecting arcs, and then drawing by hand the curve through the intersections; it is a truer way of setting out a large arch than the approximate method by arcs of circles, for it must be remembered that no portion of the curve of an ellipse coincides with an arc of a circle. Hence the value of the method of the trammel and that of the intersecting arcs.

The ogee label above is formed in the manner represented by the dotted lines. There are five centres, the arcs being limited by the straight dotted lines. Another method producing a pleasing curve is to divide the span into three parts, the two middle centres or foci describing the springing arcs on each side, and the external or contrary curves being struck from centres, which are formed on lines drawn from the same foci, which lines also limit the contrary curves. The proportion is determinable by the length and direction of the limiting radii, or the line joining the main arch curves with the upper contrary curves. The sketch represents a moulded arch over window of a villa in a western suburb.

#### GOTHIC ARCHES.

In describing pointed arches, the same variety of proportion may be obtained. Those described by two centres being either acute or pointed, as the centres are placed upon or external to the curves or arches, or are within them. Fig 2 shows how the centres of an ordinary pointed arch can be formed. The formation of the key is important in brickwork. In this example the joints radiate to the natural centres of the arcs, producing a wedge-shape space at the apex, which has to be filled up with two triangular shaped bricks. The arch bricks, radiating to the proper centres, make a true arch.

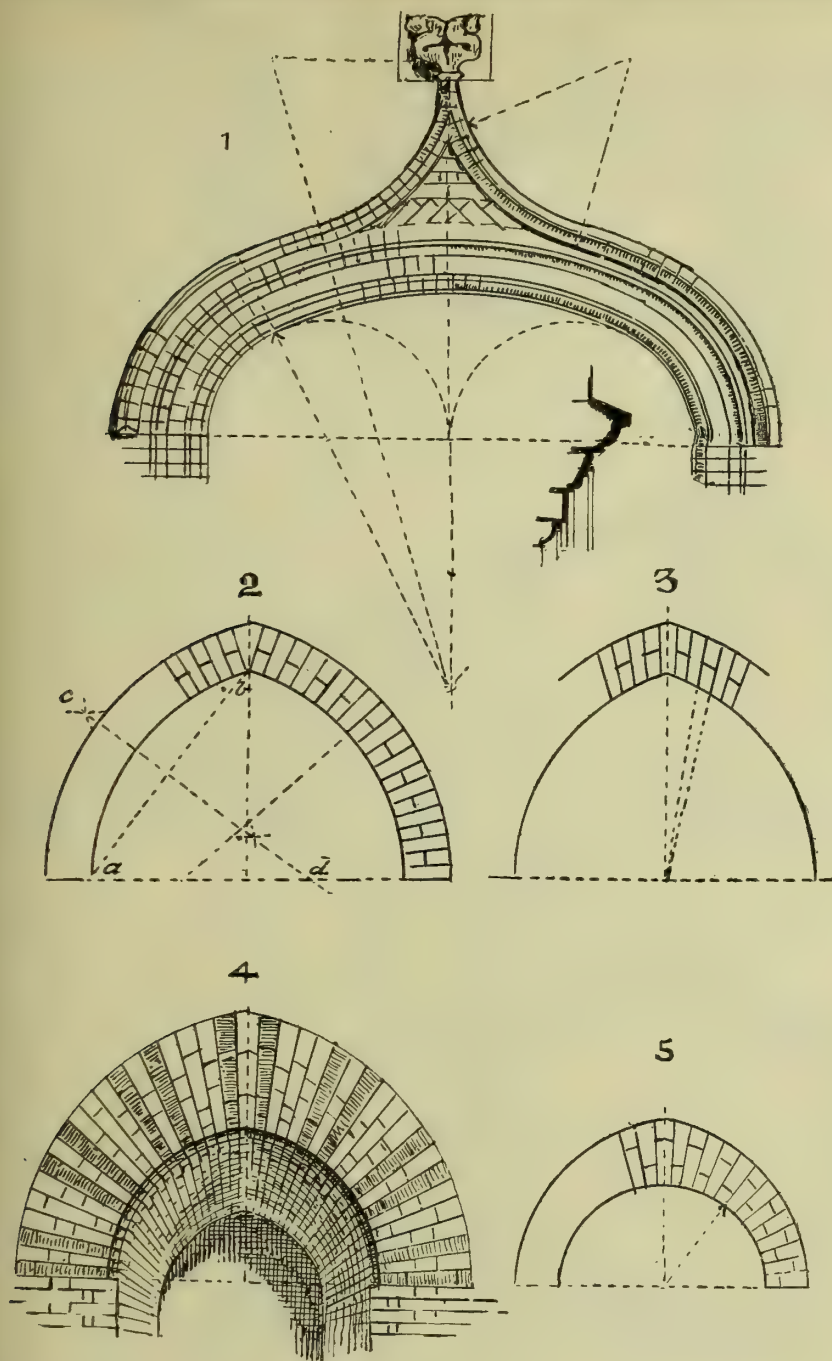
#### ARCH BRICKS RADIATED TO ONE CENTRE.

To avoid the unpleasant appearance of the wedged-shaped key, many bricksetters prefer to radiate the joints to the centre, as shown in the next figure. The "key brick" is cut as shown, the angle of the two arcs being cut in the brick. This form of key is said to be "birdmouthed." The arch has an uneven number of bricks; certainly the arrangement is more pleasing to the eye, though the principle of the arch is absent. The plan sometimes adopted of making a joint at the apex is objectionable. The bricks are cut to varying bevels and length, as in the camber arch.

#### VENETIAN POINTED ARCHES.

To add to the strength as well as to improve the ornamental effect, pointed arches are sometimes formed having the extrados struck from centres outside those of the arcs forming the intrados; that is to say, the inner and outer curves of the arch are not struck from the same, but from different centres. Figs. 4 and 5 represent two forms of this kind of Venetian arch; the former is a sketch of an arch in the tower or campanile of Christ Church, Streatham, a church designed and carried out entirely in brick. This form of arch occurs over the main entrance at the west end, in all the aisle and clerestory windows, and also in the circular apse. The church is one of the few designed on the basilican plan in which Italian and Oriental features are introduced. The arch shown, which is of considerable depth and thickness, occurs in the entrance to tower on the south side,





which is a bold campanile-shaped structure rising uninterruptedly in unbroken lines slightly battered. Stopping the aisle, and at the upper end of church, this tower is a picturesque object. The arch is worked in voussoirs composed of red brick, as shown by the hatched lines placed in pairs with a white brick between. The intermediate or light voussoirs are of white bricks with a centre yellow or buff brick between.

#### THE INFLUENCE OF MATERIAL UPON DESIGN.

AT the ninth ordinary meeting of the Society of Architects, held at St. James's Hall, Piccadilly, on Tuesday evening, the president, Mr. Robert Walker, of Cork, in the chair, a lecture on "The Influence of Material Upon Design" was delivered by Mr. G. A. T. Middleton, the secretary of the society. The address was illustrated by numerous limelight views of typical buildings described. Mr. Middleton formulated the theory that the progress and development of architecture in all ages and countries have been more largely dependent on the limitations and restrictions enforced by the building materials to hand than has been generally admitted by writers on the styles and orders. Beginning with Egypt, he showed that

the two modes of architectural treatment there adopted were due to the use of burnt clay and reeds in the Nile Valley, and of hard stones, especially granite, in the hill districts on either side. In Assyria the inhabitants found themselves in a clay country, the only accessible stone in the neighbourhood of the plains being a soft, easily-worked alabaster. They, therefore, adopted sun-dried and stamped bricks for building, veneering these both within and without with a casing of alabaster, which was afterwards elaborately carved. Such a treatment of brick-work, with a veneer of a better but more perishable material, was, he thought, quite permissible. Passing on to Greece, the lecturer showed how the presence of a fine-grained, almost translucent marble stimulated the builders to the greatest refinement of detail and carving, while their ability to obtain large blocks developed the employment of trabeated forms. The Parthenon and the Temple of Niké Apteros were selected as typical examples of the Doric and Ionic orders. It was a common error to suppose that the Romans also used a trabeated mode of treatment almost exclusively; as a matter of fact, the smallness of the stones necessitated an arcuated style, and we found in early works, such as the Aqueducts, arches used for constructional purposes; while it was only in later days, when the influence of Greek ideas had permeated the minds of the Romans, that the lintel and post treatment

prevailed. The circular body of the Pantheon, one of the older structures, was constructed of brick-work, with a circular drum above the walls carrying a dome constructed of the light concrete formed from the local pumice-stone; in front was a later portico, built up of large stones. Mr. Middleton showed that the use of light pumice-stone led to domical construction; while at Constantinople, the necessity for building St. Sophia's in fireproof material, after it had been destroyed by fire for the fourth time, resulted in the development of the domical Byzantine style. The presence of free stone and soft timbers in Russia resulted in the deterioration of this style, its decadence in bizarre forms and barbaric ornamentation being reached in the Cathedral church at Moscow. The author went on to show how the Romanesque style was influenced in its developments in various countries by the materials available, and proceeded to illustrate the local varieties of Gothic work to be met with in England, also due, he claimed, to local materials. Thus in Essex, Suffolk, and Norfolk we found large use made throughout the Mediæval ages of flint and freestone panel work, one of the earliest examples of the exclusive use of local materials being St. Botolph's Priory at Colchester, in which Roman bricks were interworked with river flints. The Gothic styles of the sandstone and limestone districts of Yorkshire were quite different in treatment, while wherever, as at Exeter, Salisbury, and Bath, soft stones were used, we found a freedom and elaboration of decoration and a profusion of surface carving unknown elsewhere. Again, in the south-west, granite was worked with bold but shallow carving, as in the well-known porch of Launceston Church, entirely different to the forms given to such work in the soft Caen stone as Henry VII.'s Chapel at Westminster. The effect of the love of stained glass both in enlarging our window openings, filling them with tracery, and finally reducing their mullions and transoms to mere horizontal and vertical lines, and leading to the use of the vaulted roof and bay windows, was well recognised, and had often been commented on; but a like development went on in France, although there it assumed different phases. He thought it possible that another cause had somewhat more to do with the development of our Perpendicular style than was generally recognised—the use of hard timbers. Having alluded to the Renaissance, Mr. Middleton closed by referring to modern materials—iron and steel, employed under a stone, brick, or timber mask, to carry all our large shop-fronts, a use condemned by the lecturer as false construction, and terracotta, which had been successfully dealt with by Mr. Waterhouse. In the present day, he remarked, the architect could procure and introduce into his design any material he chose to employ, and therefore the responsibility lay the more strongly upon him to select his materials carefully, to use them in consonance with their character, and to decorate his buildings suitably.

At the close a vote of thanks was accorded the lecturer on the motion of Mr. H. R. Gough, seconded by Mr. Ennals, and supported by Mr. William Woodward.

#### CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—II.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

INTERIOR OF THE PALAIS DES MACHINES.

IT will be as well, before beginning to describe in detail the great trusses, &c., of the interior, to give a short and general outline of its disposition. As stated last week, there are twenty principal trusses of a Tudor arch form. These are articulated at the centre and over each pier (three articulations). They are bound together by five deep purlins on each side of the centre—the two nearest the ridge on each side carrying the examining platform fixed above the ridge. There is a smaller purlin which carries the main eaves-gutter on each side. The purlins are framed in the thickness of trusses. Resting on these purlins, and to the number of three, between each truss come the principal rafters which carry the secondary purlins, supporting the rafters which carry the glass, which goes down to the fifth purlin. The side galleries join the main hall, and are covered with segmental roofs covered with zinc squares, as will be explained. Having given a general description of the dis-



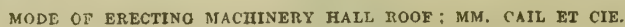


FIG. 3.



FIG. 4.



tribution of the parts, we will examine them in detail.

*The Great Trusses.*—The methods of raising these great trusses into position, adopted by the two different companies who were the successful

contractors, is interesting and curious, because two entirely different methods were employed. I give three woodcuts from *Engineering* which will show the methods sufficiently well without much explanation. It will be seen that the "Fives

Lille Company" (No. 4) raised the complete truss in four pieces, previously riveted on the ground, and therefore only two joints were required to be riveted on the scaffolds, which ran along the interior of the hall on wheels. MM. Cail et Cie



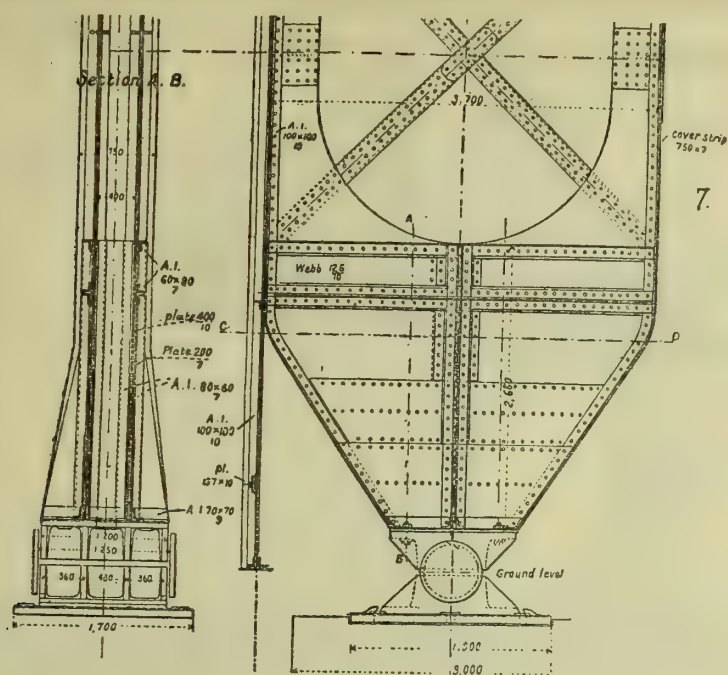


FIG. 7.

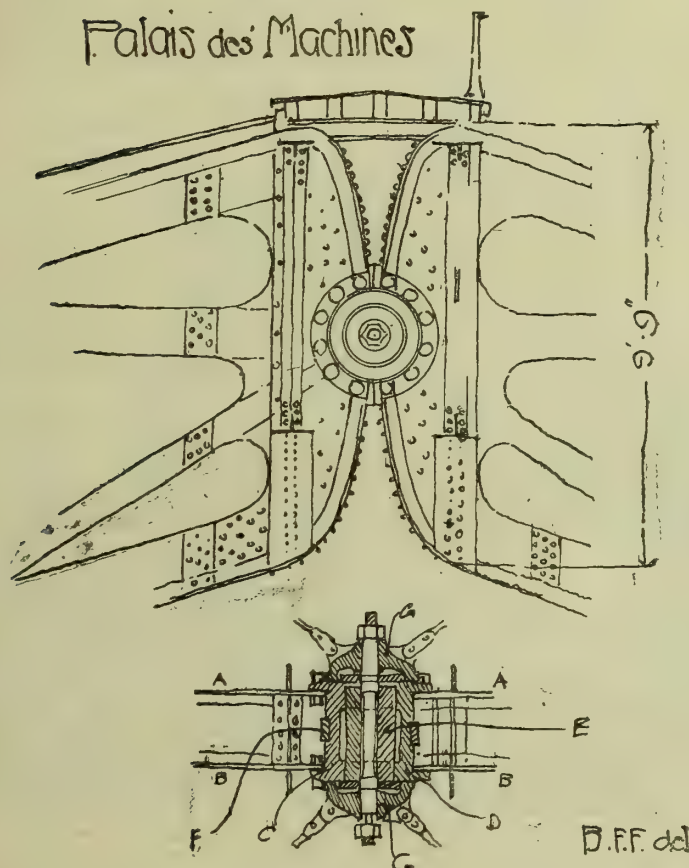
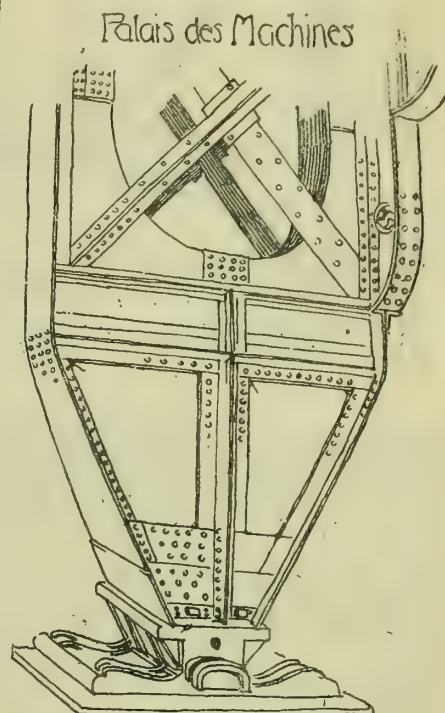


FIG. 8.

(No. 3) adopted an entirely different method, hoisting the parts of the truss, weighing not more than 3 tons at a time, and riveting upon the scaffold, a centring being formed to the shape of the roof. The proposed method of erecting the roof (No. 5) is also given, but evidently the contractors could not see their way to adopt it. The reasons why the roof is articulated at three points is because, as stated above, it reduces and defines the points where the strains have to be calculated, and therefore simplifies the construction, and the smallness of the points of support at the base simplifies the problem of resistance. The outline of these great trusses takes the form of an elliptically pointed arch. (No. 6. from *Le Génie Civil*.) The most interesting part of the roof, undoubtedly, is its jointing. It is

articulated at three points—at the crown of the arch where the two half-trusses meet, and at the springing of each half-truss, which being reduced, as it were, to a point (No. 7A), rest on a roller-plate of cast-iron (No. 7 from *Engineering*), which, in its turn, is fitted to the cast-iron shoe which is bolted through the stone foundation. The strains, therefore, are taken right through the centre of the cast-iron roller-plate and down the centre of the foundation pile, described under "Foundations," by means of forming the lower part of the truss, as shown. The lower part, the part immediately above the roller-plate, is formed in cast iron, and rests immediately on the roller-plate, which it fits exactly. This semi-cylindrical block, or roller-plate, is fitted into a cast-iron

shoe, which rests on a foundation plate, 2 1/2 in. thick, which plate is secured to the stone foundation by six strong tie-rods, secured by bolts. Having considered the jointing at the base, the articulation at the top next claims our attention. It is formed on the same principal, but by means of a steel cylinder, upon which the ends of the



Sketch of base to principal showing articulation at Grand. B.F.F. del

FIG. 7A.

trusses rest. To exemplify this, I give a scale drawing showing the jointing (from *L'Architecture*). A and B are the two webs of the trusses, running parallel to each other; C and D are the two cushions, which bind these webs together by the aid of bolts; E is the steel pivot, which is the only point of connection between these two trusses; F is a strong band in hammered iron, which clasps the two half-cushions, and prevents any liability to spread on the part of the two half-trusses. Two steel rings, G, one on each side of the truss, are held against the cushions by means of the bolt, as shown, which, passing through the steel pivot, binds the whole truss together. To these last, rings are attached by means of ears, which carry the tie-rods, which in the case of the two outer bays and the three central ones, run diagonally between the trusses from the ridge to the gutter. The thrust of the trusses on each articulation at the base is 115 tons (which includes the weight of the covering, as also the pressure of wind and snow. The weight of each truss is 196 tons. The weight of the pieces forming the vertical face (plate, gutter, and arch of a half-bay) is 23 tons. The weight of the trusses which support the gable ends of the brasswork is greater, each being 240 tons. The total weight of ironwork to the great roof is thus 7,400 tons. The point of support at each roller-plate at the base below the upper cushion is about 7 1/2 sq. ft.; therefore this weight of ironwork (7,400 tons) rests on a cast-iron surface of about 300 sq. ft. The lateral galleries covered also with iron roofing and framing form a series of natural buttresses which tend greatly to the stability of the hall. Considering the principals in detail we find that at the base the depth is 12 ft. 2 in., and it gradually tapers to the summit where it is reduced to 9 ft. 10 in. (this, necessitated, of course, by the construction, nevertheless has a great deal to do with the light and graceful effect of the roof as a whole). The trusses are composed of two parallel girders, running along their whole length, whose top and bottom webs are 17 1/2 in. by 35 in. These are separated by a distance of 1 ft. 9 in., and are jointed by four angle irons 4 in. by 4 in. by 1/4 in. and a top and bottom flange, the exterior one



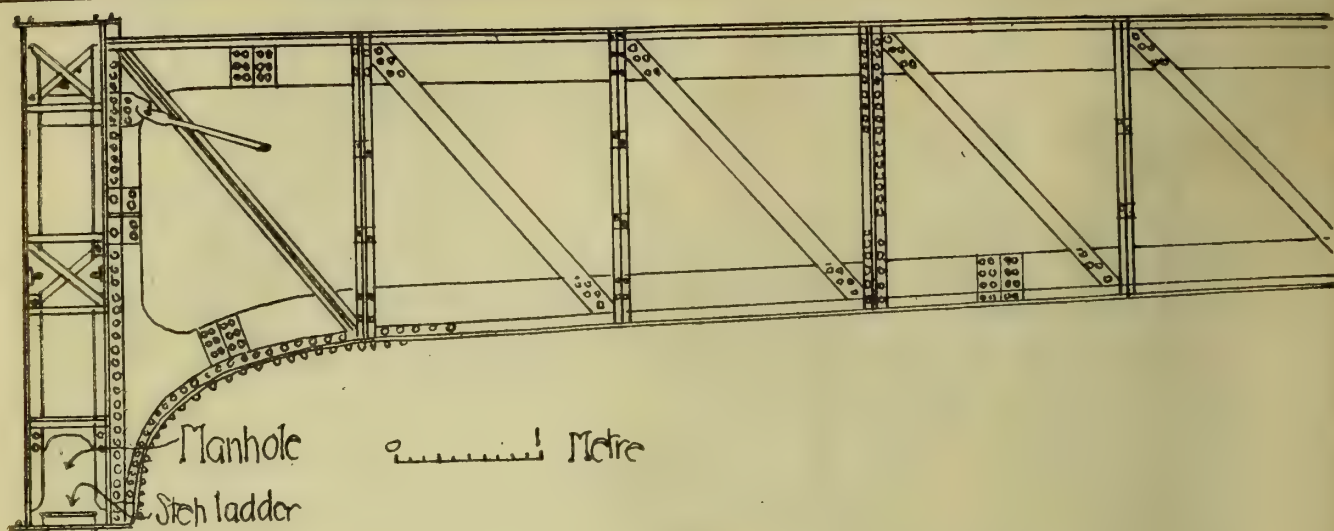


FIG. 9.

being 30in. wide, and the interior one 35in. The thickness of these flanges of course varies with the weight put upon it, and it therefore is strengthened considerably towards the lower part below the fourth purlin. At the points where the greatest weight comes upon it, it has eight thicknesses of plate-iron, each one centimetre (.39in.) thick. The upper and lower portions of each of the girders forming the truss are joined by open lattice work of the form shown. The diameters of the rivets used are 22 millimètres (.86in.). The uprights of the lattice framing, it may be mentioned, are in double T-iron, and are drawn to centre of the arch. The cross-bracing is in T-iron. The lattice-work filling-in, designed by M. Dutert, is well deserving of notice. It is divided, as will be seen, into 12 large and 12 small squares to each half-truss. This spacing was to some extent necessitated to find spaces for the corbelling-out of the lattice-work purlins which are framed in the thickness of the principal. The two members of the extrados and intrados of the trusses are bound together by uprights at the points shown, made of double T-irons and close web (see section), in opposition to the open lattice-work, which is pierced at the lower part adjacent to the intrados by an opening which serves as a manhole, in which is a service ladder fixed to the connecting flange of the intrados. This ladder, running from top to bottom of the truss, allows of the inside of the truss being visited without any scaffoldings, and also gives access to the interior of the roof below the ridge.

The five purlins to each half-truss are corbelled out for every alternate small square (see No. 9), and are formed, like the trusses, with a top and bottom web, separated from each other and joined by angle-irons to their respective flanges, the top and bottom webs being joined by a species of N lattice framing, which serves to distinguish the purlins from the trusses, which trusses, as explained above, are in large and small lattice-work squares.

#### THE ORGANISATION OF AN AMERICAN ARCHITECT'S OFFICE.

A RECENT number of the *Engineering and Building Record* gives an interesting account of the office arrangements of a Philadelphian architect. Unlike many other offices, there are no individual heads of departments, the principal supervising all the work, thus being fully acquainted at all times with each particular portion. The original sketches of a proposed building are executed by the architect himself, at his own home, free from the interruptions unavoidable at his place of business. When these are approved, they are passed over to the drawing office to form a basis in preparing the working drawings. Every plan is laid out to  $\frac{1}{4}$ in. scale, so insuring greater accuracy in the estimates. Simultaneously with each set of plans the usual perspective view is commenced, and, in addition, a bird's-eye view is worked out.

The ironwork designs and the plumbing and heating arrangements are severally taken in hand by one man, who devotes his whole time to the

special work. Usually one room is set apart for the work of preparing the plans of any particular building, and a draughtsman at work on the basement plan nominally supervises the work of the draughtsman on other portions. Thus, any change made in his plan, likely to affect the other floor plans, may be taken into account at once in all the other drawings.

One of the features of the drawing office is the system adopted of using upright adjustable drawing-boards on easels. These were devised by the architect. They are arranged against the walls of the office, and allow easy inspection of the progress of the drawings, without disturbing the worker. Horizontal boards are used only for perspective work. Twenty draughtsmen are on an average constantly employed. There is a separate room for estimating: here tracings of the drawings are on view for the inspection of those desiring to hand in tenders. The tracings are not permitted to be taken away; but tracings may be taken from them by intending bidders. Blue prints taken from the tracings are furnished for the use of contractors; but this is not done in the office. The office staff likewise includes a number of building superintendents, whose duty it is to inspect the buildings in course of erection. They generally hand in their reports at noon. Office hours are from 8.30 a.m. to 5 p.m., with the exception of Saturdays, when the offices closes at 1 p.m. in summer, and 3 p.m. in winter.

The architect personally conducts all correspondence, and the system of his work enables him to get through work which would surprise many.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.

Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

#### BRICK-MOULDING MACHINES FOR THE SEMI-PLASTIC PROCESS.

THE method of moulding bricks for the semi-dry or semi-plastic process differs essentially from that of the plastic already described. In this latter case the ground clay is fed into dies and subjected to great pressure through the medium of pistons; the bricks on leaving the machines being ready to be taken to the kilns without further drying or preparation. To secure bricks of good quality, with freedom from cracks, it is necessary to carefully regulate the pressure applied, to the nature and dryness of the clay, to make the prepared clay of as even a sample both in firmness and dryness as possible, and to secure a constant and even feed of the clay to the moulds. Should these points be neglected, the bricks may either be pressed too little or too much: in the latter case, they may be made too thin, and the machine will at the same time run the risk of fracture. Another difficulty found in the production of bricks under the pressure system arises from the presence of air in the clay. To get rid of this as far as may be, in some machines of recent construction two distinct pressures are given to the clay, and the speed of production of the bricks is reduced to give time for the air to

escape. In some modern machines the pistons and dies are kept hot by means of steam circulating through them, which, acting on the moisture in the clay, keeps the dies thoroughly lubricated, and permits the pressed bricks to readily leave them with clean, sharp edges. Owing to the great pressure to which the clay is subjected in this process of manufacture, and the consequent great strain on the machines, to secure success in working and freedom from breakdowns, it is necessary that they should be of the most massive construction. This point has not, however, always been sufficiently borne in mind by manufacturers, and the failures arising therefrom has had a tendency to prejudice users against this process and form of machine. There is little doubt, however, as we have elsewhere remarked, that during recent years this process of brick manufacture has made great headway, especially in America, and many difficulties have been successfully overcome, so as to render it, when properly applied, a great commercial success; but at the same time it cannot be denied that, owing to the greater variety of the materials employed, it requires greater knowledge and skill in its application than the ordinary plastic process.

Our first illustration, Fig. 14, of a brickmaking machine for the semi-plastic process is from the designs of Messrs. Bradley and Craven, of Wakefield—a firm that has been for many years largely engaged in the manufacture of bricks as well as brickmaking machines. In this machine a mixer, pug-mill, circular rotary moulding-table, and press are combined. The plan of working is as follows:—The prepared material is fed by means of a spout from the grinding-mill into the mixer. The mixer consists of a horizontal trough, wherein rotates a shaft fitted with knives or stirrers, which mix the clay and propel it into the vertical pug-mill of the machine. The pug-mill kneads the clay and forces it into moulds, which are fitted on the rotating table shown in the sketch, and which rotate in succession under the bottom of the pug-mill to receive their charge of clay. The moulded bricks are ejected from the table moulds when they have rotated, to a position opposite the press of the machine, and they are mechanically transferred into the die of the press, in which they are subjected to great pressure by means of a plunger or piston. The bricks, on being ejected from the press, are ready for the kiln, except when the best quality of facing bricks are required. In this case the bricks are passed through a second press similar to the one forming part of the machine. This machine is of massive construction, and it is claimed by the makers that in its various arrangements, wear and tear and the chance of breakdown have been reduced to a minimum. We have seen these machines working in a most satisfactory manner, and the bricks turned out were of excellent quality. The makers also inform us that they have supplied machines to many collieries for working the shale as it is raised to the pit's mouth, and that they are working with great success.

Machinery is now in use (working the semi-dry process) for making slate *débris* into bricks, which are stated to be the strongest ever made



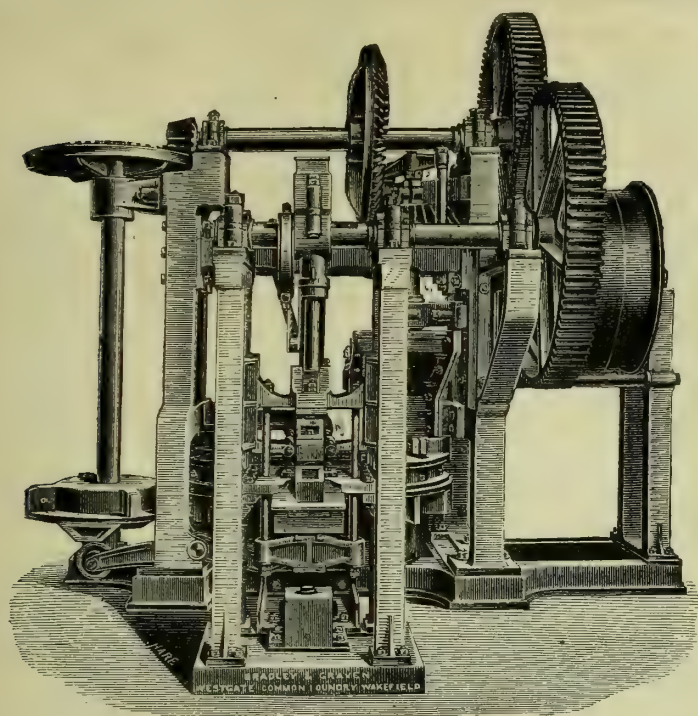


FIG. 14.

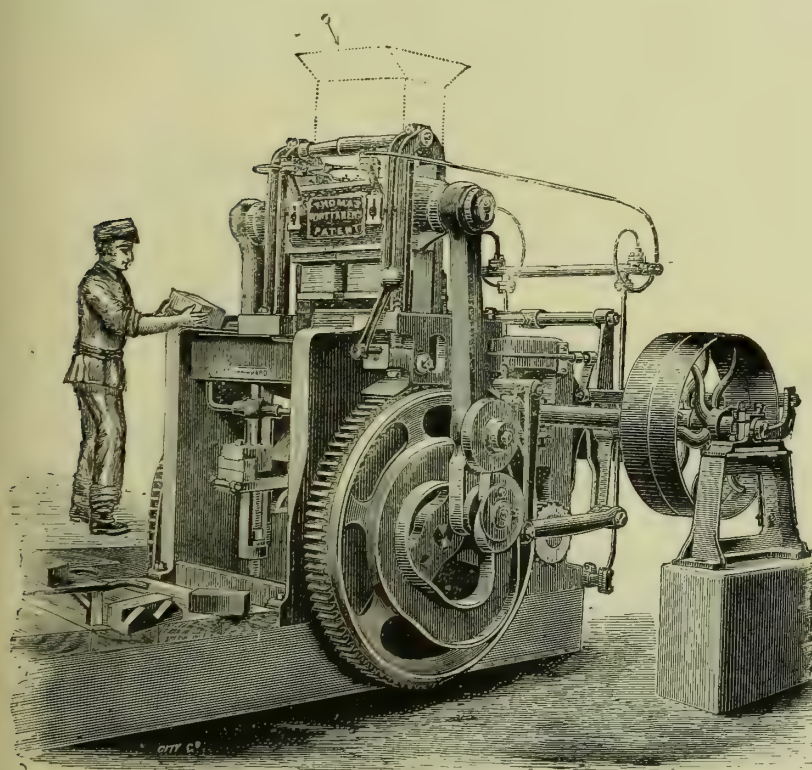


FIG. 15.

the crushing strain being equal to 1,056 tons per square inch. The waste slate is, in the first instance, reduced to a fine powder in a perforated-pan grinding-mill, it is then raised by an elevator to a stage above, and passed through a mixing trough, in which a little water is added. The material is then passed into the hopper of a Whittaker brick-moulding machine, and being subjected to great pressure, a sufficient quantity of the moisture is forced out of the bricks to enable them to be passed directly to the kiln without losing their shape. We have recently inspected some of these bricks, and found them of excellent shape, and very dense and compact in appearance. Should their durability be equally satisfactory, we venture to predict a considerable sale for them for various engineering purposes, foundations, &c.

Fig. 15 represents a Whittaker's patent semi-ry brickmaking machine, manufactured by Christopher Whittaker and Co., of Accrington.

It is especially designed for making bricks from ground shale, slate *débris*, fireclay, &c., prepared in a perforated-pan grinding-mill, with no more moisture than is found in the clay naturally. The prepared material is fed into machine and moulds by an elevator, where it is subjected to very great pressure, or, more correctly speaking, pressures, as it is claimed as a special feature of this machine that the clay is subjected to two separate and distinct pressures before the brick or piston leaves the mould, the object of this being to expel all air from the clay, and turn out a brick of a solid character. The pistons are heated by steam, which does away with the necessity of using oil for lubricating purposes. Expanding moulds are used, and by the insertion of linings of suitable shape and size almost any form of brick having parallel sides can be made. These machines are constructed to make either one or two bricks at a time, at a speed of from 12 to 16 bricks per

minute. They are strongly made, and stayed to resist the heavy strain put upon them. They appear also to have been well thought out, and must be pronounced very advanced machines of their class. We are informed they have met with great success in America.

#### HARDNESS OF CONCRETE.

THE intense hardness of concrete, its homogeneity, and the want of lines of cleavage in it, have rendered it exceedingly difficult to break up or remove in case of alteration. Probably for this cause, as suggested by one writer, concrete is very seldom employed in building, notwithstanding its many other advantages. As pointed out, all natural materials, such as stone and slate, possess lines of cleavage which make it easy to remove or divide portions, and following the analogy, he thinks that it would be feasible to leave artificial lines of cleavage in our street and road foundations, so as to permit of the concrete being broken up when occasion required. At present, certainly, the force required, the sledge-hammer blows that have to be given to the steel wedges used in breaking up street concrete, are considerable objections. In house or wall building, the "block" system has for this reason very decided advantages, as each block can be detached by ordinary means of dislocation, the wedge or lever being all that was necessary in removing or taking down.

#### CHIPS.

Mr. Owen Williams, for the past four years surveyor to the local board of Colwyn Bay, has been appointed to a similar position under the Aberdare local board.

The large projecting block of whinstone, known as the Bible Rock, on the south side of Edinburgh Castle, which for some time has been considered dangerous, was removed on Friday by blasting. The quantity of rock removed amounted to between ten and twelve tons.

Mr. John A. Bryson, assistant city engineer of Newcastle-on-Tyne, died on the 20th inst., in the 53rd year of his age. Mr. Bryson was the son of the late Mr. Thomas Bryson, borough surveyor, who met his death as the result of the nitroglycerine explosion which took place on the Town Moor on the 18th of December, 1867. While a young man, he entered the employment of the corporation as assistant to his father, and he has since occupied a similar position uninterruptedly under Mr. Fulton, Mr. Fowler, and latterly under Mr. Laws. Mr. Bryson was possessed of considerable architectural skill.

Mr. T. G. Murray, of Stenton, W.S., Edinburgh, has presented to Birmam Institute a copy of Slezer's rare print, entitled "The Prospect on the Town of Dunkeld, 1693." Dunkeld Cathedral is a prominent object in the picture, and shows the Gothic form of the windows as they were originally previous to 1762, when they were modernised during the repairing of the church. Bishop's Palace, long ago removed, is also seen. Craig-y-barns, now well wooded, appears a bare and barren height.

A new Wesleyan Chapel at Windmill Hill, Bristol, was opened on Friday. It is Early English in design, and provides sitting accommodation for 200 persons. It has been erected at a cost of £750, in Pennant stone, with Bath stone dressings, the windows and fittings being of varnished deal. All the glazing is executed in tinted cathedral glass in lead casements, the window heads being in geometrical design. The architect is Mr. Herbert J. Jones, M.S.A., Bridge-street, Bristol, and Mr. George Elmes, of Bedminster, was the contractor.

A new highway bridge has just been erected at Bishopstone, over the L. and S.W. Co.'s lines, by Messrs. Matthew T. Shaw and Co., of London and Wolverhampton, who have just removed the old structure. The new bridge is a road 25ft. wide. It is an iron bridge of four spans, the largest span of which is 96ft. long. The three other spans are 58ft. each. The end buttresses are of red brick, and the intermediate supports are 12 circular columns of about 3ft. diameter, with square base and top, and stand on a foundation of Staffordshire blue brick and cement on a concrete footing. The side girders are fitted on the expansion principle, and the bed of the bridge is of trough-pattern iron plates, the ballast being laid on a concrete floor.

The committee in charge of the movement for the erection of a statue of Burns in the city of Aberdeen, in an appeal for subscriptions, state that the estimated cost of a statue in bronze, including pedestal, is £1,000, and the subscriptions already received amount to £390. A model by Mr. Bain Smith, London, has been approved of.



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## ILLUSTRATIONS.

CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.—  
NO. XXI. LENNOX-GARDENS, S.W.—OLD GATEWAY, EVESHAM.—INTERIOR OF CROPTHORNE CHURCH.—NEW MAIRIE IN THE RUE DU FAUBOURG ST. MARTIN, PARIS.—PULPIT IN GLOSSOP PARISH CHURCH.—INVERTED SIPHON, ACROSS A VALLEY.—DECORATIVE ITALIAN METAL-WORK.—DIOCESAN CHURCH HOUSE, NEW YORK.—MACHINERY HALL ROOF, PARIS EXHIBITION.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

NO. XXI. LENNOX-GARDENS, S.W.

THIS house, on the Cadogan Estate, is the town residence of Mr. W. M. Thorp, of Chippenham Park, Cambridgeshire. The walls are of red

## THE NORMAN GATEWAY, EVESHAM.

THIS is the most ancient relic of the Abbey of Evesham. The foundation of the abbey dates from 701; and this gateway, which dates from the 12th century, is the entrance from the south-east corner of the town market-place to the churchyard, where stand the two parish churches which have survived the great abbey church destroyed in the 16th century under the Acts of Henry VIII. for the dissolution of the great monasteries. The gateway was originally vaulted over, but all that now remains are the two sides, each of them having three semicircular arches supported by semi-columns, with indented capitals, and the bases of which are now below the level of the ground. The columns in front are also partially preserved, and from those sprang the circular vault already referred to. The accumulation of the soil during many ages has not only concealed the lower portions of this gateway, but has raised all the surrounding surface considerably above the floor of the church of All Saints, which is within a few yards of it. A wooden tenement erected above the remains of the gateway, bears in itself marks of antiquity, though lately restored and used as the parish room.

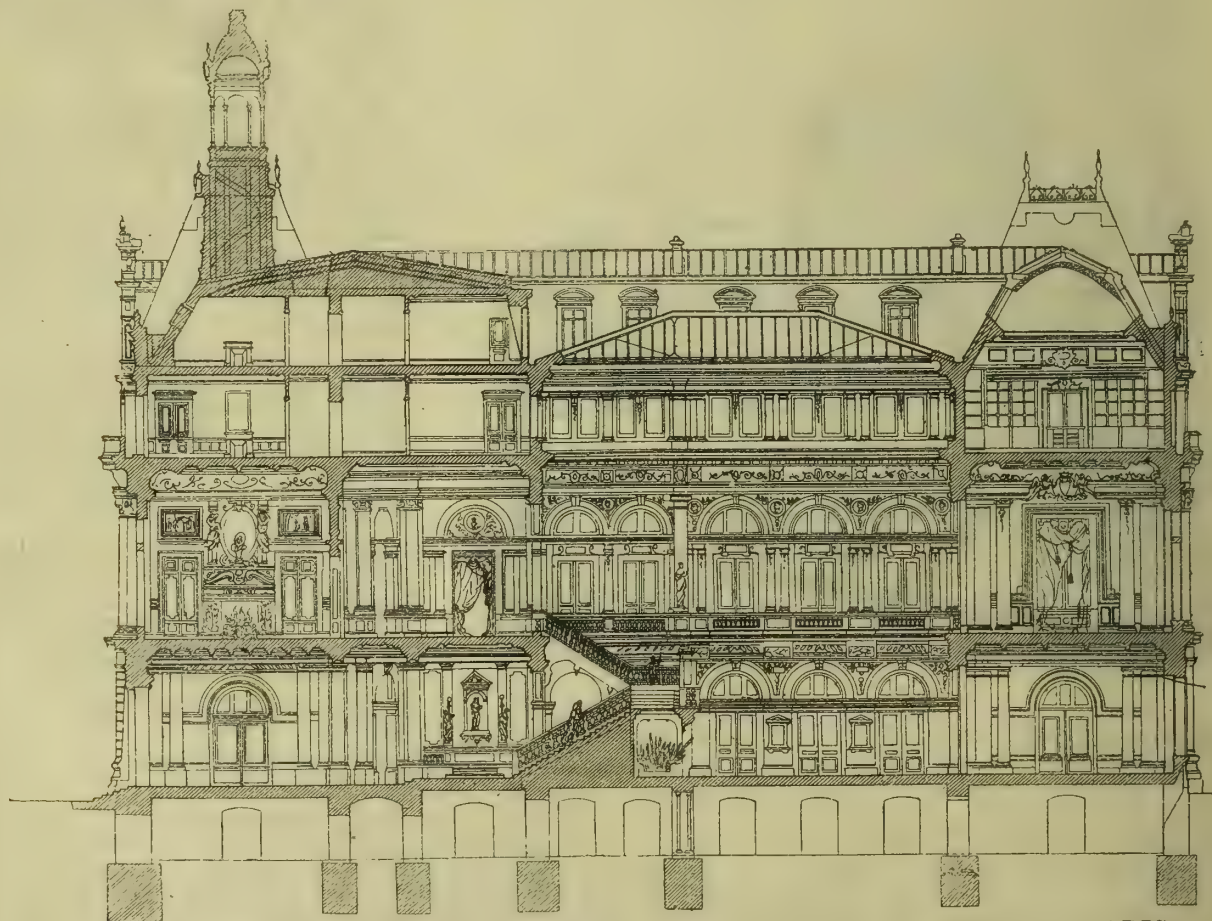
## CROPTHORNE CHURCH.

CROPTHORNE is a very picturesque village, delightfully situated on rising ground above the river Avon, and half-way between the abbey towns of Evesham and Pershore, being about three miles from either. It is an ancient parish, having been originally granted by Offa, King of Mercia, to the Bishop of Worcester in 780. The church is dedicated to St. Michael. It is one of the few parish churches in the neighbourhood which have not undergone recent restoration. The more ancient architectural features are of the

wall of the chancel, is a Greek cross elaborately carved with figures of animals and foliage. The sketches are by Mr. Edmund St. New.

## NEW MAIRIE, RUE DU FAUBOURG ST. MARTIN, PARIS.

THIS new building for the municipal authorities of Paris is being erected for the Tenth Arrondissement of that city, from the designs of M. M. E. Rouyer, the architect. The site is a very good one in the Rue du Faubourg Saint Martin and Rue du Château d'Eau. We give the principal façade in elevation herewith to-day, with the two chief plans and a longitudinal section showing the entrance, grand staircase, and central hall or cortile. Besides the usual accommodation and offices provided for the use of the chief official and his department, the building is intended to afford a series of apartments for the reception of societies and festive gatherings, for which purpose the rooms are contrived to be used together *en suite* or in part only, the whole arrangement being conceived on a commodious and sumptuous plan, as the drawings will show. A, on the ground plan is the grand vestibule, B is a smaller one, and C a covered doorway for persons arriving in carriages, with a robing place at G for the use of the mayor and other distinguished officials. The porters are placed at D, with small kitchen and conveniences; H is the grand staircase, I and J are secondary ones for use to the offices above. E and F are corridors round the cortile; Y, M, and N are the vestibule and court of the Justice of the Peace, and O is his private room; Q is his robing-room and water-closet, &c.; L and R are the relief offices; and K is the public assembly hall; V is the police office; and at T are cells for both sexes; and staircase to basement at S; X is a military-recruiting office. The first floor is chiefly devoted for grand ceremonies and muni-



SECTION OF NEW MAIRIE, RUE DU FAUBOURG ST. MARTIN, PARIS.

Fareham bricks with Portland-stone dressings, and the roofs of slate. The builder was Mr. T. Boyce, of Hart-street, Bloomsbury, and the architect, Mr. T. G. Finch Noyes, F.R.I.B.A., of No. 42, Half-Moon-street, W.

CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.

(See description on p. 464.)

Late Norman style; but the building is mainly Perpendicular: the lower part of the square tower at the west end is said to be Early Norman. The church contains two monuments of the Dineley family, one of which, dated 1646, is canopied and coloured, and is seen, in our illustration, at the east end of the nave. The old carved solid oak pews add to the picturesque character of the view. Outside the church, inserted in the south

central fêtes. E C are waiting-rooms in connection with the Salle des Mariages, D is the Mayor's room, and F F' are his assistants' rooms. M and N are connecting galleries leading to the banqueting-rooms at T, U, and V. G on this floor shows a committee-room, and H the secretary's office. K is the ante-chamber to the Mayor's department. O and P are the offices connected with the marriage register, and rooms P and Q



are occupied by the Registrar of Births. R is a secretary's bureau. Beyond are water-closets and urinals, arranged in a typical fashion at S.S. We are indebted for these particulars and details to the "Nouvelles Annales de la Construction."

#### PULPIT IN THE PARISH CHURCH OF GLOSSOP.

This pulpit has been executed in the workshops of Messrs. Cox, Sons, Buckley, and Co., of Southampton-street, London, and was designed by the Rev. E. Geldart. It is executed in oak, on a stone base, with marble colonnettes; the figures in niches are carved in box-wood, with walnut-wood backgrounds. The three groups represent the Patriarchs, Prophets, Apostles, and Evangelists. The four statues of the archangels at the corners of the pulpit are also in box-wood.

#### DECORATIVE ITALIAN METAL-WORK.

THE sketch of a Gondola Prow is taken from one of two specimens now in the Metal Work Gallery at South Kensington Museum. It is of pierced steel, and of Italian 17th-century design and execution. The dimensions are 4ft. 2in. high, 1ft. 7½in. from front to back, and the circular head is 13½in. in diameter. It is secured to the gondola by screws between each of the fleur-de-lis branches. The Brazier Stand is also from the South Kensington Museum. It is executed in wrought iron, and is of Italian workmanship, 16th century. The height is 3ft. 10½in., and the width across tripod at top is 8½in. The curious and clever Bronze Lamp is also of the 16th century, though probably copied from an ancient example. The opened mouth of the satyr's head forms the place for the wick, and foliage is skilfully substituted for hair on the head and face. Oil is poured in through an opening at the top, to which there is a hinged cover. The spirited stand of eagle's claw is of different workmanship. The height is 8½in. to the top of head.

#### AN INVERTED SIPHON ACROSS THE VALLEY OF A BURN.

IN laying down gravitating water-mains from the springs and sources of supply of a small town, it sometimes becomes necessary to convey the water across a ravine or valley of a burn by an inverted siphon of cast-iron pipes, in order to avoid a long detour. The details in our illustration show a simple and practical manner in which this may be accomplished. The object in keeping the pipes above the water of a burn, instead of laying them under its bed, is to insure that no undetected leakage may occur. The boulders in the burn can be utilised in forming the stone piers. It is very important to provide good ventilation at both limbs of the siphon. Our illustration shows the fittings, &c., and the arrangement adopted by Mr. Geoffrey Wilson, M.A.S.E., town surveyor, Alnwick, Northumberland.

#### WAYSIDE NOTES.

I MUST supplement my last week's remarks on the Registration question with a very earnest appeal to all Fellows and Associates of the Royal Institute of British Architects—to all members of that body, in fact, who have a lively interest in the future of the architectural profession. Last week I pointed out that at the next meeting of the Institute the subject of registration would be seriously dealt with, and endeavoured to show that there would be no possible reason for a single member regarding the matter in anything but an unbiased and unprejudiced manner. I now wish to point out the necessity for a very determined attempt on the part of all members who may be in favour of the Institute seeking statutory powers to establish, as in other professions, a system of compulsory examinations, to attend the special general meeting to be held on Monday next, the 31st inst., at 4 p.m.; and at the same time I would take the liberty of reminding members that Associates as well as Fellows have the right to vote.

Once again drawing the attention of members to the fact that the subject will be considered from a point of view independent of anything now being done or that has been done, I would urge the importance of a numerous and enthusiastic attendance of Registrationists. Let all who can make it convenient so to do attend

—few London members, with the exercise of a little self-denial, will be prevented from attending—and assist by vote the cause of Registration; and let those who can speak assist by voice. The day for action has arrived. We have had a plethora of writings at various times, and the subject has been forced upon the attention of all who, personally, have neglected it. The result of all this seed-sowing should be apparent in the result of any polling on Monday evening. If I am not mistaken, this result should be gratifying. Hitherto, unfortunately, other questions besides principle have influenced the opinion-testing of members with regard to the compulsory examining of all entering the architectural profession. But I trust that, on Monday, principle only will influence everyone present. To this end I would beg all to forget, for the moment, the existence even of the Registration Question, and think only of true compulsory examination, by the Institute, as advocated by you for thirty years, and brought within the range of "practical politics" by Mr. Hugh Roumieu Gough.

The importance of the present opportunity cannot be overrated. In the past the Institute Council, ill-advisedly as we may think, has neglected true compulsory examination—possibly pardonably in the belief that the majority of the members, in whose interest we should bear in mind it has been elected, have been unfavourable to any scheme of the kind. Now, it has long been the secret conviction of many, that the real opinion of the majority of Fellows and Associates of the Institute has never been obtained. The discussion that followed Mr. Graham Jackson's paper on the effect of making close the profession of an architect has been taken as an indication of a very antagonistic view on the part of the members of the Institute. All who know the circumstances attending the reading of that paper and the subsequent discussion know well enough that there was an unfriendly feeling towards the doings of the Registration Committee which warped the views of those present. Principle was thrown to the winds. Regrettable as this may seem, I maintain it is an indisputable fact. Being present on the evening in question, I could not fail to perceive the true nature of the feeling underlying the meeting. But now, I understand and believe, an opportunity occurs to really test the opinion of members. It may not be the most favourable, since London architects are not, as a rule, so wide awake to the desirability of the institution of true compulsory examination as are those in the provinces and provincial towns. Nevertheless, it being known that the subject comes under serious consideration on Monday evening, and the attendance being numerous, the result of any polling cannot be anything but a fairly correct indication of the private opinions of members.

My anxiety to ascertain the true feeling of Fellows and Associates of the Royal Institute of British Architects with regard to this question is born of an earnest desire to see the completion of any attempts to obtain statutory powers with regard to the closing of the profession in the hands of the Institute Council. Despite the fact that I have not hesitated to persist in giving what little assistance lies in my power to movements irrespective of, and directly opposed to, the opinions of the Council, I have yet all along cherished a wish that some day the Council would, under the influence of the expanding views of individual members, see fit to itself take charge of the arrangements for gaining the requisite statutory powers. This, I take it, is also the wish of nine-tenths of persons whom we call Registrationists. Earnestness and tolerance go hand in hand, and bigotry is as contemptible on the one side as on the other.

I really cannot understand the R.I.B.A. preferring to remain as at present, instead of attaining to the position of added dignity that it would assume if it had the power of compelling all entering upon the duties of an architectural practitioner to pass examinations of its own setting. It will perhaps be better to say *I shall not be able to understand* such a state of things at what time it happens, that a majority of its members are proven to desire true compulsory examination; for so far I prefer to consider that its Council has some grounds for neglect of the subject. If all passing the examination were

to become A.R.I.B.A.'s, one can imagine it would be decidedly distasteful to the whole body; but seeing that the Institute would remain as before, excepting that, as the holder of the statutory powers, it would be brought more before the public, and be regarded with more reverence by them, and seeing, moreover, that "A.R.I.B.A." and "F.R.I.B.A." would be designations of increased importance and value in the eyes of the world, if a second examination were instituted for admission to the Institute, of more intrinsic worth than at the present time when, if I may be some day forgiven for so declaring, the examiners are rushing candidates through with a vague and visionary idea, so I opine, of defeating the ends of those endeavouring independently to make the selfsame examinations truly compulsory (!) Seeing all this, and the futility of hoping to remedy crying evils by swelling out the bulk of the Institute, like the frog in the fable, I ask, Where is the just reason for the R.I.B.A.'s opposition to a scheme that will be all to its own gain?

The Institute may continue to absorb shoals of students and young architects; but even if it ultimately absorb all to be found in the length and breadth of the land, the evils will remain, because the examination is voluntary—voluntary, that is to say, as regards the independent architectural practitioner. It is a vanity to declare that the increased size of the Institute will constitute a safeguard to the public against incompetency, and to the member against charlatanism. Those who so affirm may deceive themselves; but it is difficult to understand how an unbiased person would be deceived. The evils would continue; the public would employ the grocer-and-architect class as heretofore; they would employ incompetency, and they would suffer; the young architect who has to fight the hard fight though which alone he passes to a measure of heart's ease, would be handicapped as heretofore; the doings of the incompetent would reflect upon the competent, and all would feel the effects of a condition of things where brag, bombast, and bounce are mistaken by the client class for depth of knowledge of professional duties. The bull would remain master of the situation, though the frog had inflated itself to bursting point.

True power will only come to the Royal Institute of British Architects when it is in a position to control by statute the portals of the architectural profession. At the present time it may be regarded as in much the condition of a ship without a rudder, a steam-engine without a supply of steam, or a watch without a mainspring. Something is required to make it really useful, to endow it with real power, and to bring it forward in the eyes of the world. The new Charter failed to give it power and added dignity, though it increased, in a measure, its usefulness. But dignity, usefulness, and true might would be wielded by the Institute if it gained to itself statutory powers with regard to compulsory examination. And it now remains to be seen whether it will maintain its old policy of "masterly inactivity" with regard to this question, or whether its members have awakened to the truth of the assertions that I have made, and are resolved no longer to let matters slide, but take immediate and energetic steps to make up for past remissness. To me, as I have said above, it seems passing strange how, in days gone by, this vital question has been so neglected; and if the future line of conduct is to be modelled on that of the past, I shall have to confess that the reason of such conduct will exceed my powers of comprehension.

GOTH.

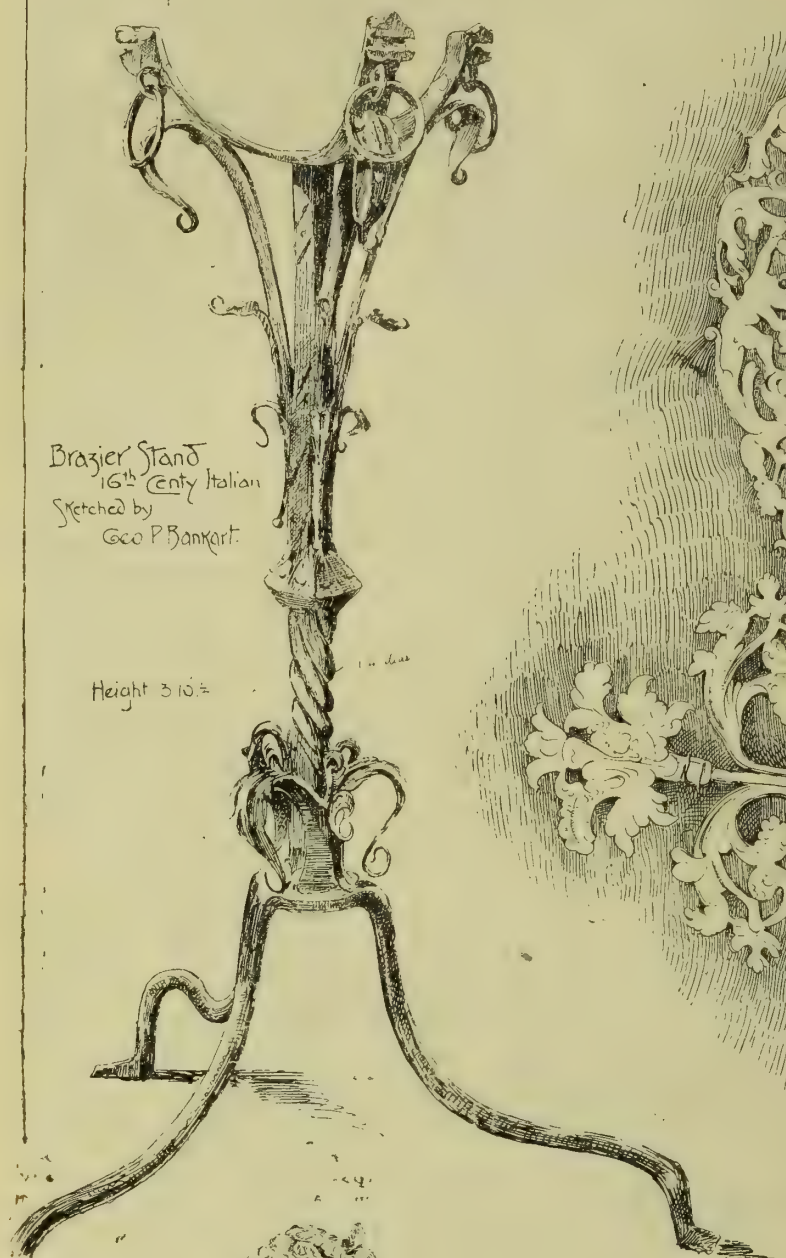
The church of St. John the Evangelist at Rhyl was consecrated by the Bishop of St. Asaph on Tuesday week. Designed by Mr. Walker, of Liverpool, the church seats 600 persons, and cost £6,243.

The inhabitants of Richmond, Surrey, have decided by a large majority in favour of incorporation.

The Earl of Rosebery formally opened, on Monday, a new Fire Brigade station, erected at a cost of £13,878 upon a site of 12,000 superficial feet in East-street, a thoroughfare leading from Marylebone-road to Blandford-street. The building will be the chief headquarters of the A division of the brigade, which comprises Marylebone, Hampstead, Westminster, and Fulham. The building is surmounted by a tower 85ft. above the street level. The new station will be in communication by telegraph, telephone, or electric bells with thirteen minor stations.

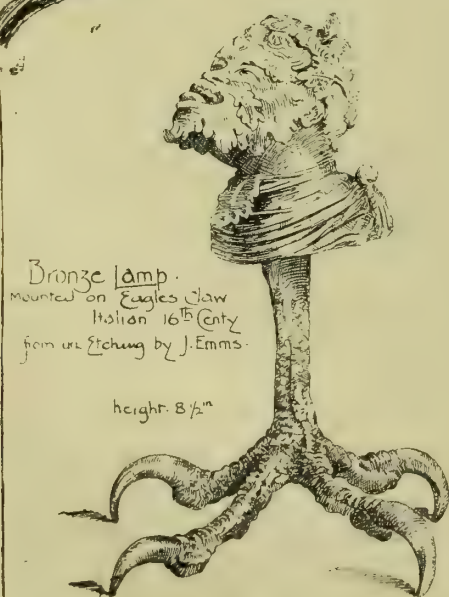


## Decorative Italian Metalwork from the S.M.



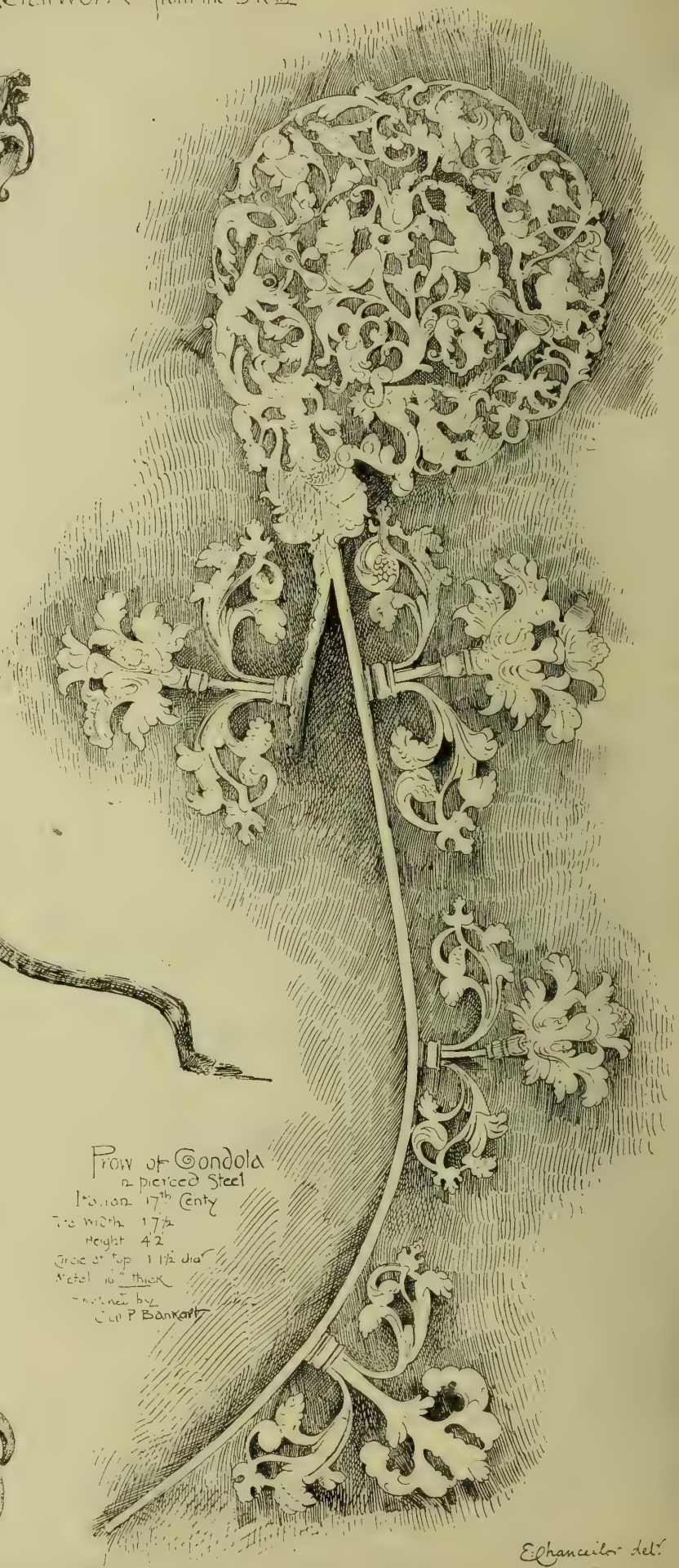
Brazier Stand  
16th Centy Italian  
Sketches by  
Geo P Bankart.

Height 31 1/2



Bronze Lamp.  
Mounted on Eagles Claw  
Italian 16th Centy  
from an Etching by J. Emms.

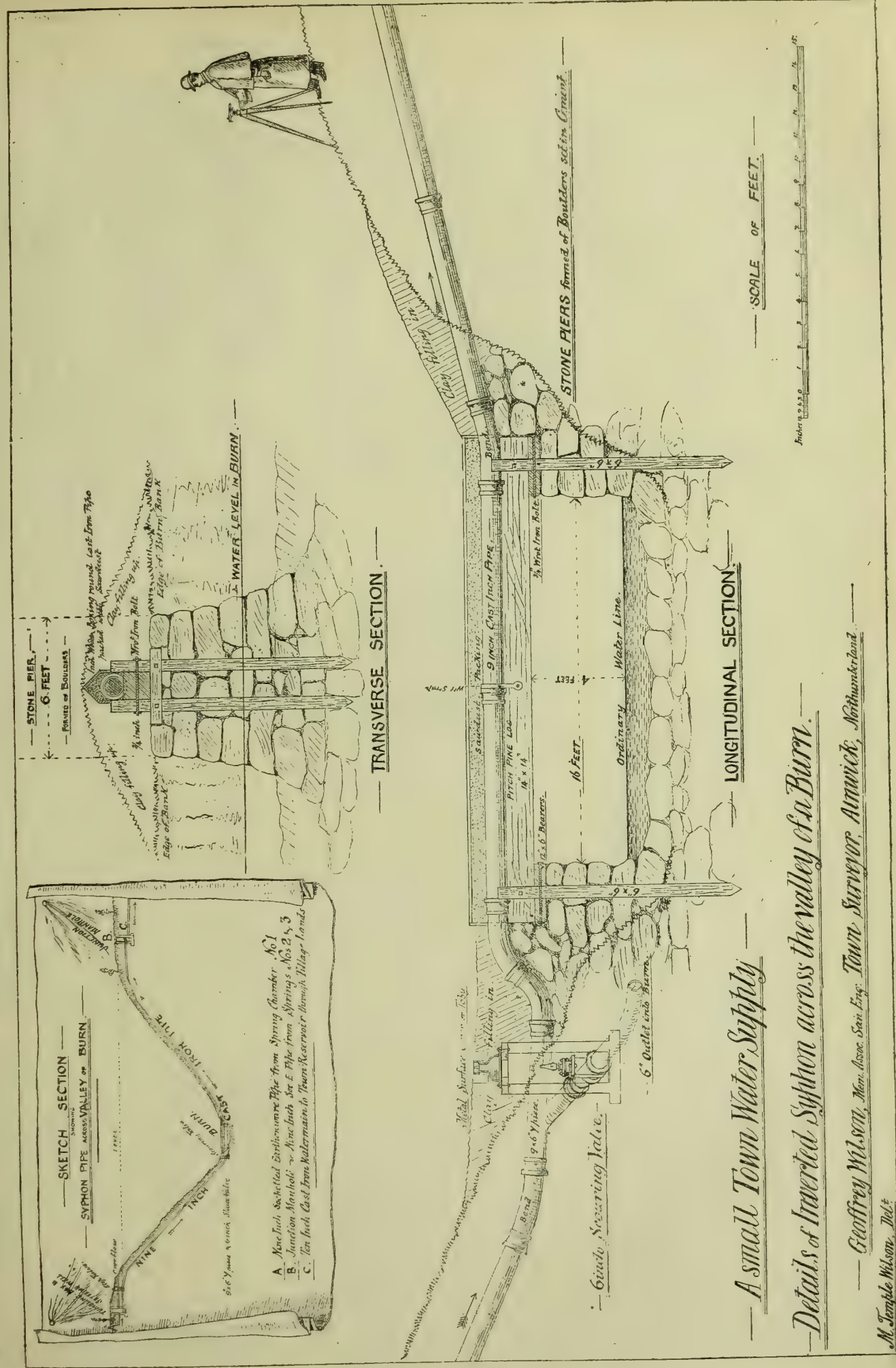
height 8 1/2"



Prow of Gondola  
in pierced Steel  
Italian 17th Centy  
Tie width 17 1/2  
Height 42  
Arc of top 1 1/2 dia  
Metal 1/8" thick  
Sketches by  
Geo P Bankart

Edgemoor del.







## CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THE series of portraits which we commenced with the New Year giving photographs of Contemporary British Architects has been received with such general interest, that we have determined to give besides a similar and concurrent series of photographs of our leading Builders and Contractors. We publish the first sheet of these to-day. Shortly we intend to publish the photographs of some leading Contemporary Artists, Sculptors, Art Workers, and Manufacturers. Messrs. William Morris, Ford Madox Brown, Walter Crane, and others have already sent us their portraits. In the series of British Sculptors we shall give the President of the Royal Academy, Sir Frederic Leighton, Bart., R.A., Sir E. J. Boehm, R.A., Mr. G. F. Watts, R.A., Mr. Hamo Thornycroft, R.A., Mr. Alfred Gilbert, A.R.A., and others.

In the Builders and Contractors series, the senior partners representing the firms with which their names are herewith associated have been chosen in all instances. These commence with Mr. Benjamin Hannen, the head of the firm of Messrs. Wm. Cubitt and Co., of Gray's Inn-road. In the year 1858 he became a partner in the firm since known as Messrs. Holland and Hannen, of Duke-street, Bloomsbury. Previous to this he had worked in this same office for ten years. Mr. Hannen was a member of the Council of Builders in the first great strike, and chairman of the Builders' Committee in the second, which took place soon afterwards. Mr. Hannen is a brother of the Right Hon. Sir James Hannen, the celebrated judge, and President of the Royal Commission in the case of "Parnellism and Crime," lately concluded. In 1883, when most of the partners in the well-known firm of Wm. Cubitt and Co. retired, Messrs. Holland and Hannen acquired their business, and Mr. Benjamin Hannen and one of his partners migrated to Gray's Inn-road to conduct that establishment. Some of the more prominent of the works carried out by Messrs. Holland and Hannen, which we can recall at the present, are the Great Western Hotel (the first of the great terminus hotels), Montagu House, Whitehall, for the Duke of Buccleuch; the Wellington College; the Meat Market, Smithfield; and the Prudential Assurance Office. The photograph of Mr. Benjamin Hannen is by Messrs. Byrne and Co., of Richmond.

Mr. Robert L. Trollope, representing Messrs. George Trollope and Sons, comes next on our sheet. Their business was founded in Parliament-street in 1778, by Mr. Joseph Trollope, the great-grandfather of the present junior partners, and it has been conducted solely by his direct descendants up to the present time. It was simply a paperhanger's business, and the development of it is principally due to his younger son, Mr. George Trollope, who, having been some years a clerk in the War Office, and seeing no prospect of great advancement, joined his elder brother as partner. He soon began to undertake other trades connected with house decoration, alterations and repairs, employing, as was the practice in those days, separate tradesmen for each class of work, such as masonry, bricklaying, carpentering, &c. In 1851 one of his sons, having completed his articles with the then well-known firm of builders, Messrs. Haward and Nixon, the firm commenced executing their own building works, and from that time to the present their building trade has steadily progressed. Besides executing important works in London and the country, they have built largely on their own account on Crown land, and on the Duke of Westminster's estate, and are just completing their large undertaking in Cadogan-square, on Lord Cadogan's estate. Mr. Trollope's photograph is from the studio of Mr. Bassano, of Bond-street, W.

Mr. Wm. James Longmire, of Messrs. Longmire and Co., of Osnaburgh-street, Regent's Park, N.W., is the son of the founder of the firm for many years known as Messrs. Longmire and Burge. During more than half a century the work executed by them has been very considerable, and we subjoin a few as examples. The mansion, Brodsworth Hall, near Doncaster, and extensive works in farmhouses and buildings on the estate; Westfield House, Battle, Sussex; the French Hospital, Victoria Park; Parsonage, Onslow-gardens; Warehouses, 66, Mark-lane; Messrs. M. B. Foster's Beer Stores, Lisson-grove; Dame Alice Owen's Schools for the

Brewers' Co.; House at Ascot, for the late Mr. J. T. Delane (editor of the *Times*); New Weighing Offices, &c., to Ascot Racecourse; Mansion, "Tangewood," Hawkhurst, Kent; Wellingare Hall, near Grantham; Nostell Priory, Yorkshire; Lincoln's Inn Chapel; large blocks of Chambers in Stone-buildings, for the Honourable Society of Lincoln's Inn; Mansion, 39, Upper Grosvenor-street; Messrs. De la Rue's Factory, Bunhill-row; the Mansion, "Batchwood," St. Alban's; the Rectory, St. Alban's; Townsend Farmhouse, St. Alban's; the new Post-Office, St. Alban's; two Houses, Marden, Surrey, for Sir R. Garth; and two Interiors in Grosvenor-square, in fine Spanish mahogany. Their greatest work of late years has been the reconstruction of St. Alban's Abbey, for Lord Grimthorpe. They began to work there under Sir Gilbert Scott, R.A., in 1877, and are still engaged on the building. Mr. Longmire's photograph was specially taken by Mr. Thomas Fall, of 10, Baker-street, Portman-square, W.

Mr. Charles Lucas, of 37, Great George-street, Westminster, S.W., is the senior partner of the eminent firms of Messrs. Lucas Brothers and Messrs. Lucas and Aird, builders and contractors, whose works are well known both at home and abroad, and who are among the largest employers of labour in the kingdom.

Mr. Richard Thorn is the senior partner of Messrs. Woodward and Co., of Finsbury. This business was established 40 years ago by Mr. John Woodward, and carried on by him up to December, 1888, when he disposed of it to Mr. J. Hughes, Mr. R. Thorn, Mr. E. Beazley, and Mr. J. Woodward. The new firm have executed several very large jobs in London, and are now erecting business premises for Sir Reginald Hanson, Bart., Messrs. De la Rue, West End Hospital, Bishopsgate Ward Schools, Artisans' Dwellings, Wentworth-street, &c. Mr. R. Thorn's photograph was taken by Messrs. Gunn and Stuart, of Richmond.

The last portrait on our sheet to-day is of Mr. J. Howard Colls, who is a partner in conjunction with his brother, Mr. W. A. Colls, in the firm of Messrs. Colls and Sons, builders, of Moorgate-street and Camberwell. Their business was founded fifty years ago by the late Mr. Benj. Colls. The following notes furnish the names of some recent works and works in hand:—Offices of the Security Co., and the Meistersingers' Club in St. James-street; the Institute of Chartered Accountants, in Moorgate-street; Messrs. Ashurst and Co.'s offices, Throgmorton-avenue; the firm has also built the larger portion of the new buildings in Fenchurch-avenue, as well as buildings occupying several hundred feet of frontage in Queen Victoria-street; large works for the Stock Exchange, and others for several of the City companies. The new banking house of Lloyds, Barnett, and Bosanquet, in Lombard-street, was built by them, and the River Plate Bank in St. Swithin's-lane. The firm has a good connection among banks, insurance offices, &c., in the city, and the Union Bank of Scotland (London offices) is one of their works. Mr. J. Howard Colls is a Past President of the Builders' Institute, and is now President of the National Association of Builders, and of the London Central Association. He has served the office of president of the various charities in connection with the building trade with success. In addition to Messrs. Colls and Sons' London offices, they have a branch at Dorking, where they carry on extensive works. His portrait is from the studio of Mr. Thomas Fall, of 10, Baker-street, W.

## BOOKS RECEIVED.

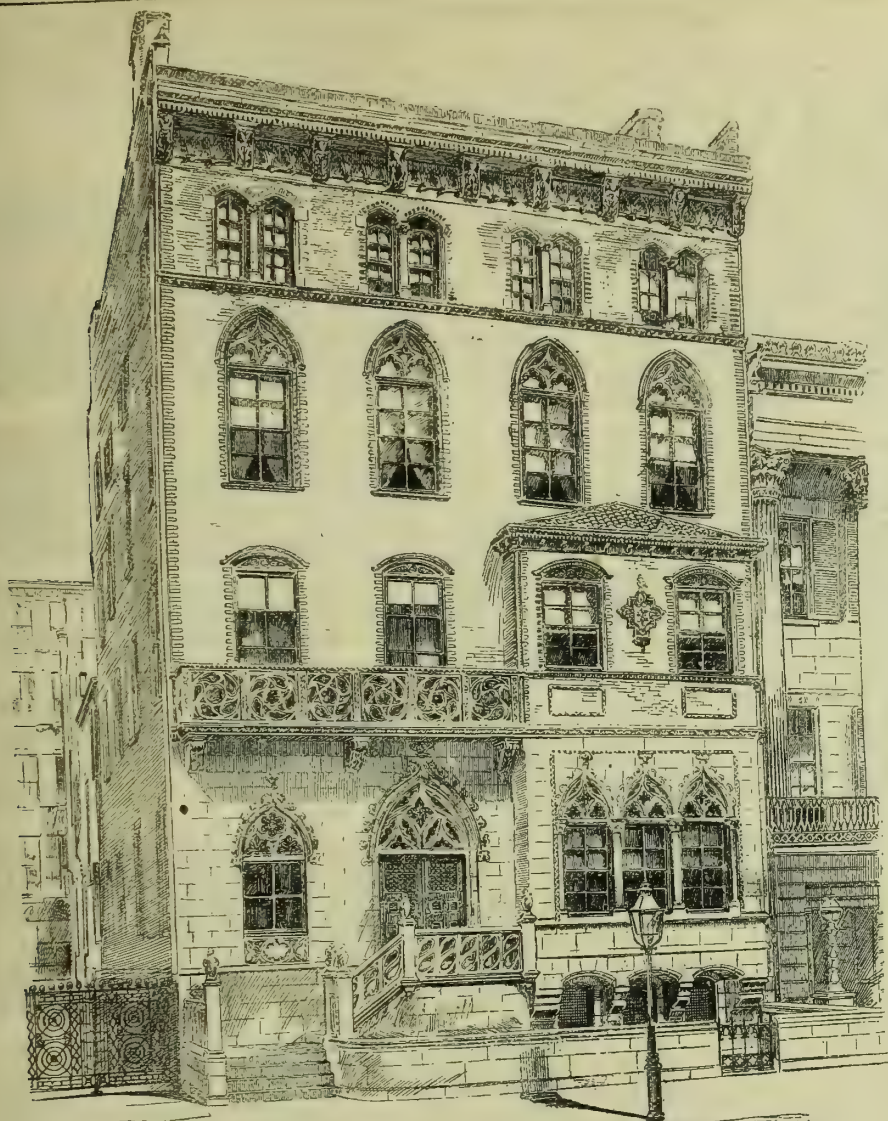
*The Railways of Scotland: their Present Position, with a Glance at their Past and a Forecast of their Future*, by W. M. ACWORTH (London: John Murray), contains some useful information about the Scottish railways, which number five companies, though there is too clearly a desire on the part of its author to push a scheme. There is a little too much advocacy of one line to make us feel that we are reading a disinterested work on the Scottish railway system. An account is given of the Forth Bridge, and the cost of the approach lines borne by the North British is estimated at over a million—the total expenditure at four and a half millions. The author has some doubt as to the gain in distance. "From London to Perth, by West Coast, is said to be now 450 miles; it will also be by the bridge 450. By the Midland route it is 475½ miles; it will be 455

miles. By the East Coast the distance is 462 miles; will be 441½ miles—i.e., East Coast was 12 miles worse, and will be 8½ miles better than the West Coast." Such is what the North British and their allies will gain to compensate them for the great expenditure and the cost of maintenance of the bridge. The railways in Scotland form certainly a unique combination, and the complication of relationships between the various companies at Perth is far greater than any in England—even the railways at Manchester. Mr. Acworth's little book points out the future prospects of the Scottish system, and gives many interesting details of routes and specialities in modern railway travelling.—*Stone: How to Get it and How to Use it*, by Major-General C. E. LUARD, R.E., is the title of a thin book, the substance of which was written for the Surveyors' Institution. The author, as a Royal Engineer, has had some practical experience of his subject, and discusses the bibliography of stone, the resemblance of stones, the localities from which stone is procured, and qualities of certain limestones. The information conveyed is somewhat superficial, and the author refers largely to treatises on the subject, such as "Notes on Building Construction." The remarks on "How to Get Stone" are of more practical value, and the author refers to the necessary clauses in stone quarry leases, and gives several hints to those who become lessees of quarries. The estate agent who has had little experience in the letting of such estates will find some information in Major-Gen. Luard's little book. Those who are thinking of getting the stone themselves cannot do better than read the remarks on "Minimum Rent," "Rents Exact," "Causes of Dispute," and on the "Machinery Necessary in Working Stone."—*Ipswich, Past and Present* (Ipswich: W. Vick). Parts 15 and 16 of this monthly publication contain photographs of grotesque carved heads from the Market Cross, and a carved spandrel from the Shambles, two buildings which formerly stood on the Cornhill in that town; the bridge of "Seven Arches" carrying the London road over a branch of the Gipping; the Unitarian Chapel, a good specimen of a Queen Anne meeting-house erected in 1700; the Presbyterian Church, built from Mr. F. Barnes's designs twenty years ago; and views of 18th-century houses.

## MATERIALS FOR RELIEF DECORATION.

A NUMBER of new kinds of relief decoration has been brought into the market, the aim of which is to supersede the more expensive kinds of wall decoration, like stucco relief, wood carving, and marble veneers. Thus, we have several very beautiful kinds of reliefs for walls and ceilings, produced from paper pulp and other materials, such as Lincrusta, "Anaglypta," "Coriacene," which imitate the most delicate and sharply-cut low-relief surfaces. The old flat-printed papers are still in request for ordinary decorations to rooms; but the relief decoration admits of various kinds of effect, while, even without the aid of colour, it gives a richer effect than the most expensive kind of plain wall paper. An endless variety of colour effects can be produced; thus, by changing the tints only the painter can alter the entire effect of the room. The fabric itself need not be removed, it may remain as a permanent relief on the walls. Thus by the repainting of the "Anaglypta" in delicate shades of greens, pinks, and blues, the most varied effects can be produced on the same pattern. The fabric is obtainable in any thickness, and the parts in relief are not apt to get flat or to lose their sharpness. The designs are of the highest class, and are generally in strict keeping with the plastic material and the motive of wall or ceiling decoration. The expense is less than that of other similar materials. The walls so decorated can also be sponged over and cleaned. The "Coriacene" is another richly-modelled imitation of embossed leather, in which the raised parts are hardened. Various effective designs have been produced and brought out by Messrs. W. Woollams and Co. Many are lacquered a rich brown, well suited for dados. We now hear of new companies for decoration in America. The New York Stereo-Relief Decorative Co. have introduced a composition or chemical stone for interior and exterior decoration which is said to rival marble, granite, or sandstone. It can be moulded into any variety of forms in pure white or any other tint, or bronzed or gilded. As a wall decoration it is





DIOCESAN HOUSE OF THE EPISCOPAL CHURCH, NEW YORK.

said to be a success, and many of the historic styles of decoration have been produced, such as Moorish and Renaissance. These means of reproducing the relief of delicate modelling and embossed leathers, have certainly opened a new era in internal decoration, and if architects are careful to use these fabrics with discretion and taste, and manufacturers do not pander to a vulgar and indiscriminate public demand, there will be an encouragement to obtain the assistance of skilful designers, modellers, and engravers.

#### THE DIOCESAN HOUSE OF THE EPISCOPAL CHURCH, NEW YORK.

**T**HIS building presents so many good points of design, in spite of the incongruity of some of its parts, that we have chosen it for illustration to-day, from a sketch given in the *Engineering and Building Record*, whose drawings, printed in the "Illustrated Series," are quite among the best things published in America. The Diocesan House is situated in Lafayette-place, New York City, and the architects are Messrs. Renwick, Aspinwall, and Russell, of that town.

#### THE LATE MR. J. T. WOOD, OF EPHEBUS.

**W**E regret to announce the death of Mr. John Turtle Wood, F.S.A., Hon. F.R.I.B.A., the discoverer of the Great Temple of Diana at Ephesus, which occurred at Worthing on Tuesday last. Mr. Wood, who was 69 years of age, succumbed to heart-disease. Vast labour and research were expended by Mr. Wood during his Ephesian explorations between 1863 and 1874, and again in 1878-9, under the auspices of the

trustees of the British Museum. When these investigations were commenced twenty-seven years ago, nothing was known of the famous temple whose existence had passed into the region of doubt and of fable. Mr. Wood's labours were first rewarded by the discovery of the Odeum on the southern slopes of Mount Coressus, and soon afterwards by the ruins of the Great Theatre on the western slope of the same mountain. The disinterment of the foundations of these theatres occupied four years, but still nothing had been found which could be identified with the Temple. Numerous trial holes and trenches were dug, the clues given by Philostratus and Pausanias were followed up without result, and the funds being exhausted, Mr. Wood returned to England in failing health, having only added the Christian building known as St. Luke's Tomb to his list of finds. Accompanied by Mrs. Wood, he went back to Ephesus in 1868 and adopted a better plan—that of following up the roads from the Magnesian and Coressian Gates, already identified in the city wall, into the city, and on the last day of 1869 the first trace of the long-sought-for temple was discovered 20ft. below the surface. The walls of the cella and of the platform were traced back till the whole plan was revealed in 1874, and Mr. Wood established the fact that three temples were successively built on this site, while a Christian church was built into the last. Some drums of marble columns and other details brought home are now in the British Museum. Mr. Wood had many hair-breadth escapes, and was once stabbed by a madman within an inch of his heart, and undoubtedly injured his health by his painstaking exertions spread over many years in an unhealthy climate and uninhabited district. His labours are described in his monograph, "Discoveries at Ephesus," published in 1877.

## Building Intelligence.

**MANCHESTER.**—A Boys' Refuge in Great Ducie-street, Strangeways, is nearly ready for occupation, having been built from plans by Messrs. Maxwell and Tuke, of Princess-street, Manchester. Designed in the Queen Anne style, the structure occupies a site at the junction of two streets, in front of the present Boys' Refuge. The main frontage is faced with Ruabon terracotta and stone dressings, while terracotta ornamentation and moulding have been used freely. Three separate and distinct Homes are inclosed within the walls, in the largest of which it is intended to house lads rescued from the streets. A home will be provided here for 60 or 70 lads, each of whom will have a cubicle of his own. On the right of entrance is the reading room, and on the left the games and visitors' rooms, while overlooking the entrance is the superintendent's office. The dining-room, four classrooms, and the master's and matron's room are placed on the first floor. The second and third floors are divided into cubicles, and each floor is provided with bathrooms and lavatories. A large covered gymnasium is provided at the rear. In the centre of the block is the Caxton and the Shoeblack Brigades Boys' Home, where provision is made for between 40 and 50 boys. The basement of this division contains baths and lavatories, with disinfecting closets, and work and play rooms. On the ground-floor are the dining-room, the kitchen, the dayroom, and a shop. The dormitories are on the higher floors. The remaining division of the block will be used as a training home for intending emigrants to Canada, and accommodation is furnished for between 50 and 60 boys. The day and dining rooms, the kitchen, and the "father's and mother's" room are on the ground-floor, and dormitories, officers' rooms, and lavatories occupy the upper floors. At the rear of the buildings are additional workrooms. The interior is heated throughout with low-pressure hot-water pipes, constructed by Messrs. Elliott, Olney, and Co. Messrs. Robert Neill and Son are the contractors for the building, which has cost over £10,000.

**TORQUAY.**—To the church of St. John, built in 1865 from the designs of the late G. E. Street, has just been added a Chapel of Our Lady. It is divided from the chancel and south aisles by metal grills, and the approach to the altar is of polished Devonshire marble. The altar itself is of teak with polished marbles largely introduced into its frontal, and the reredos is of carved oak. The body of the chapel has just been seated with massive oak benches upon a raised floor of English oak. The seats have fleur-de-lis terminations, the fronts and backs of the seating are carved and traceried, and at the ends in panels are the various emblems of the Passion of Our Lord. The seating is of Early 13th-century character, in keeping with the general surroundings, and has been made and placed *in situ* by Mr. Harry Hems, of Exeter.

Last week there was completed in Barthomley Church a memorial, by Sir E. J. Boehm, R.A., to the late Lady Doughton.

Mr. Joseph Douglass Mathews, F.R.I.B.A., of Dowgate-hill, E.C., was returned unopposed to the Court of Common Council, on Thursday, in succession to the late Mr. Deputy White, who had represented Dowgate Ward in the Corporation for half a century. Mr. Mathews is district surveyor for Stoke Newington, and recently retired from the office of honorary treasurer of the Architectural Association (of which he has also been President), after more than 25 years' service.

Lord Burton has added to the suspension bridge over the river Trent at the old ferry, built at his expense, a footbridge or viaduct from the suspension bridge to Fleet-street, in order that the passage thereto should not be blocked in times of flood. On Monday week the extension was opened. The extension is nearly 1,700ft. long and 10ft. wide, and is carried on cast-iron columns and Belgian rolled iron joists. The columns are pinned on stone slabs laid on concrete foundations. The extension for the greater portion of the distance is 6ft. above the ground, and there is a gradual ascent to the bridge level, which is joined with a curve of 360ft. radius. The roadway is of St. Petersburg deals, 3in. thick, laid on T-irons; there is a hand-railing on each side. Lord Burton has borne the entire cost, which, with that of the bridge, has amounted to £10,000. Messrs. Thornehill and Warham were the builders, and Alderman Canning inspected the work as it proceeded.



## COMPETITIONS.

**BACUP.**—At a meeting held last Monday it was decided that the first premium for baths be awarded to Mr. Wilson, jun. (surveyor's assistant); second premium, Messrs. Magnall and Littlewoods, architects, Manchester; and the third to Mr. Wilson, borough surveyor.

**GRANT MONUMENT, NEW YORK.**—The competition for the erection of a memorial in New York to the late General Ulysses Grant has been decided. The jury, which consisted of Messrs. N. Le Brun, George B. Post, and James E. Ware, and Professors William R. Ware, of Columbia, and Solomon Woolf, of New York, have reported that the results of their examination show that the terms of competition "did not offer sufficient inducements to lead men of established reputation and experience to undertake the labour and expense of preparing drawings," and that, in consequence, "only a very few of the schemes submitted were worthy of serious consideration." Five designs were selected out of the sixty-five submitted. The first premium is awarded to one of two designs submitted by Cluss and Schulze, of Washington, who receive the very inadequate sum of fifteen hundred dollars, or about £300; the second place, with one thousand dollars, is assigned to Mr. J. Philip Rinn, of Boston, the designer of the Bennington monument; the third, with five hundred dollars, to Messrs. Haran and Werkelmann, of Leipsic, Germany; the fourth, with three hundred dollars, to Mr. J. A. Schweinfurth, of Boston; and the fifth, with two hundred dollars, to Mr. Herbert A. K. Gribble, A.R.I.B.A., of London. The report of the experts was favourably received, both by the Executive Committee and the Association, which declared the first competition closed, but voted that the payment of the premiums should not commit it to the adoption of any of the designs. It is probable that a second competition, on new conditions, will be invited later. Meanwhile, the monument fund has grown to nearly one hundred and forty-two thousand dollars, and an effort is to be made to obtain further contributions on the occasion of General Grant's birthday, which occurs on the 27th of April.

**HARROGATE.**—A meeting of the Harrogate Town Council was held on Friday at the Victoria Baths for the purpose of confirming a minute by the Wells and Baths Committee as to the Montpellier competition plans. The mayor presided. It was resolved that the council should go into committee and view the plans before coming to any decision on the matter. Mr. Geo. Corson, F.R.I.B.A., of Leeds, the assessor, was present, and said he had almost fixed on five of the plans sent in. Altogether 26 sets had been sent in for competition. Councillor Ward said that in connection with the plans submitted, he was sorry to say he received the previous day by post a miniature sketch of one of the plans, and some detailed instructions. He considered that such a course was altogether irregular, and, no doubt, it would be understood that no notice should be taken of such a communication. Councillor Hammond said he also had been favoured with one of these plans. Something of that sort always occurred in competitions; but, of course, no notice would be taken of it. Councillor Meyer and others concurred in that view, and thought they need take no further notice of the matter, only to make it known that they reprobated such a proceeding. Alderman Walker said the Council having appointed an assessor, the matter would rest with him.

**SELBY.**—In a limited competition, plans submitted by Mr. W. H. Thorp, of Leeds, have been accepted by the Selby Local Board for a new town-hall, to be erected on a corner site at the junction of Galthorpe-street and New-lane. The building will take the place of the existing inconvenient local board offices, which will be pulled down to make way for the new structure. The accommodation to be provided will comprise a large board-room, committee-room, clerk's and surveyor's offices, and a fire-engine station. The building is designed in the Tudor Gothic style. It will have gables to each street, mullioned windows, and an angle oriel, with a steep-pitched roof. Externally it will be faced with brickwork of a deep red colour, contrast being obtained by the use of cream-coloured Ancaster stone for the door and window dressings and other features.

The burgh of Kirkwall has adopted the provisions of the Public Libraries Acts.

## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

**EDINBURGH ARCHITECTURAL ASSOCIATION.**—At a meeting of this body held on the 20th inst., in Heriot-Watt College, Chambers-street, Professor F. Grant-Ogilvie, M.A., B.Sc., delivered a lecture on "Electric Lighting of Interiors." The President, Professor G. Baldwin Brown, occupied the chair. Mr. Grant-Ogilvie's lecture consisted of a practical demonstration of the principles of electric lighting, in the course of which he explained the construction and the cause of the incandescent and arc lamps. He hoped that from the elementary facts he had brought before the association they would take a greater interest in the coming Electrical Exhibition. A visit to an exhibition of that kind could be made far more interesting in the possession of even such elementary knowledge of the principles of electricity and electric lighting.

**SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.**—The usual monthly meeting of the above society was held in the School of Art on Friday night, Mr. F. Fowler, President, in the chair. Mr. C. F. Wike, C.E., the Borough Surveyor, read an interesting paper, entitled "Municipal and Sanitary Engineering." He presented statistics showing the relative sizes of Sheffield and other towns, and pointed out that Sheffield and Leeds have the largest areas of any English boroughs, each having an area of 20,000 acres. The next town in size is Bradford, with 10,776 acres. He also stated that Sheffield has an area equal to the areas of Manchester, Liverpool, Bristol, and Salford combined. He next dealt with the construction of roads, described the different kinds of granite, gritstone, and other materials used, gave particulars as to the manufacture of tar and concrete pavement, and as to the cost of maintenance. He also gave statistics as to the comparative cost of granite and gritstone paving, showing that at the end of 25 years the latter would have cost 50 per cent. more than the former. He then referred to the sections and gradients of roads, giving the formulas of the most experienced engineers for cross sections. The second part of the paper dealt with sewerage and house drainage. The most modern methods of sewer construction were described, and particulars given as to the different forms of sewers and the volume of sewage and amount of rainfall to be provided for. The question of sewer ventilation was extensively discussed, and various systems in work in other towns were described. Drawings were exhibited showing how engine chimney shafts can be utilised for ventilation purposes, and the results of numerous experiments made with different sewer ventilators were given. The question of house drainage was then thoroughly gone into, and different methods of drain disconnection and ventilation were explained. The use of rainwater pipes as sewer ventilators, and the use of soil-pipes as rainwater pipes were condemned. The Hon. Secretary announced that next month the well-known surveyor, Mr. T. M. Rickman, of London, would read a paper on "The Present State of Questions relating to Quantities."

**YORK ARCHITECTURAL ASSOCIATION.**—Under the auspices of this Association, Mr. A. Buckle, B.A., delivered a lecture on the "Manor House, York," on the 20th inst., in the Church Institute, Lendal. Mr. W. G. Penty presided. Mr. Buckle divided his remarks into three periods of one hundred years each. Originally the Manor House belonged to the Abbot of St. Mary's and was the Abbot's palace. The abbey was suppressed in 1538, and the Manor House became the residence of the Lord President of the North, and remained so until 1640. From then until about 1748 the Manor House ceased to be a palace and became an official residence for what might be called the Governor of the City. Then it was put in possession of one person, who let it out in lots, until in 1837 or 1838 it was leased by the Yorkshire School for the Blind. Nothing now remained of the palace except what they might call the dungeons or king's cellars. Under the Museum of the Philosophical Society were the remains of a fireplace. Mr. Buckle gave an interesting account of the residence of various Lord Presidents of the Northern Council at the Manor House, showing by means of a plan additions made to the house by several of the presidents up to 1640, when the Northern Council was abolished. He also dealt with the second and third periods, and remarked that no

one would consider that the Manor was losing any of its prestige in the work which was now being done within its walls. On the motion of the chairman, seconded by Mr. Hopper, a vote of thanks was accorded to Mr. Buckle.

## CHIPS.

A visit has been arranged by the Society of Architects to the works of Messrs. Starkie Gardner and Co., 29, Albert Embankment, S.E. (workers in iron, brass, and bronze), to take place to-morrow (Saturday), at 2.30 p.m.

A new Wesleyan school-chapel is being erected on the Palace Avenue Estate, Paignton. Four large classrooms and a commodious vestry are to be built in connection with the above. Messrs. W. G. Couldrey and G. S. Bridgman are the joint architects, and Messrs. C. and R. E. Drew are the contractors.

Messrs. Faraday and Son, of Berners-street, have recently laid down successful electric-light installations, including gas-engines, dynamos, &c., at Messrs. Agnew's Galleries and Messrs. Asprey's showrooms in Bond-street, Mr. Henry Irving's in Grafton-street, Mr. L. Solomon's in Bruton-street, and Messrs. W. Morley, Halstaff, and Hannaford's in Regent-street.

The Board of Works for the Plumstead district have appointed Mr. Wm. Gow, C.E., who at present is in Glasgow doing work for a London engineer, as their chief assistant engineer and surveyor.

Sir Edward Birkbeck's Bill, dealing with labourers' cottages, which was read a first time on Monday night, proposes to confer on the Rural Sanitary Authority power to compel the provision, in the erection of such cottages, of proper accommodation and adequate means of drainage, and also, where practicable, of a garden in connection with the cottage.

The Board of Guardians for Holborn have adopted plans prepared by Messrs. H. Saxon Snell and Sons for securing increased safety in case of fire at the Highgate Infirmary, the proposals comprising bridges from one block to another, and an outside gallery or verandah. The cost will be £2,300.

A pastoral staff is about to be presented to Bishop Temple, the design for which has been prepared by Sir Arthur W. Blomfield, son of a former Bishop of London.

A French Exhibition will be opened at West Brompton on the 3rd May next.

The Brighton Railway Company's Bill to obtain powers to widen and improve their line into Victoria was on Monday before a Select Committee of the House of Lords. Mr. Saunders, for the promoters, said the traffic to and from Victoria Station had enormously increased during the last twenty years, the number of passengers last year having been nearly four millions. On Tuesday the Committee declared the preamble proved.

A new police station has just been completed at New Brompton, near Chatham, from the designs of Mr. F. Ruck, county surveyor for Kent. Messrs. J. G. Naylor and Son, Rochester, were the contractors.

The body of the late Mr. J. R. Herbert, R.A., was on Saturday removed from his house, built by his friend, Mr. Pugin, at Kilburn, to the adjacent Roman Catholic chapel. Thence it was taken to Kensal Green Cemetery, and laid by the side of the deceased's wife, who only died five weeks ago.

The consecration of St. John's Church, Dunton-green, Sevenoaks, took place on Monday, the 24th inst. The church is built with local red bricks, slightly relieved with Bath stone dressings inside and outside, the roof being covered with local red tiles. The works have been executed from the designs of Mr. Thomas Potter, of Sevenoaks, by the Mid-Kent Building and Contracting Works (Limited), Beckenham.

An important addition is being made to the Royal Masonic Institution for Girls, which is so prominent a feature at the edge of Wandsworth Common on the top of Battersea Rise. The new works include a hall 10ft. by 40ft. for assemblies of the whole school, drill, and recreation; new kitchen offices, matron's room, &c.; three large class-rooms, and six large dormitories. At present there are 206 children. The new building will accommodate 240 in the dormitories.

The Blackwall Tunnel Scheme was further discussed at Tuesday's meeting of the London County Council, who adopted a proposal made by Sir J. Lubbock to proceed provisionally with the works under the advice of an engineer of experience in subaqueous tunnelling, and, after sinking shafts and ascertaining the difficulties of the soil, to report to the Council for further instructions. It was also resolved that the expenditure on experimental works shall not exceed £10,000.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

## TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 90c. gold). To France or Belgium, £1 6s. 0d. (or 3frs. 90c.). To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

## GOOD FRIDAY.

THE BUILDING NEWS next week will be published on Thursday, and all advertisements for that issue must reach the office at the latest by 3 p.m. on Wednesday, April 2.

RECEIVED.—A. W. K. and Co.—J. P. and Son.—H. and G.—H. L. B.—H. and W.—E. K.—W. G. C.

## "BUILDING NEWS" DESIGNING CLUB.

## SIXTH LIST OF SUBJECTS.

Subject G.—A Village Bank on a street frontage of 25ft. wide, with a depth of 70ft. The adjoining buildings to be taken as three-story ordinary houses with shops. The Bank Entrance to be on one side, and a private entrance to the manager's residence on the other. The Bank to comprise public office, manager's room, small waiting-room, and strong room, with clerk's lavatory, w.c.'s, &c. The house to have two sitting-rooms, five bedrooms, kitchen, and offices, with bath-room, and also a store-room. Light only front and rear of the buildings. A good house yard to be reserved at the back; but there is no back way to the site. The coal cellar may be in the basement. Style: "Free Classic," in red brick and stone dressings. Scale: 8ft. to the inch. Elevation, section, plans, and sketch.

DRAWINGS RECEIVED.—"Attempt," "Glaucus," "Grafton," "King Bruce," "Nory B." (no name nor address, send name), "Van-Roke," "Cyclist," "Fiddler," "Skull and Crossbones," "Horse Shoe," "X. Y. Z.," in circle.

RED ROVER. (We regret your design for the Cabmen's Shelter was lost in the post.)—JACK PLANE. (Yes, the plainer the better, as a rule; this is an "old saw.")—ATTEMPT. (We can only say Try again.)

## Correspondence.

## LOW SIDE-WINDOWS IN CHURCHES.

To the Editor of the BUILDING NEWS.

SIR,—If anything further were needed to strengthen my faith in the "sanctus-bell" theory of the use of low side-windows advocated by me in the *Antiquary* for this month, the interesting example quoted by your correspondent, Mr. Dickson, and of which I had no previous knowledge, would remove all doubts, and I am greatly indebted to him for the mention of it.

I agree with Mr. Dickson that low side-windows in an upper-story chapel could not have been used for the purpose of confession or the Communion of the persons outside, nor for such

persons to witness the sacred rites being performed within, and the existence of such features in Prior Crauden's oratory is one of the strongest arguments I have met with against the acceptance of either of these theories.

But, so far from its "disposing at once" of the hand-bell theory, I submit that it goes to prove that it is the only one tenable under the circumstances. I see no reason why it should not be as desirable for the sanctus bell at the prior's private Mass (held, as it would be, at a time when public Mass in the cathedral was not being sung) to be heard outside, as in the case of that used at any other altar. The elevated position of the chapel, moreover, would cause the bell to be heard at greater distance, and promote the usefulness of the windows. It would be interesting to learn the location of the dwellings of the people, or even the prior's residence, in relation to the chapel as possibly explaining why there were two windows.

Mr. Dickson's own "very prosaic explanation of these two low windows" at Ely does not seem to receive support from the facts he states; he tells us that the chapel "is abundantly lighted by large eastern and western windows, as well as by two tall windows of two lights each on the north and south sides." Where, then, is the necessity for these small windows for the purpose of giving light? And if either of them was constructed on account of the "dim sight" of the "elderly prior," and against his stall, why was one put on the opposite side also? The low position of the windows, 2ft. 6in. from the floor, would seem to indicate that they were not for the purpose of giving light.—I am, &c.,

CHAS. E. PONTING, F.S.A.

Lockeridge, Marlborough, March 23.

## CHIPS.

A scheme is on foot for the building of a new town hall for Portobello, near Edinburgh. The present hall is seated for about 300 people, and it is proposed to provide a much larger one, with adequate accommodation for gatherings of Volunteers, Freemasons, and Foresters. A vacant piece of ground in High-street, close to the Municipal Buildings, has already been measured, and plans are being prepared. The front elevation will face Ramsay-place.

The Clifton Antiquarian Club are engaged in fixing commemorative tablets on interesting houses and places of Bristol and Clifton. Robert Southey, a native of Wine-street, has been already thus honoured, and it is proposed to inscribe houses similarly or in other ways related to Hannah More, Sir Thomas Lawrence, P.R.A., Chatterton, Bowdlen, the Ashantee traveller, T. L. Beddoes (author of "The Bride's Tragedy," &c.), Mary Carpenter, Thomas Eagles, S. T. Coleridge, and other eminent natives or residents of the past. Roman camps and roads of the neighbourhood are likewise to receive annotations on their respective sites.

At the quarterly meeting of the Yorkshire Association of Sanitary Inspectors, held on Saturday, under the presidency of Mr. T. Pridgin Teale, at Leeds, a paper was read by Mr. F. Rothera, surveyor to the Sowerby Bridge local board, on "Drainage and Ventilation in Dwelling Houses."

The City of London and Southwark Subway Bill came before a House of Commons' Committee on Friday, and their decision was that the preamble of the Bill was proved, but that the Committee expected a clause to be inserted protecting the Chatham and Dover Railway Company in the matter of the foundations of their bridge over the Clapham-road.

Messrs. Blaikie Brothers, Footdee Ironworks, Aberdeen, have completed the erection of a steel bridge across the river Urie at Inverurie. It consists of two main girders, the length of span being 52ft. 6in., and the breadth of roadway about 17ft.

A Select Committee of the House of Commons has rejected the Croydon and Crystal Palace Company's scheme, by which it was proposed to construct a line  $3\frac{1}{2}$  miles in length through a densely inhabited district in South London, at an estimated cost of £600,000.

The Prefect of the Seine has presented to the Municipal Council of Paris the new project of the French Government for the preservation of the Exhibition buildings. By this the city would become proprietors of them, but would be bound to lend the Champ de Mars and the buildings thereon to the State if they were ever required for the holding of another exhibition.

Messrs. Pilkington and Co., of Monument Chambers, E.C., are considerably extending the scope of their business, and are now undertaking contracts in slating and tiling, and supplying bricks, cements, and other building materials.

## Intercommunication.

## QUESTIONS.

[10251.]—Concrete Floor.—I shall be obliged if some of your readers will give me particulars for laying a concrete floor, composed of rolled iron joists and cement concrete, the depth of floor to be as small as possible. Size of building: 32ft. long by 9ft. 6in. wide.—SUBSCRIBER.

[10252.]—Old Mortar.—A portion of a recently-erected building (within the last three months) is to be pulled down and the bricks reused for an addition to the same building. Will some kind reader inform me if the old mortar, after having been screened, may be mixed with the new to advantage?—ECONOMY.

[10253.]—Cement Flat.—Will it be possible to make an external cement flat, containing an area of 460 sup. yards, laid on 6in. of cement and coke breeze concrete, carried by 4in. by 2in. rolled joists, which, in their turn, will be carried on plate girders, to be perfectly watertight?—BREWSTER.

[10254.]—Round or Octagonal Churches.—Could any of your correspondents kindly inform me how or where I could obtain ground plans of some of the best-known round and octagonal churches in England?—W. F. C. JORDAN.

[10255.]—Iron Bridge.—Will Mr. Henry Adams, or some other authority, be kind enough to say what rolling load per foot-run of bridge should be taken for an iron or steel girder bridge to carry, say, a 20ft. main road where the heaviest weights would be 20-ton traction engines? For spans up to 70ft., and how is it arrived at?—RIVET.

[10256.]—Shingle Spires.—I wish to fix an oak shingle spire. Would some reader kindly give me full particulars how to carry out same, the size of shingles, and how to protect laps and angles, &c.—E. W. D.

[10257.]—Sewage Disposal.—If any of your readers have had experience which will help me in the following case, I shall feel grateful for their advice. I am anxious to dispose of the sewage from a country house and stables of, say, 35 rooms and 12 horses, and propose carrying a pipe through a large kitchen garden about 400 yards from house, making use of a portion of the sewage there, and irrigating grass and ploughed land beyond with the remainder. The fall is satisfactory, the water-supply good, and the soil light and sandy. Would the result be a nuisance to the occupants of the house?—SANITATION.

[10258.]—Rain Driving through Stone.—Have any of your readers had the same experience that I have, of rain driving quite through Ham Hill stone mullions (9in. thick) of windows and perceptibly running down on the inside face of stone and lying in pools on the window seats, also coming through stone window heads and stone roofs of oriel windows properly weathered? If so, what is the best thing to prevent it without disfiguring the stone? Any practical advice will oblige.—E. T. S.

## REPLIES.

[10248.]—Warming Apparatus.—"Comfort" asks: "Is there any kind of apparatus that can be used in conjunction with low pressure where the latter system is not sufficient?" I should like to mention that my latest patent for generating pure warm air is specially constructed for the express purpose of easily connecting to an existing low pressure hot-water apparatus, without in the least disturbing any of the hot-water pipes, but to supplement the heat and to allay draughts. In cases where the boiler is worn out, this combined furnace is used to substitute the defective boiler, and to couple up to the present arrangement of hot-water pipes. Thus it will be readily seen that by this simple and inexpensive method an inefficient low pressure, hot-water apparatus may be made to thoroughly warm the building.—JOHN GRUNDY.

A bronze medallion portrait of the late Mr. William Hay, the architect who designed and carried out the St. Giles' Cathedral restoration, is now being erected in the north porch of St. Giles' Cathedral by a few friends who commissioned Mr. John Rhind, sculptor, to execute the work. The portrait is artistically modelled and a good likeness, and is the original of the plaster cast on view in the Royal Scottish Academy. The inscription is as follows:—"In memory of William Hay, architect, who designed and carried out the restoration of this church. Born 1818; died 1888."

Arthur John Robbins, who pleaded guilty on Monday to embezzling various sums belonging to the Cardiff Building Society, was, at the Glamorganshire Assizes at Cardiff on Tuesday, sentenced to five years' penal servitude. According to a statement written by the prisoner, he had appropriated £6,200, and his defalcations extended over a period of ten years. The deficiency was made good by the directors. Mr. Peter Price, secretary, an architect in Cardiff, contributed £3,500.

There is a new town-hall about to be erected at Cleckheaton, Yorkshire. The building is of imposing design, in the Renaissance style, and will, when completed, reflect credit upon the architects, who are Messrs. Mawson and Hudson, of Bradford, the builders being Messrs. Holdworth Bros., of Cleckheaton, and the stone-carving has been entrusted to Messrs. Howarth Bros., of Stretford-road, Manchester.

A new public hall has been erected at Maidstone, and special attention has been given to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator.



## LEGAL INTELLIGENCE.

**RE T. QUINN.**—The second meeting was held on Friday of the creditors of Mr. Thomas Quinn, M.P., Kilkenny, described as of the Estate Office, Popham-street, Islington, builder and contractor. The liabilities amounted to £75,743, of which, however, not more than £9,097 are unsecured, and assets estimated at £919. At the first meeting a composition of 5s. in the pound was accepted, payable in two instalments at 14 days and six months from approval by the Court, and the resolutions were now duly confirmed.

**NEW HOUSES AND OLD FOUNDATIONS.**—At Wandsworth Police-court on Friday, William Hole, a builder, of Lower Richmond-road, Putney, appeared to answer an adjourned summons at the instance of the London County Council for neglecting to comply with a notice to set back the external fence or boundary of the forecourt of certain houses in Quill-lane to a distance of 10ft. from the centre of the roadway. Mr. Alfred Millwood, the surveyor to the Council, explained that the fence inclosing the forecourts had been erected on the old boundary line, thus reducing the width of the way. There were posts on either end of the lane, which could not be used for vehicle traffic. He also stated, in answer to Mr. Todd, who represented the defendant, that there was a fence running right and left, and if the particular fence in question was removed it would leave a gap. Mr. Burton, on behalf of the Council, mentioned that they had refused an application made by the defendant for permission to allow the fence to stand. The defendant said two out of the three houses had been erected within the area of Quill-cottage, which was demolished to make room for new buildings. Mr. Todd contended that no order could be made in respect of two houses erected within the area of the old cottage, as the defendant was protected by the provision of the sixth section of the Act. With respect to the third house, he was bound to submit to an order. Mr. Denman, who took time to consider his decision, said he was of opinion if a man wished to be protected by the proviso he should confine his buildings within the limit of the external walls of the old house, and not within the area. He therefore made an order for the removal of the fence in 14 days.

**IN RE GREEN AND LEE.**—At the London Bankruptcy Court on the 20th inst., Lee, one of the partners in the firm of Green and Lee, applied for an order of discharge. The bankrupts were builders and contractors carrying on a somewhat extensive business at the Anton-street works, Amherst-road, Hackney. The failure occurred in November last, the joint liabilities expected to rank against the estate being returned at £10,985, with assets estimated at £4,545. The bankrupts entered into partnership in May, 1887, Green having traded for three years previously jointly with his nephew. The business showed a surplus of £3,554 at the time, and Lee paid Green £1,000 as premium on joining him, and he also brought £3,000 capital into the concern. In June on July, 1888, the bankrupts entered into a contract to erect a number of buildings in South Audley-street for the sum of £35,000, and in their balance-sheet of December 31, 1888, they assumed £2,328 as the amount of the profit on that contract at that date, the profits for the whole year being estimated at nearly £4,000. In consequence, however, of unexpected delay in completing the buildings, a loss of £3,000 was sustained. To this loss the bankrupts attributed their failure. The Official Receiver submitted that, inasmuch as the bankrupts tendered for the contract in question at 5 per cent. below the estimated cost of the buildings, and as they had sustained losses on other contracts from a similar cause, the failure was to some extent due to their having accepted contracts at too low a figure. There was no opposition, and Mr. Registrar Brougham granted an immediate order of discharge.

**Mr. Banister Fletcher, J.P., F.R.I.B.A., D.L.,** has been appointed to the Professorship of Building Construction and Architecture at King's College, London, in the place of Professor Kerr, F.R.I.B.A., who retires in July.

The following have been elected to five assistant surveyorships under the Staffordshire County Council:—J. Percy Gates, Worthing; J. Howarth, Liverpool; Alex. Kinnison, Eassie, Forfarshire, N.B.; Charles S. Morris, Bury St. Edmund's; James Wylie, Linlithgow, N.B. The salary in each case is £175, to include the keep of a horse and trap and all other expenses except stationery. There were in all 275 applicants.

The Leeds School Board have, by placing a large clock on the school buildings which are now nearing completion at Richmond-hill, conferred a great boon on the inhabitants in the eastern part of the borough. The clock has been made by Messrs. Wm. Potts and Sons, Leeds, and has four external dials, 6ft. each in diameter, and illuminated by gas at night. The clock strikes the hours upon a bell weighing over 5cw. The clock has gravity escapement, compensation pendulum, &c.

## Our Office Table.

**MR. EDWIN FRESHFIELD, F.S.A.,** writes that Mr. William Brindley, the well-known marble mason and sculptor of Westminster Bridge-road, has forwarded him a block of red porphyry, part of a large quantity just received from the quarries in Egypt, of which he is the lessee, which is very interesting, as it illustrates the ancient method of working hard stones in the Imperial porphyry quarries. On this piece is the wedge hole by which it was worked. The wedge hole, which Mr. Brindley has compared with those made in granite quarries in this country, shows that the tools used at the time this porphyry was worked were precisely the same as those which have been in use in granite quarries until recently in this country and throughout Europe. From the look of the hole, it seems probable that the tools were of steel, though this is not so certain as the method of their use.

The Guinness Trustees have received a letter from Lord Cadogan offering them as a gift a plot of freehold land, upwards of an acre in extent, in a central part of his estate in Chelsea, as a site for the erection of dwellings for the poorer classes in that district. The site, which has been accepted by the Trustees, forms part of the garden of Blackland's House, Marlborough-road, (now a private lunatic asylum), near St. Joseph's College and the Royal Military Asylum. In order to render it immediately available, Lord Cadogan has purchased from the lessee the unexpired term of his lease, which has still 14 years to run. It is understood that the value of the land thus given by Lord Cadogan is about £40,000. The trustees have lost no time in the matter, for they have already instructed Mr. M. E. Macartney, of 52, Berkeley-square, to prepare plans for the erection of dwellings on the site. The trustees have also acquired by purchase sites in Columbia-road, Bethnal-green, and Brandon-street, Walworth, and have instructed Mr. F. T. Pilkington, of 24, Russell-square, and Messrs. Joseph and Smithem, of 45, Finsbury-pavement, to prepare plans for these sites.

The collection of works belonging to the Italian schools at the National Gallery, already its strongest feature in point of numbers, has just been augmented by eight pictures, which are now hung. The most important of these is a large altar-piece, by Girolamo Giovenone, of the Piomonte school of Verelli. It represents the Virgin enthroned in the apse of a church of Romanesque type, holding the infant Saviour in her lap, and having on either side saints, who present two kneeling male donors in early 16th-century costume. At the back of the throne are two angels. The next work of interest is the right wing of an altar-piece by Antonio Vivarini, of Murano—with upright figures of St. Francis and St. Mark—of which the left wing had long been in the Gallery. There is also an Early 16th-Century landscape, showing a blue-green river flowing between high cleft rocks, sparsely adorned with herbage, the distance being furnished by the pale bluish peaks of an Alpine range abruptly springing into the air; it is, perhaps, the work of a 16th-century Lombard under Venetian influence. The other acquisitions are a "Pieta," from Lombardy; a "Madonna and Child," by Bernardino Luini; the "Portrait of a Youth," ascribed to Domenico Ghirlandajo; and two decorative landscapes by Giuseppe Zais, a Venetian painter of the 18th century. While these are interesting examples of the later schools of Italian art, it is to be regretted that the authorities should have purchased works of a class with which they are sufficiently stocked, and at a moment when they are hesitating to accept Mr. Tate's free gift of pictures by contemporary English artists.

The spring exhibition of the Royal Birmingham Society of Artists opens to-day (Friday), the main feature this year being a representative collection of 30 paintings in water-colour by Mr. Thomas Collier, including some of his finest works. The chief place in the large room is occupied by an important picture by Mr. Alma-Tadema, R.A., entitled "The Studio"; Mr. Walter Langley shows "Disaster," and other characteristic examples; Mr. T. Austen Brown sends "Sunday Morning" and "The Recruit"; Mr. J. Henry Henshall, "In Wonderland"; Mrs. Allingham, Mr. W. J. Muckley, Mr. John Parker, Mr. C. J. Lucas, Mrs. Stanhope Forbes,

Mr. George Weatherbee, Mr. Aumonier, and other water-colourists are well represented. In the oil rooms will be found "At Amalfi," by Mr. J. C. Hook, R.A.; "Dominicans," and "Feathers," by Mr. H. S. Marks, R.A.; "The Awakening of Eve," by Mr. Val Prinsep, A.R.A.; "Zephyrus Wooing Flora," by Mrs. Normand; "Husband, Children Home, All Lost," and "A Japanese," by Mr. Anderson. In the Black-and-White Room is a collection of studies by the President of the Society (Sir Frederic Leighton, P.R.A.), and 14 frames of studies by Mr. E. Burne Jones, A.R.A.

In order to aid in the revival of the art of book illustration, Mr. Felix Joseph has just presented to the Corporation of Nottingham, for the Castle Museum, a collection of Early English drawings of considerable interest and value. It consists of some 200 designs, principally in sepia, made about a century since, for such works as "Sir Charles Grandison," "The Invisible Spy," "Don Quixote," "The Vicar of Wakefield," "Paradise Lost" and "Paradise Regained," "Fatherless Fanny," &c. The drawings, which are in a perfect state of preservation, comprise the works of Mr. Stothard, R.A., Richard Westall, R.A., William Westall, A.R.A., W. M. Craig, W. Smirke, R.A., Richard Corbould, Thomas Uwins, R.A., S. Wale, R.A., Wright, J. P. Neale, and many others of that school of English painters. With this addition to the already existing works by Stothard and Smirke, also presented to the same place by Mr. Felix Joseph, the Nottingham Castle Museum now possesses the nucleus of what easily may be made, if it is followed up from time to time by judicious purchases of recent works, a pretty complete collection, elucidating the history and progress of English book illustration.

The new Glasgow Decorative Art Society, which has for its object the fostering of a public opinion favourable to decorative art, has appointed a provisional committee, consisting of the following ladies and gentlemen:—Francis Powell, R.W.S., P.R.S.W.; James Bell, chairman, Institute of Fine Arts; James Fleming, chairman, School of Art and Haldane Academy; William Jolly, H.M.I.S., president, Ruskin Society; James Paton, curator, Corporation Galleries; John Honeyman, F.R.I.B.A.; Wm. Leiper, F.R.I.B.A.; E. A. Walton, A.R.S.A.; William Kennedy, Duncan Mackellar, R.S.W.; D. S. Biddoch, James Mavor, Mrs. Cowan Lees, Mrs. Newbery, Mrs. Patterson Wingate, and Mrs. Reith. The honorary secretary is Miss Henderson, 17, Belhaven-terrace; honorary treasurer, Mr. J. A. Campbell (Burnet, Son, and Campbell), 167, St. Vincent-street; and convener, Mr. Francis H. Newbery.

The County Council of Northumberland received on Friday a report from a committee with reference to the superintending staff to be engaged on roads, bridges, and other county building works. The committee recommended that the staff consist of a county surveyor, to devote his whole time to the work, at £600 per annum; two assistant surveyors, at £150 each; and clerks, to cost in all £150, or less. The county contains, it was pointed out, 480 bridges and 475 miles of road, and the surveying expenditure would thus be £1,050 a year. The scheme was, however, thought by the councillors to be too expensive. Amendments were carried reducing the salaries of the surveyor to £400 a year, and of the assistants to £120 each, and the whole matter was then referred back to the committee.

MANY readers will learn with sincere regret of the death of Mr. John Ridley Hunter, who, until last July, was the senior partner in the well-known firm of Messrs. W. and J. R. Hunter, timber merchants, of 57, Moorgate-street, E.C., and 5 to 11, Bethnal Green-road, E. Mr. Hunter died almost suddenly (syncope of the heart) on the 11th inst. at his residence, Firtree House, Enfield, N., and was carried to his last resting-place at Cheshunt Cemetery on the 15th by workmen who had long been in his employ. He was in his 75th year at the time of his death, and was the second son of the late Mr. Alderman Hunter, Lord Mayor of London, 1851-2. The year afterwards (1852-3) the same civic chair was filled by Mr. Alderman Challis, father of the present Mrs. Hunter, who, with six children, now survives her husband. The deceased was on the Court of the Upholders' Company, a governor of St. Bartholomew's Hospital, one of the oldest members of the Board of



the Commercial Travellers' Schools, a trustee of the parish estate of St. Stephen Coleman, E.C., and was one of Her Majesty's Lieutenants of the City.

The Epping Forest Committee of the City Corporation report that they have received from Sir T. F. Buxton and Mr. E. N. Buxton, without payment, a piece of land situated at Oak Hill, Theydon Bois, containing about 12½ acres. This land forms a valuable addition to the Forest, not only on account of its beauty, but because there is now no break in the continuity of the Forest adjoining the main road from the Wake Arms to Theydon Bois. The area of the Forest, including Wanstead Park, is now 5,542 acres. The committee have given careful consideration to the question of thinning the densest portions of the Forest, about which certain complaints had been made. They found in every instance where the Forest had had time to recover itself that the underwood was springing up, and the trees had benefited by the admission of more light and air, and by having more room for growth. The committee had drawn up a few rules for the guidance of the superintendent, one of which provided that each annual thinning should be spread over an area of about 500 acres of thicket, which was to be gone over lightly, and that no blackthorn or undergrowth should be cut, except where it was dead or when it ought to be removed for the improvement of the growth of neighbouring trees, or for protection from fire or for the purpose of felling pollard trees. The amount expended on the Forest last year was £3,891, and the income was £1,061.

The object of the Technical Instruction Bill introduced by Sir Henry Roscoe, M.P., is stated to be to clear up any doubt as to the legality of the provision of technical and manual instruction in public elementary schools. At present it is questionable whether the managers of these schools may include such instruction in the time-tables, so that attendance at it may be counted as attendance at school. The Bill would remove all doubt on these points. It declares that the managers of any public elementary school may provide technical or manual instruction for the scholars either on the school premises or in any other place approved by the inspector; and attendance at such instruction is to be deemed to be attendance at the public elementary school. The conditions on which Parliamentary grants are to be made in aid of technical or manual instruction in public elementary schools are to be those contained in the minutes of the Education Department and of the Science and Art Department in force for the time being.

A few of Colonel King-Harman's friends are about to erect an elaborate memorial brass in the parish church, Margate, the design of which is decorated in character. Upon the left is the family coat-of-arms, surmounted by the Colonel's crest. Above the whole is a very rich gable ornamented by crockets, while the intervening ground is full of work, the detail of which is very minute. The whole of the ground in the body of the brass has been cut away and matted, leaving the inscription in bold relief. There is a wide border round the whole, consisting of elaborate work, very small in detail, to give greater effect to the appearance of the brass. It has been mounted upon a black marble slab. The execution has been intrusted to Messrs. Jones and Willis, London and Birmingham.

The honorary freedom and livery of the Turners' Company was conferred yesterday (Thursday), on Sir John Fowler, Bart., K.C.M.G., and Sir Benjamin Baker, K.C.M.G., "in recognition of their distinction and eminence as engineers, earned by many great works at home and abroad, especially the design and construction of the Forth Bridge, one of the greatest triumphs of British engineering in the Victorian age." The ceremony was held in the old council chamber at Guildhall, under the presidency of Mr. Burdett-Coutts, M.P., Master of the Turners' Company.

Mr. Newton Brooke, stone-merchant, of Northowram, near Halifax, was defendant in a breach of promise of marriage, in which a young woman, living at Halifax, sought to recover £2,000 damages. The case was, however, settled out of court, defendant consenting to pay £700 and all costs.

The waterworks committee of the Manchester Corporation have accepted the tender of Messrs. Monk and Newell, contractors, Bootle, for the construction of a large section of the Thirlmere aqueduct. Work will be immediately started between Windermere and Oxenholme.

#### MEETINGS FOR THE ENSUING WEEK.

SATURDAY (TO-MORROW).—Society of Architects. Visit to Starkie Gardner and Co.'s Works, Albert Embankment. 2.30 p.m.

MONDAY.—Builders' Clerks' Benevolent Institution. Annual Dinner at Holborn Restaurant. 6.30 p.m.

Royal Institute of British Architects. Business Meeting. 8 p.m.

TUESDAY.—Institution of Civil Engineers. "Barry Dock and Railways," by John Robinson. 8 p.m.

Glasgow Architectural Association. "The Development of Wood-Carving," by George Tudhope. 8 p.m.

WEDNESDAY.—Civil and Mechanical Engineers' Society. "Oceanic Vertical Circulation," by W. Lant Carpenter. 7 p.m.

#### CHIPS.

The parish church of Guestling, near Hastings, an edifice dating from the 12th century, was burnt down on Sunday.

The Senate of Bremen has approved a scheme for deepening the harbour. The cost is estimated at fifteen million five hundred thousand marks—about £775,000.

At the rising of his Court at the Birmingham Assizes, on Tuesday, Baron Huddleston paid a visit to the Victoria Courts, now in course of erection from the designs of Messrs. Aston Webb and Ingress Bell. He was shown over the building by Mr. Bowen (the builder) and Mr. Richards (the clerk of the works).

The parish church of Charles, near Barnstaple, is about to be restored from plans by Messrs. Gould and Webb, of Barnstaple.

Mr. Turner, head master of the York School of Art, delivered an illustrated lecture on "Art and Artists" before the Yorkshire Philosophical Society in that city, on the 20th inst.

Building operations are about to be commenced on the site procured by the Committee of the Junior Constitutional Club for the erection of the permanent club-house in Piccadilly. Col. R. W. Edis, F.S.A., is the architect.

A Select Committee of the House of Lords has passed, without opposition, the South London Polytechnic Institutes Bill, which authorises the purchase of a site in the Borough-road, Southwark, for the purposes of a Polytechnic Institute for that district.

At a general assembly of the Royal Society of British Artists, held on Friday evening, the following gentlemen were elected members:—Messrs. Alfred de Bréanski, J. W. Godward, Edwd. Holmes, Albert Kinsley, G. Sheridan Knowles, Chas. E. Marshall, Leopold Rivers, and Henry Zimmerman.

By the destructive fire which occurred on Friday last at Messrs. Wilson's saw-mills and timber-yard at Wearmouth Bridge-end, Sunderland, damage to the extent of £20,000 was occasioned.

The Strand district board of works decided, at their last meeting, to raise the salary of their surveyor, Mr. Ventris, from £500 to £550 per annum.

The charity trustees of Bath opened, on Friday, thirteen tenders, ranging from £14,000 to 19,000, for the erection of a hospital for idiots on Claverton Down.

"The Bridesmaid," by Millais, has been presented by Mr. Harding to the picture gallery of the Fitzwilliam Museum at Cambridge.

A new German Expedition in Eastern Africa is announced from Berlin. A German architect, Herr Hoffmann, and five other Germans, accompanied by a number of coloured men, have gone to Halule, on the Somali coast, for the purpose of founding a German station there.

Mr. Alfred G. Tucker, for the past two years surveyor to the highway board of West Powder, Cornwall, has been elected assistant district surveyor to the Sussex county council at a salary of £160 a year and expenses.

The county council of Shropshire elected on Saturday Mr. Frederick Brayshaw, at present in the employ of the Leeds corporation, as surveyor to the south-western division of the county, from among 29 candidates.

The Corporate Property Committee of Leeds have resolved to ask the corporation of that borough to grant the sum of £500 for the restoration of Kirkstall Abbey. It is proposed to lay new drains, in order to carry away the accumulated water on the land between the road and the abbey, and to clear away the debris from the base of the ruin.

The second annual meeting of the Bath Stone Firms, Limited, was held at the Grand Pump Room Hotel, Bath, on Friday, Mr. C. J. Pictor in the chair. In October a dividend at the rate of 5½ was declared, and at the meeting on Friday a dividend for the half-year at the rate of 7½ per cent. was declared, making £6 7s. 6d. for the year.

## Trade News.

### WAGES MOVEMENTS.

KENT AND ESSEX BRICKMAKERS' BARGEMEN.—On Monday a meeting of Sittingbourne and Milton bargemen was held, at which a proposal was submitted from the masters, to the effect that the bargemen should resume work upon the old freights until July, by which time a scale of new rates, the joint production of masters and men, might be prepared. To this proposal the men returned an emphatic refusal. Since the bargemen first came out, a month since, more than £7,000 has been lost to Sittingbourne and district through unpaid wages. About 1,100 of the brickmakers are in receipt of strike pay, amounting to 10s. a week, from the Kent and Sussex Labourers' Union, to which they belong. It has been suggested that, if the bargemen refuse to come to terms, the bricks can be sent to market by rail. The cost would be 8s. a thousand, at most, to London, and by short connecting lines the trucks could easily be loaded in the most convenient part of the fields.

KILMARNOCK.—The joiners resumed work on Tuesday, the masters having conceded the advance of a half-penny per hour, with a reduction of four in the working hours per week, as asked by the men. The strike lasted a fortnight.

NEWCASTLE AND GATESHEAD.—The upholsterers employed in Newcastle and Gateshead have obtained the demand made by them for an advance of 2s. per week—from 33s. to 35s.—from the majority of the masters in Newcastle and Gateshead. The men employed by those firms who have not made the concession struck work on Saturday. The cabinetmakers, who gave notice for a similar advance, have received the full amount from their employers, so that no stoppage whatever will take place in that trade.

THE POTTERIES.—Some time ago a dispute took place in the district in connection with the wages of carpenters and joiners, while the bricklayers also asked for higher wages and less hours. The arbitrators to whom the matters were referred were unable to agree, and it was mutually decided to leave the dispute to Mr. Cooper Whitwell, architect, Birmingham, who has given his decision. He gives the carpenters and joiners what they ask—namely, 7½d. per hour, to take effect from the 1st of May next. The bricklayers, who ask for 8d., are to have 7½d. an hour, without any alteration being made in the time they work.

#### CHIPS.

The net value of the personal estate of the late Mr. James Stewart, iron tube manufacturer, Glasgow and Coatbridge, has been returned at £153,487 9s. 8d.

An arcade is about to be made at Wrexham between Hope-street and the Market Hall, and will contain about a score lock-up shops. Mr. A. C. Baugh, of Wrexham, is the architect.

A free public library was opened at Middlewick on the 20th inst. The premises have been adapted and fitted up for their new purposes by Messrs. Clark and Son, Mr. Tarleton being the architect, and the indicators are on the Cotgreave system.

The contract for the demolition of Whitefield's Tabernacle, Tottenham Court-road, was signed on Monday morning, the work of destruction to begin forthwith. In a month the building will be razed to the ground, and the rebuilding will then be taken in hand.

A new warehouse, together with extensive stables, &c., are being erected in Stockport by Mr. D. Clifton, as an extension to his already large mineral water manufactory. When completed, there will be accommodation for 30 horses. The elevation (55ft. high) will be built of Darley Dale stone and Ruabon bricks, and there are fireproof floors throughout. Mr. A. M. Fowler, jun., is the architect.

The Hebrew Synagogue at Portsea was reopened on Sunday. A new porch has been erected to guard against panic, which must have ensued in the event of a hurried exit from the ladies' galleries, the original porch having been so inconveniently constructed. The whole of the interior has been re-seated in pitch pine, and a handsome new reading-desk erected. The ark, which was opened in the synagogue 175 years ago, has been carefully preserved and restored. This is surmounted by the first two letters in the Decalogue in Hebrew, symbolical of the two tables of stone delivered to Moses on Mount Sinai. The ark now stands on a tier of polished marble circular steps in place of the original worn wooden ones; a handsome brass pulpit rises from same. The floors have all been laid in mosaic. The total cost has been £1,100. The contractor was Mr. J. Dugan, of Portsea, and the architect Mr. Harry A. Smith, of Gosport.



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## TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**BRISTOL.**—For works of street paving, for the city council:—

Districts 1 and 2:—Galbraith (accepted).  
District 3:—Yalland, T. K. (accepted).

**BEXHILL-ON-SEA.**—For completion of Marine Mansions Hotel. Mr. J. B. Wall, F.R.I.B.A., Walbrook, E.C., architect:—

Soper, R. ... ..	£3,138	4	8
Holloway, H. L. ... ..	2,714	0	0
Jenkins, P. ... ..	2,700	0	0
Eldridge and Cruttenden ... ..	2,682	0	0
King, J. ... ..	2,479	0	0
Webb, J. W. ... ..	2,369	16	0
Nicolls, J. G., Catford (accepted) ... ..	2,335	15	0

**CHARD.**—For the repair of all roads throughout the borough during the ensuing year, for the town council:—  
Hill, F. (accepted).

**CHELSEA.**—For the erection of new studios in Oakley-street, for Mr. W. Douglas. Mr. E. E. Hawkins, 19, York-buildings, Adelphi, W.C., architect. Quantities by Mr. C. G. Saunders, 5, Agar-street, Strand, W.C.:—

Bird, S. G. ... ..	£4,098	0	0
Green, T. L. ... ..	3,959	0	0
Smith, W. H. ... ..	3,953	0	0
Gregory, T., and Co. ... ..	3,867	0	0
Johnson, W. ... ..	3,630	0	0

**COVENTRY.**—For the construction of service reservoirs and works at Coundon in connection with the new water-works, for the city council:—  
Smith, G. F., and Sons, Milverton (accepted) ... £13,900

**DARVEL.**—For the erection of a house at Darvel, Ayrshire, for Mr. A. Jamieson. Mr. T. H. Smith, 17 and 18, Basinghall-street, E.C., architect:—  
Anderson ... .. £1,250 0 0

**DAWLISH.**—For laying a sewer from the Town Hall to Lawn-terrace, for the local board:—  
Matthews, W. T. (accepted).

**EALING.**—For additions to St. Mary's boys' school, Ealing, W. Mr. R. Willey, F.R.I.B.A., 66, Ludgate-hill, E.C., architect:—

Grover ... ..	£430	0	0
Down ... ..	424	9	0
Jobbins ... ..	410	0	0
Jones ... ..	405	0	0
Sills ... ..	399	15	0
Nye (accepted) ... ..	398	10	0

All of Ealing.

**GOSFORTH.**—For detached residence, Elmfield-road, for Mr. Lord. Mr. W. L. Newcombe, F.R.I.B.A., Newcastle-upon-Tyne, architect:—  
Reid, E. B., and Son (accepted).

**GOSFORTH.**—For detached residence, Elmfield-road, for Mr. Snowball. Mr. W. L. Newcombe, F.R.I.B.A., Newcastle-upon-Tyne, architect:—  
Haswell and Waugh, Gateshead (accepted).

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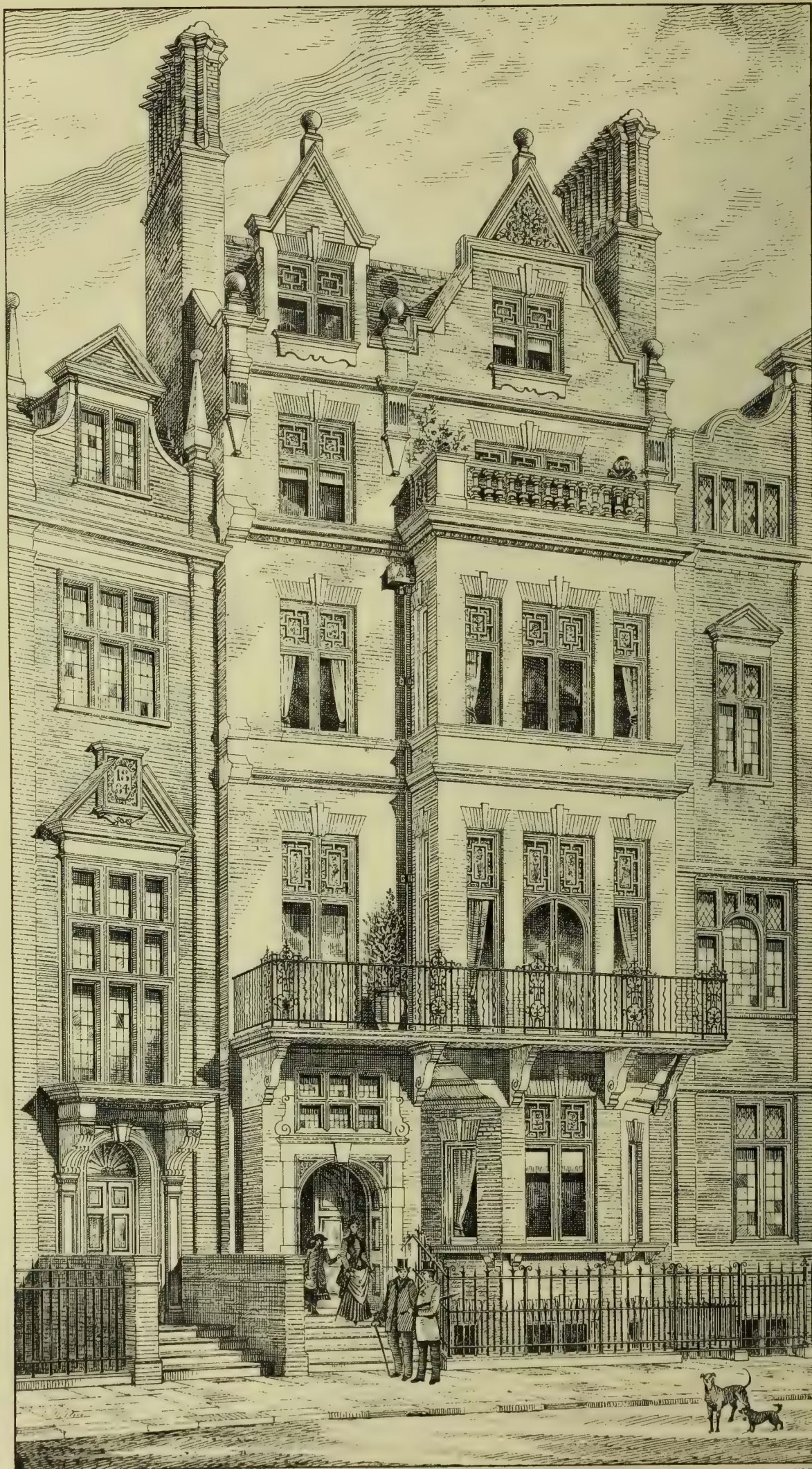


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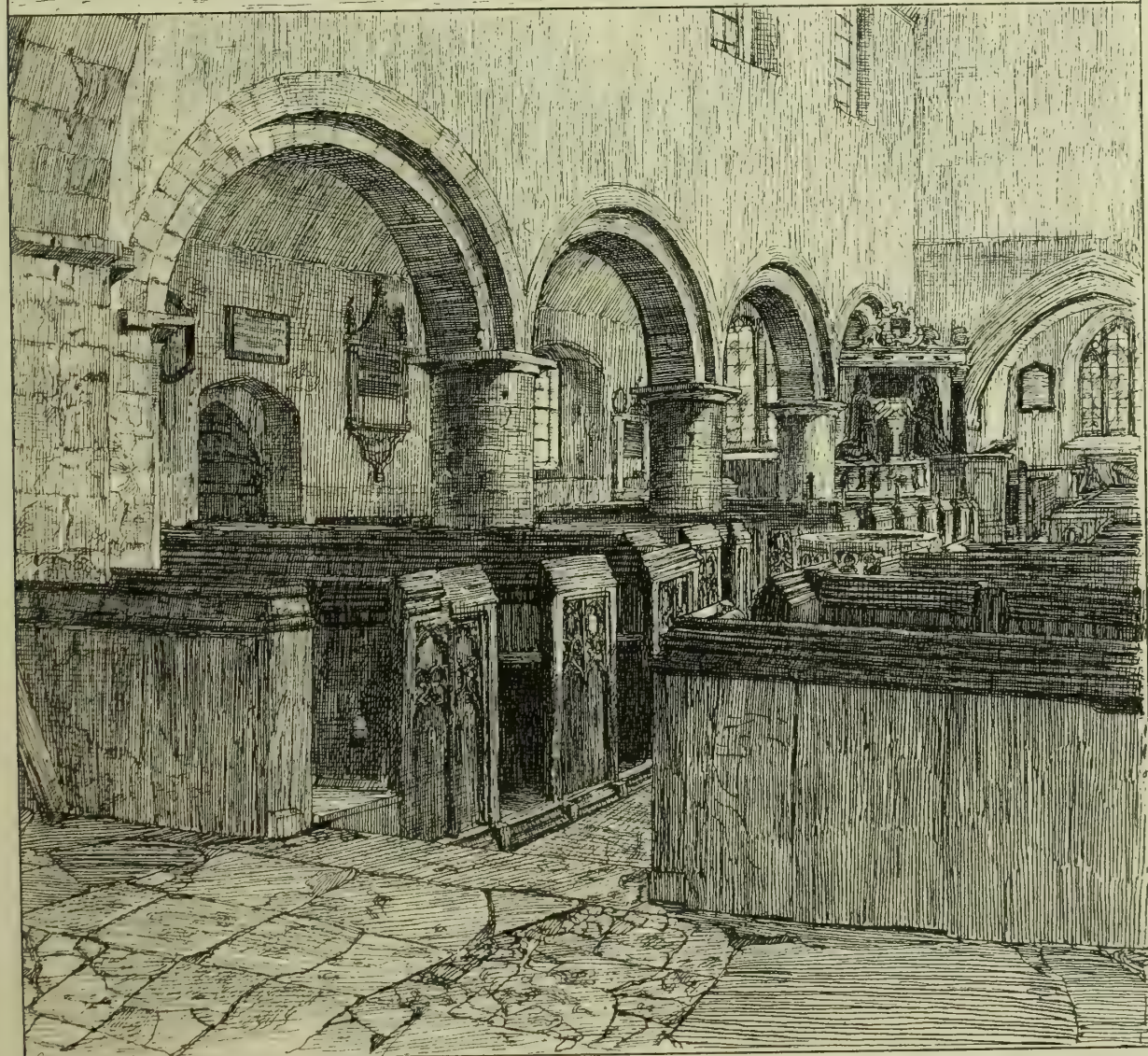
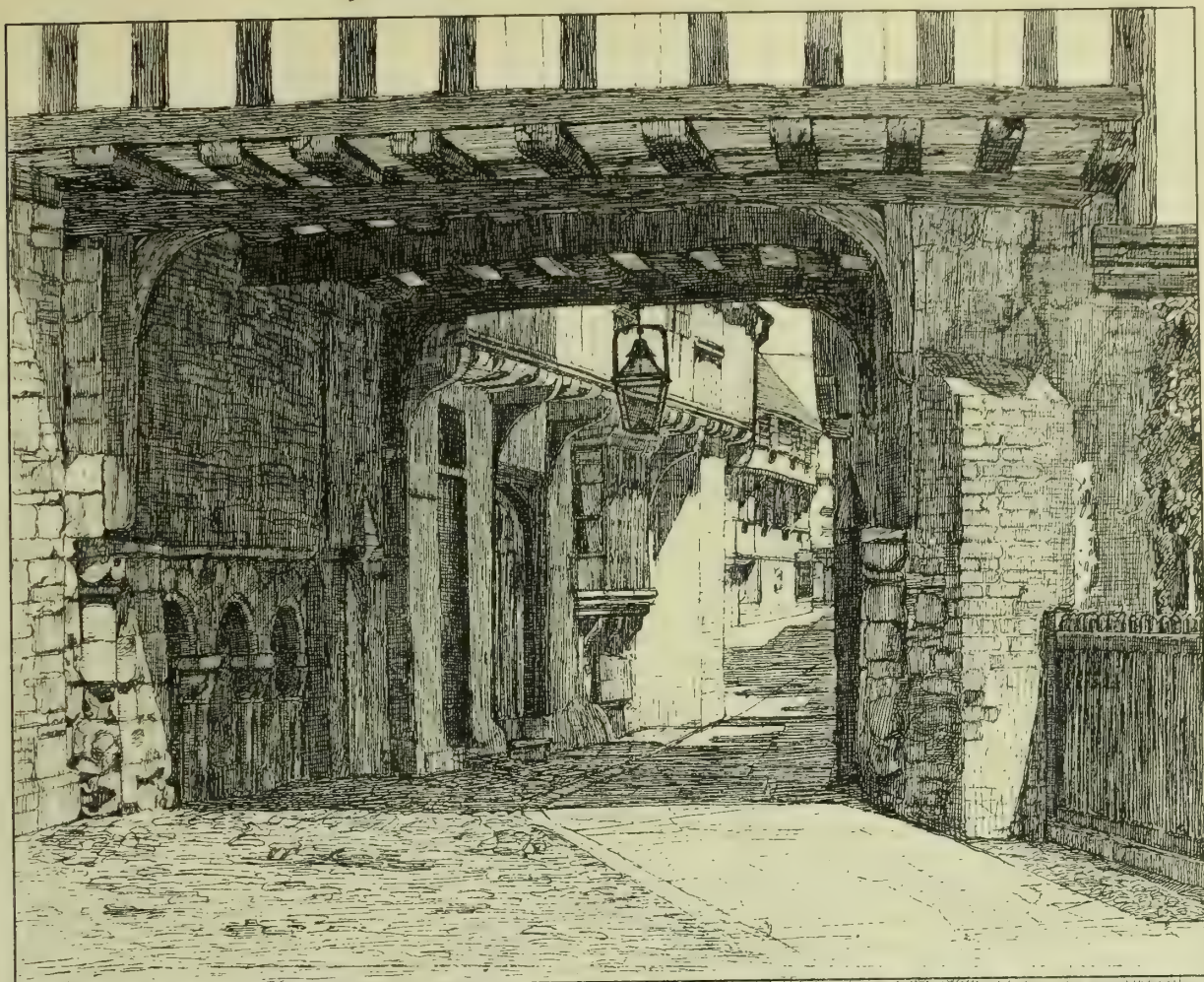


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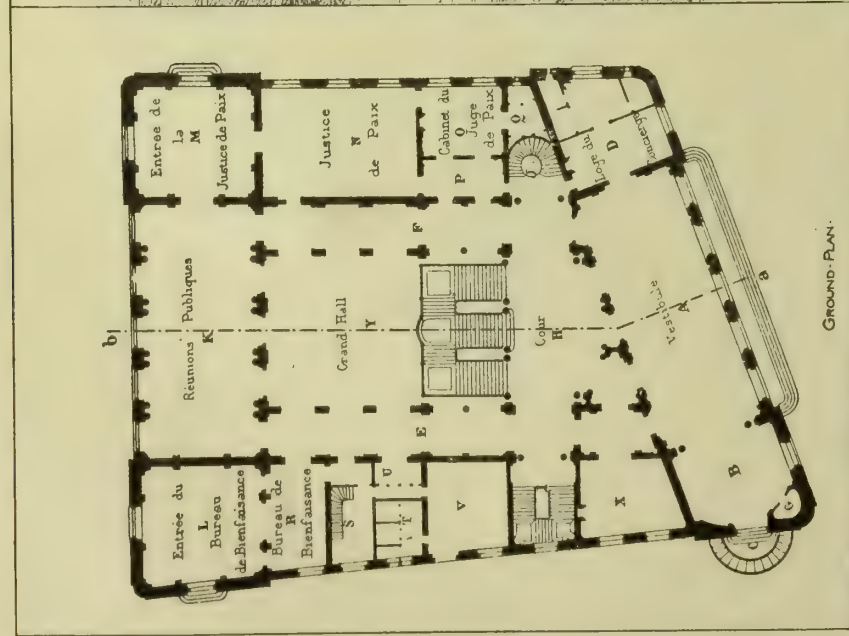




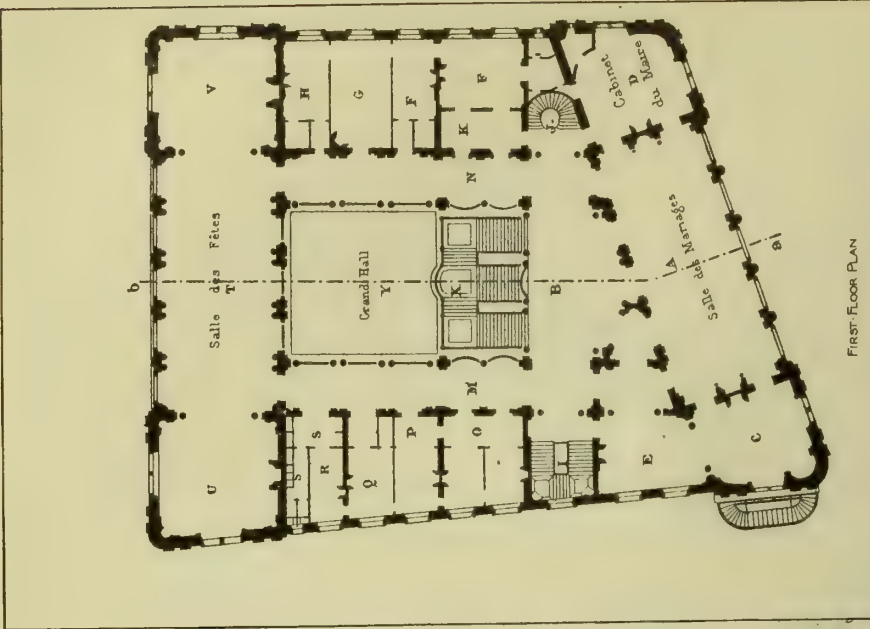




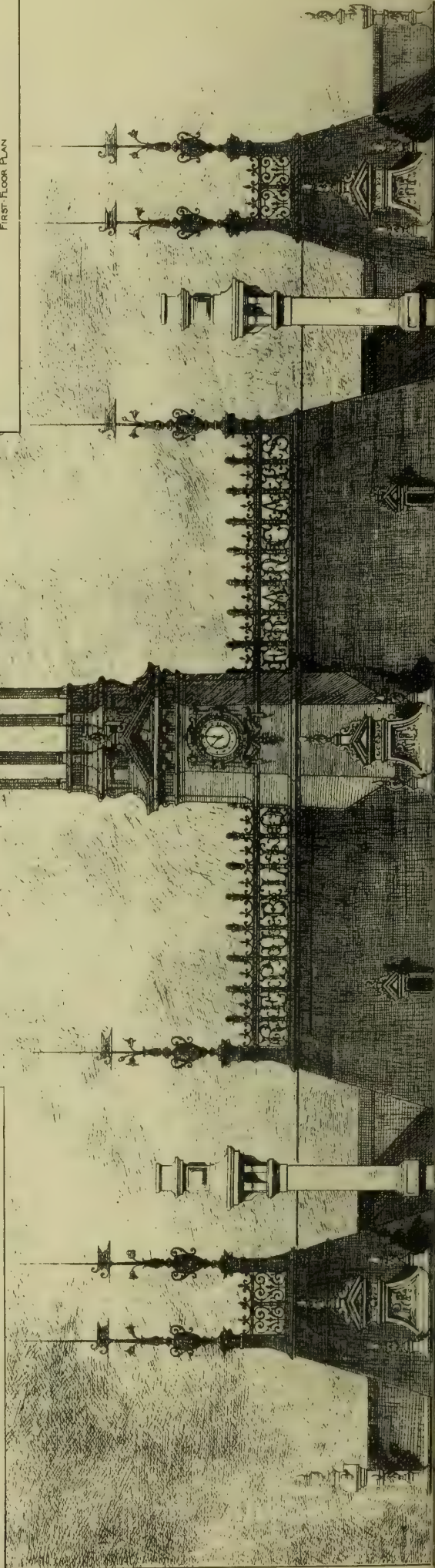
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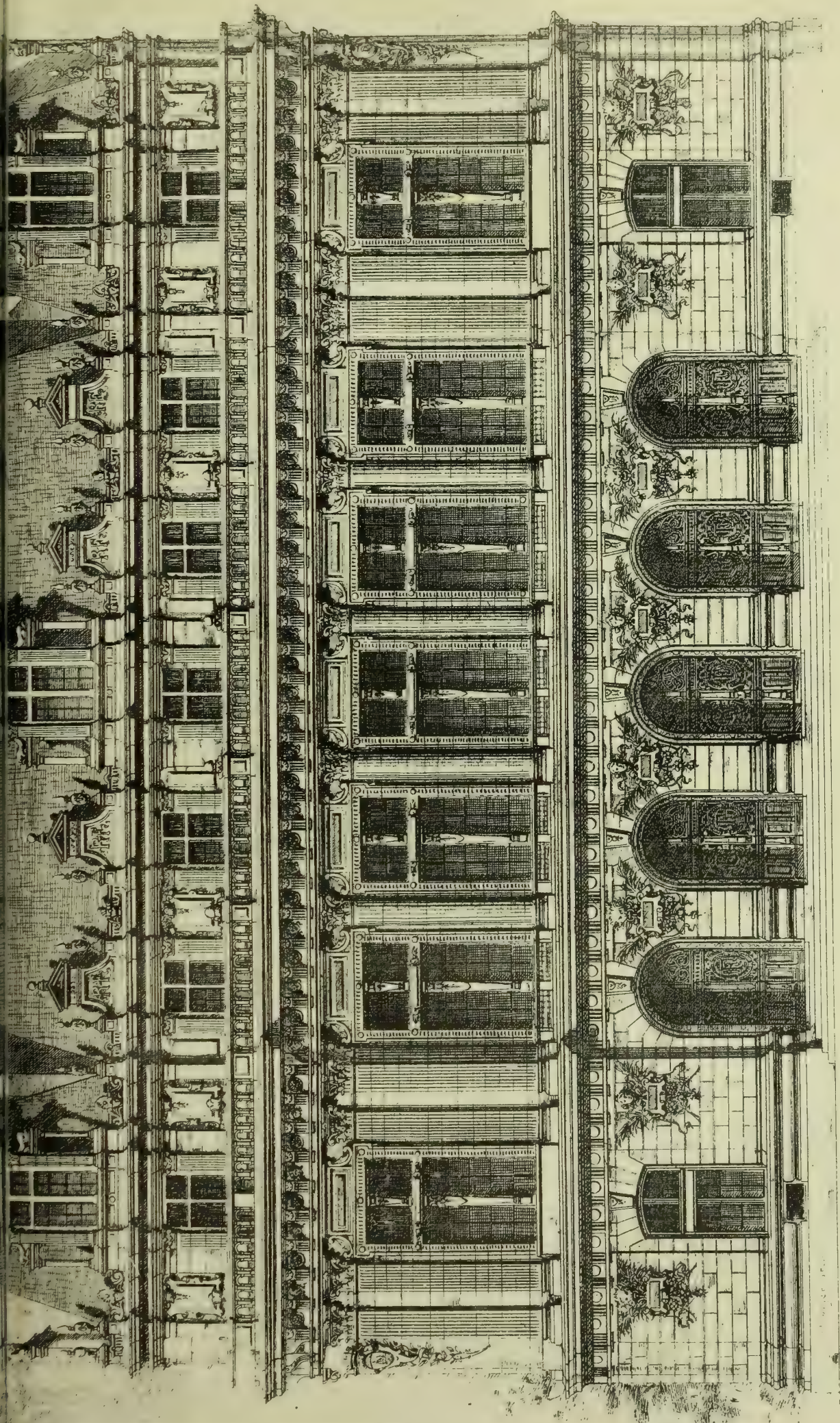
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# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1839.

FRIDAY, APRIL 4, 1890.

## NOT NOW?

MONDAY night's meeting at the Institute was, on the whole, encouraging and hopeful. Mr. Wreghitt Cannon's speech was a statesmanlike and sagacious one. Professor Roger Smith, with amiable timidity, is afraid of Registration, and it is evident from the voting, that while all the reasons for Registration were adduced by its advocates, all the people who are insensible to reason still outnumber the wise. Five years ago Registration was scouted as ridiculous. In the face of facts more potent than arguments, everybody sees now it is a good thing; but "not just yet," plead the people who supported Professor Roger Smith's amendment on Monday. These gentlemen are acting with the best of faith, and from the most honourable motives; but they are—in many cases unconsciously—simply the puppets of the bitter and interested partisans who, for perfectly comprehensible reasons, want to keep the Institute in its present condition of feebleness—a respectable corporation enough, but one at which outsiders snap their fingers and the Judges of the land shake their heads and smile whenever its regulations are appealed to in support of professional custom. We do hope that the proposed poll of members of the Institute throughout the country will reveal a better and juster appreciation of the situation. The Royal Institute of British Architects is just now so powerful for good, if it can be brought to see it—though at the same time, fortunately, so powerless for evil—that it is impossible to over-estimate the responsibility which attaches to each of its members. We earnestly advise each member to read carefully our summarised report—all, unfortunately, we are able to give, and only that by the help of friendly Fellows. The old, bad, ostrich-like policy of the Institute survives in all its stupidity as far as excluding reporters from such meetings as that of Monday is concerned. On the vote each member gives depends, not whether Registration is coming—that is as certain as death and quarter day—but whether its attainment shall be effected in a dignified and statesmanlike fashion, at the instance and under the auspices of the Institute itself; or whether it shall be forced on the profession by the public, who are vitally interested and daily becoming more and more alive to the importance of Registration—quite possibly in an incomplete and in some respects ill-advised fashion.

## PROVISIONAL AMOUNTS.

A DIFFERENCE of opinion as to the meaning and intention of providing certain sums of money for certain goods supplied to a building in specifications and quantities is found to exist in the minds of architects and builders, and, as a correspondent has drawn attention to the subject in a letter we published on March 21st, p. 433, we refer to the matter. As "A Builder's Manager" says, much unpleasantness often arises in the adjustment of these amounts in contracts. There are, no doubt, two distinct views of the term "provisional amounts," and it is with the object of throwing some light on the question that we discuss those theories. The terms "prime cost" and "nett" as applied to these amounts are certainly liable to be confused—the architect intends one thing, and the builder another. The architect generally

implies by the term "prime cost," the "out-of-pocket cost" to the builder, and not the amount which the employer would have to expend, supposing he bought them. The amount is put in to be dealt with or not as the employer desires, the object of inserting the money value being for this purpose, and to insure the expenditure of a certain sum upon them, so as to prevent inferior goods being introduced into the building. Generally the client wishes to select his own grates, chimney-pieces, wall-papers, or other special fittings, and he can therefore deal with the sum provided as he pleases. If the sum included the profit of the builder, the object of its introduction as a sum of money would not be attained. Suppose, for example, £100 were provided in the contract for chimney-pieces, the general idea is that the builder would actually pay that amount to the manufacturer after they have been selected by the architect or the employer. The builder's idea is different; he assumes that the sum provided means the prime cost the client would have to pay if he went to the warehouse and purchased the goods. When we come to consider the *pros* and *cons* of the matter, there is a good deal to be said on each side. "A Builder's Manager" writes:—"Taking the illustration advanced by Mr. Gough, that if 500 locks were specified the builder would be bound to supply them, and that, therefore, if 500 sovereigns are specified he should be made to supply them also, the fallacy of this argument is in supposing sovereigns to be mere goods to be supplied, whereas they imply £500 worth of goods, a totally different thing, for the amount is put in to guide the builder—in fact to price it for him. In the case of the locks the builder puts his own value, but in the case of the other goods, which the builder has no means of knowing what is required, the architect puts the value at £500 in a lump sum for a quantity of them, and this value should be the same as the builder's—i.e., include his profit."

Our correspondent's remark appears reasonable—namely, that the £500 provided means that *worth* of goods, and includes builder's profit; but the architect has not looked upon the item in that light, but as a sum set apart to be actually expended by the builder if so desired, or, in case the £500 is not expended, to be deducted from the contract amount. Again, the employer, or his adviser, may say that if the builder's profit is to be deducted he has no assurance of the amount actually expended in the goods, and that, therefore, he is no better off than if they had been provided by the contractor in the usual way. Nor is he, if the amount of profit is not known. We think we are interpreting the opinion of many in the profession when we say the sum provided is looked upon as something intact, not to be touched except for a given purpose, and upon which no profit or commission is to be levied. It is, in short, a sum outside the contract which the builder is only asked to include. If the goods are to be fixed, of course the builder charges for the labour. At least, this is one view of the question; we do not say it is a satisfactory one altogether, but only that a large number of architects hold a "provisional sum" is to be considered in the sense of so much money, and not as "worth" of goods.

This theory can be supported if we consider the sums so provided to be something separate from the contract, yet inserted with the object of obtaining the goods at cost price, or at below the price they would be sold to the employer himself. He therefore hopes to obtain some advantage by the transaction. But the builder cannot see why he should do so—why, in fact, the employer should be benefited by the trade discount and builder's profit. Thus it is, our correspondent remarks, "the trade discount or builder's profit does not concern the client any more

than the manufacturer's profit." He further says, with some reason, if the principle is conceded that an architect has a right to know the exact prime cost to the builder of any article supplied, then he can claim the right to know the prime cost of the whole job. But this does not exactly follow if what we have said is the principle acted upon. Our correspondent very concisely states the builder's view of the reason why provisional amounts are provided—namely, the architect puts a value to certain goods like chimney-pieces or stoves "as a guide to the builder in making up his estimate," and this we know is the general view of the matter held by contractors, and we cannot think it unreasonable. The builder can argue, fairly enough, as he contracts to supply everything at certain values, allowing his profit, so at least he ought to be allowed to claim his profit on a large amount set apart for goods ordered for the work. There are, therefore, these two distinct opinions on the question: the employer and his architect regard the provisional sum as intact, exclusive of builder's profit, the builder regards it only as a sum including his profit. Both are to a certain extent reasonable, but in the interests of both builders and employers some agreed procedure should be adopted, as the present difference of opinion has an injurious influence. We even know of the "provisional amounts" being inserted not for the employer's benefit. The architect is intrusted with the order and selection of goods, and the trade discount is often handed to him. We cannot defend such a practice, though it is a common one. To avoid disagreements in adjusting contract accounts, it is highly desirable that builders and architects should arrange between themselves how these amounts are to be taken—it does not matter in what way so long as it is understood. We cannot, at least, find fault with one mode of dealing with them that is suggested—viz., that where the amount is expended, the builder should be allowed 10 to 15 per cent. profit upon the nett invoiced amount; if the amount is not expended, the nett sum to be deducted from the contract. The builder certainly is supposed to undertake some risk and trouble about goods, however they may be ordered, and, as every case would have to be determined on its own merits, the percentage of profit would naturally vary.

## PIECE AND DAY WORK IN THE BUILDING TRADES.

THE general disposition on the part of workmen to resist piecework is a constant source of disagreement between them and the masters. Several strikes from this cause among engineers have taken place of late. The carpenters and joiners every now and then, as in the notice for advance in the district of the Potteries, protest against this mode of payment. In the shipbuilding, boiler-making, and other engineering trades, and in many other industries, piecework is the practice, and has given satisfaction to such an extent that the employers are induced to extend the system. They find, in fact, the results more satisfactory, and as they have to prepare estimates, the system of working by the piece offers advantages over the "time work," as it facilitates the making of estimates; it lessens the trouble of superintendence, and the system has the tendency of reducing the cost of labour. The last result is the abiding offence in the eyes of the workman. Let us examine briefly the real position, whether he is not a gainer by a mode of working which transfers any credit there is in the work to the artisan; whether, in short, there are not compensating advantages that overbalance the simply pecuniary and near-sighted view. The societies which have



protested against piecework have laid down certain rules for the guidance of their members. These are that they are justified in resisting the system when introduced by a firm where it has not been generally followed, or where it is sought to be extended to certain branches that have not hitherto worked under it. Where the system has been in operation the resistance to it is discountenanced. These rules are somewhat arbitrary. They bind the employers to a certain mode of doing business, and leave them without the option, unless they decline to accept the terms, of competing with other firms in which piecework has been followed. They further impose terms on the masters, by not allowing them to avail themselves of markets open to them. Building and engineering firms who work under the rules of associations claim the right to adopt either system, and consequently they are in a more advantageous position for competing than the employers who are bound to adhere to one system. Is this fair? An employer of labour, like the buyer of goods or commodities, is his own master, and ought to be left to make his own bargains, provided he does so without infringing on the freedom and rights of the employed. Inasmuch as the men have it in their own hands to refuse work upon any system they decline to accept, it appears to us there is little justification in the rules of societies which try to impose them on masters. Equally hard to reconcile is the dictum of the societies as regards the men. There are hundreds of workmen ready and willing to give their services by the piece. Why should they be compelled to comply with rules framed in the interests of those who prefer the time system? These are questions which naturally occur to the mind of disinterested individuals when they hear of strikes. It may be not generally known that piecework is universal in many branches of trade; in France and on the Continent it is the rule rather than the exception. Thus the bricklayers in France, or rather the masons who lay bricks, earn their living by piecework, and the carpenters and joiners prefer it to daywork, as it gives more satisfaction to employers and workmen. It may be asserted that the repugnance to piecework by some artificers is owing to the distaste they have for any effort; they prefer to have regular working hours, to have no responsibility of any kind, no brain work, and to draw their wages at regular intervals. Other men are more enterprising, less inclined to plod on like machines, and if they can see their way to accomplish a work single-handed, to obtain the credit due to skill and exertion, they prefer to work by the piece, as it allows them more freedom of choice. To them the most cheerful kind of labour is that in which head and hand are both employed. The satisfaction that comes from a personal interest in the work is the incentive. We cannot, in short, shut our eyes to the fact that those who resist piecework for every class of work are generally the drones, while those who seek to obtain a larger share of the work in their own hands are the men who make our future builders and contractors. Of course, these conclusions must not be taken too rigidly. Sometimes it is not easy to determine the time required for doing a certain thing; one man cannot do the whole work himself, in which case a subdivision of labour is necessary.

The chief reason alleged by the trade unions against the principle of piecework is that it has the tendency to reduce day wages. It is asserted that piecework is used as a means of fixing the rate of pay by regulating the wages of day-workers by the amount of work done in a certain time by those who work by the piece. The argument has been made a plausible pretext by carpenters and joiners, and other building artificers. On the piece system the rates are often low, and

in order to earn a good wage the worker on this principle is apt to hasten his work. Those who work by the day are therefore expected to perform the same amount of work in a proportionate time. Again, it is alleged that the piece-worker, by having to hurry his task, is disposed to scamp the work. There is no doubt something in the allegation. The piece system is not always fairly conducted, and we hear of complaints by workmen. One master makes a change when he finds a man earn above his usual wage; the work is pretended to be wanted, and other hands are taken on at daywork. Another, who adopts the piece system, does not hesitate to cut down the second job, if he finds his men make more than daywork price. The effort is to under-rate the daywork wages. Now these kinds of tactics could not be carried on if the employers and employed both agreed to a standard price. Instead of running their heads against piecework as a system, let them endeavour to make it a condition that a certain price will be agreed to, and if a few can, by over-exertion and skill, make a little more than their fellows, let them do so, but without reducing the wages to others beyond a certain limit. It is a ridiculous fallacy to contend for equal wages in the building trades. The attempt to reduce wages to a uniform standard is about as absurd as to suppose that all men should be reduced to an equality in other things. It would simply be to bring down the skilful workman to the level of the most inferior. The best workman can always obtain an advantage over his less competent brother, if not in wages, supposing they are equal, but in expertness and skill. He will obtain the best work and must ultimately get ahead, however trade-unionism may endeavour to suppress all individuality by equalising the rate of wages.

In the building trades there is less opportunity for uniformity than in some others. In joinery, for example, there is every conceivable class of skill required, from that necessary in turning out high-class doors and windows and staircases to the commonest labours in laying floors, planing, and framing. In house painting and decoration the same remark applies. So in masonry and in brickwork and plastering. Only in mechanical labour of a uniform kind, as in riveting, jobbing, and repairs to building, can the day work system be applied with any success. Building artisans of any ability cannot see the justice of first, second, and third rate hands receiving the same remuneration. Those who object belong to the class of "laggards."

The dislike to the system of payment by results is becoming, however, less marked. The workmen are beginning to see the advantage of working independently of each other wherever practicable—and in all trades where there is much division of labour it is so—of using their own abilities on their own account instead of performing at fixed wages services which only enrich their employer and impoverish themselves. The unionist views are entirely based on the idea already mentioned, that employers regulate the piecework rates upon the standard of the quickest and strongest workmen, and that therefore the less expert have, in order to earn sufficient wages, to exert themselves to a very undesirable extent. But these views are not borne out by facts. Where the system is fairly applied and the work registered and regulated, the results are equal and often superior to the time-pay system. Each employé should be furnished with a return specifying nature of work, extent of it, and the rate at which undertaken. These returns being duly entered by him, with the number of hours spent, the difference between the two systems can be easily arrived at. Interruptions to piece working ought to be entered with equal regularity. From these

registers the rates can be tabulated, and the gain or loss to the employer or employé determined, from which fair piece-work rates could be found. What is wanted is to find out the equivalents in piece and time work, to prepare a price list of every quality of work per foot, and when this is done, as it is by some large firms, all difficulties and much of the ill-feeling between employers and employed would be removed.

#### THE ROYAL SOCIETY OF BRITISH ARTISTS.

THE Exhibition in Suffolk-street is rather weak in important works, and we find fewer pictures by artists whose canvases have of late years increased the repute of this old society. The large room contains several landscapes. In a poetic vein, H. T. Schafer's small "Eventide" view of a village may be noticed, with the charming grey-toned study of John Gray (291), the "Heathside," by T. Roberts, under an evening glow, J. L. Pickering's melodious "Devon Stream," Yeend King's "Changing Pasture" (362), full of light and shade; and in the same spirit are H. C. Fox's "Maple-durham Mill" (384), the works of R. W. A. Rouse, whose *penchant* is in giving the wilder aspect of dark, cloudy skies and grey rivers flickering in cold, grey light. "The Close of Day" (375), "Evening after a Shower" (454), "The Moated Farm" (491), and "A Gleam of Sunshine" (521) are of this character, thoroughly English in their sombre tones, and reminding one rather of Constable in a low key, but much more weirdlike. Sometimes, indeed, Mr. Rouse is rather hard and murky, yet in all there is a vigour and strength of treatment. "At the Calm of Eventide," Stuart Lloyd (337), we have the other extreme of tender pathos and melody, a calm riverscape in a warm, suffused light, and in 346 Jas. E. Grace has a delightfully delicate view of "A Backwater." W. S. Jay sends, as usual, a large, dexterously-painted study of forest glade, "Innocent Poachers," rich in autumnal tints and checkered lights. Giant trunks spread their roots over the leaf-strewn foreground, and a few children are gathering wood in the path-way. The picture is realistic to a perhaps wearisome degree, a fault which the peculiar *technique* of the painter has intensified. "Innocent Poachers" is more of a scenic background, its figures give it meaning and a name. Subject pictures, in which figures are introduced, are fairly represented by the hands of L. C. Henley, Adam E. Proctor, F. Brangwyn, W. H. Pike, and J. R. Reid. The finished and scholarly subjects of Mr. Henley, "Harmony" and "Discord" (258, 267), are full of expression. The refined grace and modesty of the young lady with her hand in her lover's hand, leaning on a piano, is more successful than the companion; both are admirable renderings of 18th-century dress and decoration. Simple in incident and treatment is "Scandal Mongers" (271); charming in its composition and colour is F. Brangwyn's group of seafaring men on a pier-head, the mist and spray and wet cleverly handled. In W. H. Pike's "In the Corridor of St. Mark's" (301), a group of well-dressed ladies are passing an old bearded man and his suppliant little daughter; there is much to commend in the animation and character of the faces; while J. R. Reid, in the strong little canvas, "When the Boats Come In" (314), sustains the sense of fresh, vigorous colour and grouping which we always admire in his work. The blue sea is perhaps a little too blue, the shaded figures too dark; but Mr. Reid always paints under intense suns, and we may object there is not enough atmosphere. Mr. Brangwyn's sea-sides are certainly a little more English. G. E. Hicks's



arge subject, "Adoration" (292), a little boy with clasped hands, smelling a flower, is rather unnatural; the child's eyes and expression do not suggest the adoring frame of mind, but rather that of fear. The colour in F. Hamilton Jackson's classic figure-subject "The Distant Sail" (297), is extremely harsh, the bright orange drapery wanting in harmony. We certainly cannot see much in the subject of Chas. E. Marshall's "The Heir Presumptive," except in the elegantly attired lady in figured gown, holding an infant before his grandfather seated by the fireplace; the painting is careful. One of the most prominent pictures in the gallery of this class of *genre* is R. J. Gordon's "Proposal," an effective painting, a little French in its method, representing an elegantly dressed young lady, reclining on a drawing-room settee, being wooed by a gentleman who leans over the couch; the figures are graceful in drawing, the light canary green silk dress, set off by a fine gauze skirt, the polished floor and white walls as a background, are in harmonious keeping with the scene. W. Strutt's, "A Primrose League" (394), Favonius the Centurion and a Maid of Kent, recounts an early observance of the League; the picture is painted with almost pre-Raphaelite care, but lacks solidity. The full-length seated portrait of a lady, "Ethel," by S. Sidley (406), at the corner of room, kills everything near it by the scarlet colour of the dress. As a portrait study, Davidson Knowles's "Reverie," a three-quarter portrait of a plump-figured dame, is far more pleasing, at least in the colouring. Seascapes and coast views abound. Arnold Priestman's small picture, "On Morecambe Bay," is charmingly painted in the mingling of silvery cloud and sea (259); the atmosphere in Gustave de Breanski's "Gorleston Harbour" (265) is also noteworthy; pearly and bright rippling seas are the qualities we admire in G. S. Walter's work—perhaps a little artificial. Julius Olsson's "Evening Sunlight," a sea wave coming in, its crest reflecting the red gleams of the sun, is a clever study of ocean effect. Haynes King's fisher-girls are natural; one of his best is "The Fisherman's Beacon" (311), a small study of a fisher-girl holding a lantern in a door of a cottage, poetically conceived and executed. Stuart Lloyd paints a restful riverside (337). Nelson Dawson's large impressionistic picture, "A Summer's Day, Cornwall" (400)—a stretch of brown sand and blue sea—is a note of colour, full of light, but too large. We like Fred Culver's charming bits of atmosphere and water, "Littlehampton Harbour" (340) and "A Bend in the River" (397). "Drifting" is luminous; the boat, gliding on the calm water, with its freightage of girls, is cleverly painted—a piece of restful, forcible sea-painting, the light and boat reflection admirable. F. Brangwyn, "January" (352), a large winter scene, is less happy than other works in his more accustomed sphere; J. F. Darley's "Cliefden Woods" (313) is a charming piece of woodland—a poem in its way. Among other pictures we must not omit notice of Horace H. Cauty's (the secretary) "Toilers of Pleasure," a dancing girl in a circus before a number of spectators, and her dog, Toby-like, on the drum by her side—the bright dress of the girl, the accessories, and the character of the faces of the spectators are painted with considerable effect; nor should we pass over J. S. Noble's study of a tiger or leopard (324). We have left to the last the President's grand interior, "Monza Cathedral—the Duomo of the Iron Crown" (264). The subtle pencil of Mr. Wyke Bayliss does not lose its cunning; the pearly and jewel-like effect of the flickering light on vault and pillar, on spiral stair and fretted shrine entrances the eye; the gloomy spaces of shadow throw a spell of mystery over the

interior. There is over-richness and dottiness sometimes, but we also feel the repose and grandeur of the perspective.

In the other rooms we see that Claude Hayes is still a rapturous student of the poetical in landscape. "Milford-on-Sea" is a fine study of dark gleaming clouds. Richness of autumnal colour is the charm of H. C. Fox's "Edge of a Wood" (426). Again R. W. A. Rouse shows us two other landscapes (454), and W. H. Y. Titcomb's "A Cliff Pasture" is a charming little coast bit. H. Cauchois has a nice flower study (412). A large picture by Jas. Hayllar of a country wedding (429) in humble life is not without interest, though somewhat hackneyed; the characters of the bride and her smocked father, the bashful bridegroom and his "best man," and the onlookers in the small whitewashed church are well painted. Jas. E. Grace has a pleasant "Surrey Common" (430). Flora M. Reid's pretty little subject, "Dolly's Spring Cleaning" (430), is childlike in its simplicity and tenderness. A nice figure study is by E. Ethelston (462); and F. Cayley Robinson has painted very deftly and gracefully a fisher-girl seated on one of the mooring structures on the look-out. "Waiting for the Boats" (485) is a clever handling of rough sea at Boulogne pier-head. J. S. Noble's "Drove of Oxen" (500), coming along a rough road on a moor, is full of strong colour and clever drawing, worthy of this painter's talent. A pleasing view of craft on the Tay (501) is by A. S. Edwards. The snow-clad landscape of V. P. Yglesias (509) is full of poetic charm and pearly hues. The undulating country of Tunbridge Wells has afforded the required elements to the painter. Arnold Helcké, Annie Baker, and Leopold Rivers contribute clever studies. The Hon. Stephen Coleridge paints a pleasant reminiscence of "Venice from the Lagoon" (523); E. J. Cobbett is, as usual, clever in his rural studies, as in "Sheep in a Stubble Field" (528); Jas. Peel paints "On Holmwood Common" (532), a delightful Surrey landscape, and a "Surrey Lane" (572). H. C. Fox is equally happy in his autumnal effect, "Just Before the Sun Goes Down" (535), a strong piece of colour. "Poppy," by Constance E. Plimpton, is a clever sketch of a girl's head, full of expression and character; "Maidenhood" (550), by G. Sheridan Knowles, a three-quarter figure of a young lady on a grey ground, is dignified and pleasing. A. W. Strutt's head of an ox, "Young Scotland" (568), is clever; but its boldness and size suggest the signboard. W. A. Howgate paints with feeling his grey-lighted landscape (566), and for sympathetic painting we may notice Albert Kinsley's "December Morning" (564).

It would be neglecting an important part of the exhibition not to notice the water-colour drawings. The north-west room, as customary, is full of good work. J. Fraser is a master of coast life and small craft. His "Trawling in the North Sea" (3) is exceptionally good, and we like it quite as well as we do his oil pictures. The atmosphere in J. Jackson Curnock's "On the Lledr," is well rendered. Pure colour, freshness, and fidelity to nature characterise A. W. Weedon's work. His "Romney Marsh" (7), "Folding Sheep" (100), and "Winchelsea" are healthy and feeling studies. J. M. Bromley, in "Summer Shallows," is naturalistic—the pebbly bed of river and green landscape under strong sunlight; the foliage is perhaps too vivid for the conventional eye. Leopold Rivers's "Showery Weather on Sussex Downs" (24) is a successful effort; clouds and gleams of sunlight checker the landscape. We must speak approvingly of the studies of "Little Ruth" (10), by A. M. Rossi; of W. J. Morgan's "Old Man with Pipe" (20); of W. Harding Smith's "View of St. Bartholomew's the Great" (22); of W. Follen Bishop's "Part-

ing Day" (33). Albert Stevens has two clever sketches in which atmosphere and effect are broadly handled (76 and 145), one a view in Suffolk. Ernest George's sketch of Hamburg (48), and Wyke Bayliss's "Interior of St. Wulfon, Abbeville" (46), are both masterly drawings, and we need not say that Chas. Cattermole's historical study, "Treachery," is equal to his dramatic skill as a delineator of Mediæval incidents. The afterglow effect in Stuart Lloyd's "Dartmouth Castle" (61) is full of breadth and sweet repose. W. Harding Smith's drawing of cloisters of St. Antonio, Padua (79), as an architectural piece of grouping and colour; T. B. Hardy's "Thames Tunnel Pier" (84); the tenderness and delicate handling in A. E. Brockbank's "Hillside" (92), the strong coast view of J. Macmaster (99), and the subtle technique and colour in A. Kinsley's autumnal landscape, "When Summer Flowers are Flown," are worthy of praise. Some picturesque grouping of colour is to be found in the view of "Dort Harbour," by Arch. Webb (142), and in the sketches and studies of J. Hayllar (153), Nelson Dawson, A. Ludovici (168), J. M. Bromley, T. B. Hardy, C. Duassant, W. Follen Bishop, W. H. Weatherhead, we recognise well-known hands. The sketch of Bristol Harbour (222) in simple washes of transparent colour is delightfully clean work; the "Peat Bog," by J. M. Bromley (215), and the masterly drawing, "Town and Temple," a view up Ludgate Hill, by C. J. Lauder (218), F. Coleman's figure, "Repairing Armour" (209), clever and spirited, and a drawing of Bolton Abbey, by W. H. J. Boat, are other works worth notice. G. Tinworth sends a terracotta panel representing Alexander the Great drinking the medicine prepared for him by Philip, in which there are, though in a less degree than in some of his works, simplicity of composition and character. The work is in low relief.

#### ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair. Mr. F. C. Bristowe and F. W. Rogers were elected members.

#### A TRAVELLING STUDENT'S TOUR IN THE LOIRE VALLEY.

MR. A. E. BARTLETT, of Wimbledon, who won the Travelling Studentship of the Architectural Association for 1889, read his "Notes" made during that tour, illustrated by a number of delicately-executed pencil perspective sketches, together with many details, and a few plans. The lecturer selected as the district in which to expend the time and money placed at his disposal the Valley of the Loire, his aim being to examine and sketch the great chateaux and other buildings of the period of François Premier. He began work at Chartres on the 2nd July last, making perspectives of portions of the cathedral, and taking a few details of that great edifice. The most striking point in a first view of the cathedral to his mind was the effect of colour given by the bright green copper roof which tops the rich brown-grey walls. This roof is skilfully constructed of iron, and is a comparatively new addition, to replace the lead-covered wooden one destroyed by fire in 1836. The interior of the present roof is worth a visit, if only to see how little the vaulting has to do with the construction, the tie-roofs coming several feet lower than the cement finishing of the vaulting. It seemed a wasteful method of construction, though undoubtedly effective. Chartres has suffered much from fire; five times the cathedral has been burnt to the ground, and on each occasion the greater part of the town was involved in the catastrophe. The graceful tower, which stands at the north-west angle, was designed by Jean Jesuier in 1606, to replace another which had been burnt down, and though of so late a date, it shows little Renaissance feeling, except in some of the panels near the top. The cathedral as it now stands was begun in 1194, and consecrated in 1260. Mr. Bartlett referred to the rose windows, the stained



glass, the excellent sculptures, the marvellous Renaissance screen running round the choir, and compared by Fergusson to point-lace in stone, to the intricate labyrinth marked out in black marble on the floor of the nave, and the Black Virgin, the most precious treasure in the building. Except one small house in the Rue de Grand Cerf, there is not much good Domestic work in Chartres. There is, however, a curious little clock-tower on the north side of the cathedral, the cornice of which is almost exactly the same as the cornice on the main entrance front of the Chateau of Chenonceaux. Another excellent detail worth mentioning is the little cast-iron fountain in the Market Place. At Le Mans, the next town visited, he noted the extreme care with which the Mediæval builders chose their sites, taking the best for the church and other noble buildings, and grouping the rest of the town round these. The great choir towers high above the surrounding town, with a broad flight of steps leading up to the level of the floor of the church. If the builders of the choir had pulled down and rebuilt the nave in accord with it, the cathedral at Le Mans would be one of the largest in France. As it stands the nave of the cathedral is an interesting archaeological study, the capitals of the columns in this portion showing their Classic origin in a very marked manner. Mr. Bartlett's next stopping-place was Tours, in the very centre of all the great works of the François Premier age, and whence he visited Azay-le-Rideau, Loches and Beaulieu, Chenonceaux, Amboise, and Blois, and got his first impressions of the French Renaissance. The early builders of the French Renaissance used their own brains in devising their houses, and employed the skilful hands of Italian workmen to complete them, even as their predecessors, the Romans, used the cunning handiwork of the Grecian craftsmen to dress their own designs. These Early Renaissance builders thus produced a series of works which seemed to belong to a distinct class of their own, for in spite of their Gothic feeling and Classic detail, there is no appearance of the two styles clashing, and the François I. style is as distinct from the Flamboyant which preceded it, and the heavy Classicity of the Henri Quatre which came after it, as two adjacent styles can well be. As the requirements and occupations of the people who lived in those chateaux cannot have been very different from those of the ordinary country gentleman of our own day, we may learn a good deal in studying the planning and general arrangement. Perhaps they were none the worse for being Gothic in feeling. Their roofs were high pitched to throw off the snow and rain—so high sometimes as to be almost an affectation. Nearly everyone has each its little chapel or oratory, often apparently too small for the needs of the household. Their reception-rooms were stately and well-proportioned, often decorated with carved panels, into which the craftsmen must have put months of labour, and the windows arranged to give some fair view. The main staircase was treated as an important feature in the house. Thus at Azay-le-Rideau the beautiful little staircase is more lavishly decorated than any other part of the house, and the well-known external staircase allows the chateau to be divided up into a series of flats, while in the great double staircase at Chambord there is an ingenious device by which two persons might pass one another on their way from floor to floor without either being aware of the other's existence. The treatment of the balconies of these chateaux and the way in which they are screened from sun and rain is worthy attention. Every detail, in fact, points to an age almost as luxurious as our own. One detail, the lead finial, reached at this period its highest excellence. The Renaissance detail which made the strongest impression on his mind during the tour was the monument of the two children of Charles VIII. and Anne of Brittany in the chapel by the south transept of Tours Cathedral. The two children, watched over by four angels, all carved in white marble, lie on a black marble slab, underneath which is a white marble sarcophagus decorated with the arms of France and somewhat weak cherubs, and the angles of the tomb are marked by dolphins and eagles' wings. Along the upper part of the sarcophagus are carved scenes from Biblical history, most of them being conventionalised illustrations of the exploits of Samson. Another monument of great beauty is that of Agnes Sorrel, the favourite of Charles VII., which

stands in the tiny chapel of the castle at Loches. In Tours are some interesting domestic buildings, including a charming 15th-century house in the Rue Briçonnet, known as the house of Tristan l'Hermit, the famous prime minister of Louis XI. The angle staircase in the song-school, on the north side of the cathedral, is an excellent piece of work. There are many churches in Tours, some of which are desecrated, which are well worth a visit, and also a large white marble fountain in the Market-place by the brothers Juste, who designed the monument to the children of Charles VIII., already described. The Chateau of Azay-le-Rideau, next visited, contains a rather good collection of pictures. The chateau is picturesquely situated on a tributary of the Loire, a moat running round the house. Here, as in most of the buildings erected at the same time, when an angle turret is built out from the wall, the angle underneath is thickened out into an angle buttress for the moulding to work out into, giving the appearance of strength where it is most needed. The church here has a curious doorway covered with a three-centred arch. The Castle of Loches, next visited, is more famous for its terrible dungeons than the modern group of buildings standing a little way off, which form the chateau proper. There is a great deal to be seen near Loches, including the far-famed church of St. Ours, a Late 12th-century building, having four cone-shaped roofs; a 16th-century bell-tower in the lower part of the town, that of St. Antoine, now undergoing restoration; and a picturesque little François I. Hotel de Ville. Most of the author's time was spent in the little village of Beaulieu close by, where there was much to be seen and learned, the dilapidated Romanesque church of St. Laurent being well worthy of study as an impressively-planned building of three grand aisles, and without a clerestory. Mr. Bartlett's next stopping-place was Chenonceaux, where the famous little chateau is built on a bridge spanning the river. It was bought last year by the Credit de Paris, and looked at the time of his visit very desolate—stripped of its old armour and furniture, except that in the long gallery built across the river. At Amboise, the lecturer continued, I found one of the most charming of little Gothic chapels, standing in the castle garden, built on a solid rock towering high above the river. It is dedicated to St. Hubert, of Liège, and over the two little western doorways under an arch is a large representation of his miraculous meeting while hunting in Holy Week with a fine white stag, bearing a crucifix between its antlers. The chapel is a cruciform structure, measuring 40ft. by 30ft. inside. The tiny nave is practically the same size as the choir; but the eastern angles are arched over, so as to form a half-octagonal apse just below the window-sills. This arrangement works perhaps just a trifle awkwardly on the outside, but as the apse stands away from the castle garden, high up above the road leading up to the castle, this defect is not much noticed. There are no western windows in the nave or transepts, so that all the light comes from the front and sides, none from the back. One small point may be noted about the doors of the chapel—the upper panels are covered with tracery, but the panels themselves are hinged into the stiles of the door, so that the panels may be opened. The doors shut, and a very pretty peep-show effect is gained from outside by looking through the wooden tracery. The details of the chapel are very florid, and somewhat over-done. It was restored by Louis Philippe early in this century, and I was inclined to suspect that in several cases plaster had taken the place of the original stone. The little flèche at the top is decorated with stags' horns in memory of its patron saint. The chateau itself is an interesting building of red brick and stone dressings, built about the end of the 15th century, and containing a good deal of useful detail. Two great towers spring from the base of the rock on which the castle stands; they are 42ft. in diameter, and 92ft. in height, each containing, instead of a staircase, a great inclined plane, broad enough, I should think, to allow a coach and four to drive up. The present owner of the chateau is the Comte de Paris, who, though an exile from France, is patriotic enough to restore it and leave it, and the gardens in which it stands, for the benefit of the French people. The Romanesque church of St. Denis is well worth a visit, containing some good 12th-century detail and a handsome north door. There is very little good old domestic work about Amboise. The

best-known features about the Chateau of Blois is the great open staircase standing in the courtyard of the castle. There is also a very excellent 15th-century staircase of red brick and stone dressings, of which there is a good illustration in Norman Shaw's sketches of Mediæval architecture. The greater part of the Chateau has been restored by the Government, and though it has been undoubtedly well done, it struck me that it had been somewhat overpainted, as inside at least it was impossible to tell what was old and what new, and I often found myself wondering whether some paint-laden detail was stone or wood. The work here is of various dates, from the 13th-century *Salle des États* down to the western side of the quadrangle, which was erected by one of the Mansards, who, it is said, hoped to be able at some future time to model the three remaining sides of the quadrangle to suit the one he had already put up. Happily, this idea was never accomplished. The *Salle des États* is a big hall 97ft. long by 59 broad, with a row of cylindrical columns running down the middle supporting pointed 13th-century arches, with a broad, flat soffit. It has been so much restored that it savours now rather much of modern 13th-century Gothic. At first sight it seems a somewhat undesirable arrangement in a *Salle des États* to have a row of columns running right down the middle of the room; but of course it depends entirely on the arrangement of the seats. There are some excellent François Premier fireplaces to be noted here, which, however, like everything else, suffer from being overpainted. The designers of the François Premier part of Blois seem to have been careful to get in Francis I.'s salamander crest wherever they could. There are several good churches in Blois. The principal one is St. Nicholas, a large, cruciform, 12th-century church, with the crossing covered by a Gothic dome, which is covered outside with a wooden flèche. Then there is the cathedral and the Renaissance church of St. Vincent de Paul, close to the chateau. There are a few good domestic details about the place, mostly in unexpected corners; but most of the streets are comparatively modern and uninteresting. The most striking, the largest, and certainly the one which left the most vivid impression on my mind, was the Chateau de Chambord. And yet here, where there is a great house empty and stripped of its furniture, skilfully planned, boldly executed, and carefully finished—a lesson to architectural students of all ages and countries—by the order of the owner's agent, no one, unless he be a student of the Ecole des Beaux Arts, is allowed to make any drawings, inside the house or on the terraces at the top, or in the open galleries. I made every effort to obtain leave, both by letter and by applying personally, but practically without success, and I was by no means singular in my experience here. Since the destruction of the Chateau of Madrid, the Chateau of Chambord is, *par excellence*, the representative chateau of its period in France, possessing most of the excellences and a good many of the faults of its time. From its great size (it has a frontage of over 500ft.), it can hardly fail to be impressive, and, in spite of a few vagaries and extravagances, of which I think the double staircase I mentioned before is the most remarkable, it tells its story so well that it is impossible for it to be uninteresting. No one seeing it for the first time could possibly take it for anything but what it was built for, the country seat of some gay and wealthy owner. The central lantern, the conical roofs, the tall chimneys, with the little squares of black slates hung on them to fill in some of the panels of the stone-work, and which give them the appearance of being inlaid with marbles, and the fantastic dormers, all produce a most effective and interesting skyline, while the varied treatment of the building itself, its division into open arcades and groups of windows, relieved by a piece of comparatively plain wall-space, teaches some fresh lesson at every turn. Many of the caps of the pilasters are beautifully carved, and are well worthy of notice; they do not, however, do any work, and are merely used as an opportunity for allowing the carver to display his skill in his craft. Excellent leadwork is in this building chiefly conspicuous by its absence; but I am inclined to think that that is not the fault of its builder, as I feel sure that men who designed the gay and fanciful details of the lower part would never have put up with such commonplace cupolas as at present crown the tall conical towers. The Cathedral of Orleans, next seen,



is a Gothic erection of the 17th century, and on the whole is singularly uninteresting. Leaving Orleans, I travelled on to a place little known to English architects, though a good deal visited by Americans, the town of Chateaudun. It contains a most interesting chateau of Late Gothic or Early Renaissance, which is absolutely untouched by the hand of the restorer, and over which one is allowed to roam at will, unaccompanied by any chattering guide or romancing cicerone, and in which the sketcher can work undisturbed by visitors from morning till night. The chief feature about this chateau is a glorious staircase, which is illustrated in Viollet le Duc's "Dictionnaire," and of which I made a drawing. Then there is a good Gothic chapel in a very fair state of preservation, another staircase of much the same plan, but on a smaller scale than the grand one. On the first floor there is a big hall (with a fine fireplace at each end), where one has to walk gingerly for fear of rotten joists. There are also some good fireplaces in two rooms on the ground floor, which are used as general rubbish shoots. The staircase is oblong in plan, with a landing on each floor open to the air. It was, I think, on the whole, the most satisfactory staircase I saw on my tour. In the angles were little stone traceried screens, supported on corbels, in which to set a light. The chateau itself has a splendid position, standing on a lofty rock on the outskirts of the town, overlooking the river. There are two or three good bits of domestic architecture in Chateaudun, one of the best of which is the Maison des Petits Bonhommes, a house with a stone ground-floor and a half-timbered first floor, supported on 16 wood brackets, each of which is carved (so it is said) into the likeness of some local celebrity of the 16th century. I spent my last fortnight at Rouen, chiefly in measuring up the sacristy of St. Ouen. The old sacristan there gave me a very animated and interesting description of a visit of John Ruskin's to the church; his most salient criticism, done into English, seems to have been that the church was too light for a religious building. St. Ouen is so essentially French, that it was some time before I got to appreciate it thoroughly. The great height of the nave in proportion to its breadth, gives rather a bulging effect to the columns; but if all the niches on the piers were properly filled with statues, this effect would be a good deal lessened. The glazed triforium, with its sheet of unglazed tracery inside, has a very pleasant effect. I noticed in this church, and in most of the other French ones I visited, how very little the hood mould is used compared with English work. I do not remember seeing a single window in St. Ouen with one, and they were only used over the doors as vehicles for crockets and statue bases. The towers at the west end, originally planned to meet the nave diagonally, are much praised by Fergusson, who says that this arrangement solved the difficulty of giving breadth to the western façade without placing the towers beyond the aisles, as is done in the cathedral at Rouen. Externally, at least, every trace of this diagonal arrangement has now disappeared. Probably the two most famous churches which I visited on my tour were the Cathedral of Chartres and the Church of St. Ouen at Rouen, but, though both raised by the same nation, and for people of the same creed, how different are the two buildings. Chartres gives us an idea of grandeur, of simplicity of detail, of massiveness, and everlasting strength. In the great nave, which is low for a French church, even on the brightest days the light, which comes through the stained-glass windows, is subdued, and the church is in a perpetual twilight. St. Ouen, on the other hand, is lightness written in stone. Inside, the church is as light as a conservatory, and every line seems soaring upwards. The nave is so narrow in proportion to its height that, standing in the middle of it, one gets little more than a suggestion of the clerestory windows. Outside St. Ouen the multitude of flying buttresses, the conical chapel roofs coming up in front of the clerestory windows, the tall, narrow-mullioned windows, and the crocket-crowned pinnacles, all tend to heighten its light-aspiring character. At Chartres the buttresses are heavy, the windows are filled with broad plate tracery; the aisle roofs are not noticeable, and except on Jean Texier's tower, there is hardly a crocket to be seen. It is more than a difference in the style of building: it is a difference in the style of thinking. Chartres is

grand, self-restrained, and almost gloomy; St. Ouen is fanciful, light, and in parts almost frivolous. Such, at least, was the estimate I formed of these two great buildings. Besides St. Ouen there is the Cathedral of Rouen, which alone is worth some weeks of study. The first point to be noticed is the great beauty of the towers of the north and south transepts, and the north tower of the western façade. The central tower has begun but never finished, and its place has been filled in comparatively recent years by a cast-iron open-work spire, which, though not altogether an unpleasing design in itself, seems a little out of place there, springing as it does right off the massive stonework. Internally the bays of the nave are, perhaps, a trifle too small; but the choir is very fine. This was a favourite building of Street's, and I could not help fancying that in the transept towers I saw the suggestion of some of his details. In the north transept is a fine staircase leading up to the library, of which I made a drawing. There are also some good tombs in the choir, first among which comes the tomb of the Cardinals of Amboise, which was erected in 1525, and is crowded with the rich and fanciful Classical detail of that period. One of the two brothers to whom this tomb was erected carved the greater part of the west end in the feeble and frivolous Flamboyant Gothic of his period. In the middle of his work a sharp contrast is produced by some of the buttresses having been left in the block, and never finished. The third church of Rouen is St. Maclou. The central spire, which has been very well restored, is much the same in detail as the spire of the church at Caudebec, of which a photograph was published in a journal some little time back. The detail here is very gay and fanciful; but being a small church, it does not strike one as being overdone. The western doors themselves are splendid pieces of workmanship, attributed to Jean Goujon, the great carver of the François Premier period, and the brasswork on them is well worth making a note of. The choir has been spoiled by Late Classical upholstery. There is some good 15th-century painted glass in the church, and a most charming little newel staircase leading up to the organ-loft, which I made a sketch of alongside of the staircase in the cathedral. The church of St. Patrice has a large number of windows filled with 16th-century stained glass, which is very good for that date; but the most remarkable point about this church was the plan, which struck me as simple and useful. The aisles run the whole length of the church; but by the choir there are double aisles on each side, which arrangement gives a very good effect, and, I should think, gave a larger number of people an opportunity of seeing and hearing than would be possible with an ordinary plan for a church of that size. Besides those already mentioned, there are a good many other churches in Rouen, several of which are well worth a visit. I must just mention the tall, graceful tower of St. Laurent, whose church, like many others in Rouen, is now desecrated, and this particular one is used as a lodging-house. Chief among the civil buildings comes the Palais de Justice, an interesting example of Flamboyant Gothic. It is somewhat overloaded with the exuberant detail of that period; but there are several details, notably the big bay window, rising boldly out of the ground, and crowned with an octagonal roof, which are well worth remembering. Then there is the great 16th-century Grosse Horloge, spanning the narrow street, a most charming piece of Early Renaissance work, which everyone who has been to Rouen must remember, and which nearly everyone seems to have sketched. There is a rather nice Henri Quatre house just above the Grosse Horloge in the same street; but the chief bit of domestic work in the place is the Hotel du Bourgtheroude, which is an Early Renaissance house, built round a courtyard. It is not a particularly large house, and after the splendid chateaux of Loire Valley it struck me as a trifle tame; but there were one or two hints to be got from it. In a garden in the Rue Jean d'Arc stands the façade of a house, skilfully constructed entirely of oak, which formerly stood in the Rue de la Grosse Horloge; but on the demolition of the house which it fronted it was moved to its present position. There are still a good many pieces of good old domestic work in Rouen which one runs against at odd corners, though not so many as formerly, and I suppose what are left are gradually dis-

appearing. In wrought-iron work there is to be seen the great screen surrounding the choir at St. Ouen, as rich and elaborate as the great screen from Hampton Court in South Kensington Museum; then in the old museum is a good collection of ironwork of various sorts, especially excellent in the matter of keys and locks. The modern church of Notre Dame (De Bon Secours) stands on a hill a mile or two from the town. It is cold and uninteresting enough outside, but the inside has been most skilfully decorated, and the general effect is extremely good. The vaulting and the whole of the wall-space inside, with the exception of a small strip running round the church, which is used for setting forth the names of the benefactors of the church, each on a separate marble slab, is richly painted in four colours—green, red, blue, and gold. Every window is filled with very tolerably good stained glass, and it is to this, and the fact that there is practically no part of the interior stonework of the church left unpainted, that although the general effect is extremely rich, it is neither gaudy nor spotty. The music at the church is unusually good, and I could not help wondering whether the paint which covered up all the stone had anything to do with the entire absence of echo and the distinctness with which every sound could be heard. The other little modern matter of detail let me mention. I noticed in a good many new buildings, the architects' and builders' names on an inoffensive little tablet on either side of the door. This is surely no more advertising than a painter signing his picture, and if the building were a good one, it would probably save a good many discussions among the architectural students of the future as to the probable authorship of it.

Mr. F. R. FARROW, in proposing a vote of thanks to Mr. Bartlett, congratulated the lecturer on the catholicity of taste displayed in his choice of subjects, as shown by the beautiful sketches on the walls and on the many fresh details of François Premier buildings he had drawn. He thought the extremely high pitch of the roofs of chateaux in the Early Renaissance periods was due to the fact that the proprietors wished to make as ostentatious a show as possible without adding the number of rooms to their mansions that such lofty buildings would seem to involve. The little church near Loches was a remarkable instance of the planning on the church-hall system, so common in Germany. In the little village of Boos, near Rouen, was one of the finest columbaria of the French Renaissance period he had seen, and one which had so far as he knew never been illustrated in English publications.

Mr. B. DICKSEE, in seconding the vote of thanks, said he considered the high roofs of the Early Renaissance period in France arose not from ostentation on the part of the nobles, but were copied, or, rather, adapted from the high-pitched roofs of Late Gothic churches.

The PRESIDENT remarked that Mr. Bartlett had the promise of being early in the field with a style, that of François I., which bid fair to be very fashionable. They were specially indebted to him in preparing his paper at short notice, as Mr. Keith D. Young, who was to have lectured on "Hospitals," had met with an accident to his hand, and was unable to write or fulfil his engagement. The members would like to know the cost of such a seven weeks' tour as Mr. Bartlett had described.

Mr. BARTLETT, in responding to the vote of thanks, said the expenses had but little exceeded the amount granted for the studentship. The expenses were about 6fr. or 7fr. a day, exclusive of travelling, and as the district selected was comparatively close at hand, the fares were not high. He avoided English hotels, as he found French hotels were more economical.

A portrait of the Bishop of St. Alban's, by Mr. W. W. Oules, R.A., which has been subscribed for by the clergy and laity of the diocese, was presented to the Bishop, to be ultimately preserved as an heirloom of the See, on Wednesday week in the library of Danbury Palace.

The memorial to the late Lord Napier of Magdala will take the form of an equestrian statue, and the committee will endeavour to obtain as a site the centre of the roadway between the Athenæum and United Service Clubs in Waterloo-place. Sir Edgar Boehm is to be communicated with as to the sum he would require to execute a replica of his statue of the late field-marshal now at Calcutta. The fund in hand exceeds £3,700.



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## ILLUSTRATIONS.

CONTEMPORARY BRITISH BUILDERS.—PLUSCARDYN PRIORY, ELGIN.—R.A.A.S. DESIGN FOR COVERED BRIDGE.—PROPOSED POLICE STATION, LEMAN-STREET.—NEW HOUSE, ASHTON-ON-MERSEY.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.

(SEE description on p. 498.)

PLUSCARDYN PRIORY, ELGINSHIRE.

TO-DAY we commence to illustrate the Institute Silver Medal Drawings by Mr. Alex. Macintosh, who has sent us the following particulars:—This fine piece of Scotch architecture was founded in the year 1230; it was dedicated to St. Andrew. The monks were of the French order of Vallis Caulium, a reform of the Cistercians. The foundation of the parent institution of Val des Choux, in Burgundy, dates from the end of the 12th century. There are three houses of this order in Scotland, all erected in the same year (1230) by King Alexander II.—viz., Ardchattan, in Argyshire; Beaulieu, in Ross; and Pluscardyn, in Moray. These are the only priories ever erected in Britain under Val des Choux. In 1460 the priory came under the Benedictine rule; the Black Monks of the neighbouring priory of Orchard taking possession of Pluscardyn by mutual agreement. This change in the order may help to explain some of the numerous alterations made on the building in the 15th century. From documents which have come to light there appear to have been eleven priors of the Order of Vallis Caulium, and eight Benedictine Priors. The priory continued under monastic rule till 1560, the year of the Reformation in Scotland. Since then it has passed through the hands of several of the leading families in Scotland; among others having been successively held by the Morton family, the Seaton family, the Earl of Dunfermline, the Lords of Kintail and Seaforth, the Earl of Cromarty, the Earl of Caithness, the Seafeld family, and at present is the property of the Duke of Fife. The building is said to have been twice burnt, and the condition of the lower part of walls, the gables, and side of tower, show unmistakable marks of fire. In 1390, Elgin Cathedral and some neighbouring monasteries were burnt by the "Wolf of Badenoch"—it is probable he also burnt Pluscardyn at the same time, for the priory records of that time state that the building was then in a very ruinous condition. The fire appears to have created greater damage than the means at the monks' disposal could make good, for instead of restoring the beautifully traceried windows in choir and transept gables, they built them up with the fragments of original tracery and mullions, leaving only small lancet windows and four-light traceried windows of the simplest design. The plan of the building is very similar to that usually adopted by Cistercian monks, with the exception of the choir, which is longer than usual; the part locally known as the "Lady-chapel" probably derives its name from one of the changes introduced by the

Benedictine monks, the squint and the foundation of altar being work of the 15th century. There are no records of the date of erection of the various parts of the building; but there is little difficulty in following the progress of the work and deciding the approximate dates. The oldest part is that locally known as the "Lady-chapel," built about the date of foundation, 1230. The building of the south transept was carried on about the same time. The north transept, the gable of south transept, the tower, and most of the domestic buildings are late 13th and early 14th-century work. The choir is work of about the middle of the 14th century, and the vestry adjoining was built by Alex. Dunbar, the last prior; he ruled the house from about 1533 to 1560. The building up of the tower-arches and windows in choir and transept gables was done after the fire in 1390. Like other buildings following Cistercian or similar rules, the characteristics of Pluscardyn are its absence of ornament, refinement of detail, the simplicity—almost amounting to severity—of its parts, and its fine proportions. One of the most noticeable features is the number of circular-headed doors. This retention of early forms in later work is characteristic of Scotch Mediaeval buildings. We see the same thing in the group of four lancet windows at the east end of choir—work of the 15th century. The refectory door—also work of the 15th century—is a facsimile (even the moulding is a clumsy copy) of the door to the north transept, built fully a century earlier. It is interesting to notice the similarity that exists between Pluscardyn and other buildings of the same period. The transepts of Hexham Abbey, for example, are very similar in design to the south transept of Pluscardyn. Mr. Hodges, of Hexham, who has recently published measured drawings of that building, has compared my drawings of the mouldings and the masons' marks of Pluscardyn with those of Hexham, and considers them to be the work of the same masons. There is a remarkable similarity in the plan, general design, and proportions of Sweetheart Abbey, near Dumfries, to Pluscardyn. Portions also of Elgin Cathedral and Fortrose Cathedral, Ross-shire, are almost identically similar in their details and design to the 14th-century work of the choir of Pluscardyn. The building suffered considerably by Lord Fife's alterations in 1821. It was his intention to convert the building into a large mansion house, though fortunately he never finished the carrying out of his scheme. He "restored" and altered some of the most interesting features of the building, and almost entirely demolished the dormitory, leaving no trace of what the original design had been. Previous to Lord Fife's alterations, large portions were pulled down by neighbouring farmers, and many of the stones removed can still be seen in the walls of the surrounding farmhouses. At present the buildings are in a very ruinous condition and fast falling to decay. There is an accumulation of soil all over the area of the building, varying in depth from 6in. to 18in; when excavating in this soil to find the levels of original pavement in church, I found numerous fragments of stained glass, leadwork, a holy-water stoup, and many beautifully-moulded pieces of tracery, caps, &c. The walls are covered by a dense coating of ivy of the wildest and most luxurious growth. The numerous rents in the walls, and the loose state of the stonework show that, unless prompt measures are taken, we shall soon lose one of the finest and most interesting examples of monastic architecture in Scotland.—ALEX. MACINTOSH.

## R.A.A.S. DESIGN FOR A COVERED BRIDGE.

This drawing, by Mr. Thomas Davison, obtained the Royal Academy Architectural School Prize last year.

## LEMAN-STREET NEW POLICE STATION.

This building, of which an elevation and block-plan is given, is now in course of erection on the site of the old police-station and the old Garrick Theatre. Ample accommodation has been provided for the public service, and for quarters for married and single constables. The building will be faced with red gault bricks, red Mansfield stone being used for the entrances and dressings. The roof will be formed of steel troughing and concrete covered with asphalt, to be available for a drying ground in connection with the laundry. Mr. John Butler, F.R.I.B.A., surveyor to the Metropolitan Police, is the archi-

tect; and the work is being carried out by Messrs. Garlick and Horton, who are under contract to complete the work in twelve months.

## HOUSE AT ASHTON-ON-MERSEY.

THIS house is now being erected in Oakfield, Ashton-on-Mersey, for Miss Stavert, by Messrs. Torrance Brothers, of Chorlton-on-Medlock, from the designs and under the superintendence of Mr. Robert C. Whitelegg, architect, of 29, Brazen-nose-street, Manchester. The house will be faced on all sides with Ruabon bricks, the roofs covered with brindled tiles, and the half-timber work filled in with adamant cement. The whole of the interior fittings will be of the best description, the entertaining-rooms and hall being finished in American walnut, with ornamental plaster ceilings, and wood mantels. All the hearths throughout will be tiled, and all the sanitary fittings of the best and latest improved type. On the side not shown in the perspective will be a large bay window to the drawing-room, and an angle bay to the breakfast-room, the latter being carried up to the roof, and finished as a half-timber gable.

## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—On Saturday afternoon the members of this association visited Prestonpans, under the leadership of Mr. Hippolyte J. Blanc, who first introduced to them the interesting feudal tower of Preston, which was described as a work of Early 15th century, comprising, in an area of about 34ft. by 28ft., a tall keep about 50ft. to the parapet, with a 17th-century addition, increasing the height by 17ft. more. The original structure had been divided into four floors, with the usual appropriation of lord's hall, private apartments, and accommodation for retainers and stores. In a wing projected from the west side of the keep a unique construction of dungeons was examined, as also the special features of construction for the defence of the main entrance exhibited on the outside elevation. Originally a possession of the Hamiltons, the tower has remained, with but short intervals from the period of its erection, with the family; and although much of the property originally attached to it has been disposed of, the tower itself, with the inclosure in which it stands, is now owned by General Sir William Hamilton. The tower seems to have been occupied up to 1663, when a fire, the third from which it had suffered, rendered it no longer habitable. It possesses a good deal of interesting detail, sufficient to have elicited the interest of antiquaries, by whom a few years ago a considerable sum was expended, under the direction of Mr. Blanc, in replacing a great deal of the carved stonework found among the ruins, and generally repairing the structure. The party next proceeded to Preston Cross, which is one of a type of market-crosses erected in various towns in Scotland at the beginning of the 17th century. After visiting the ruins of Preston House—the mansion of the Hamiltons after their occupancy of the Tower—and the old parish church at Preston, the party returned by Northfield House, the apartments of which the party had an opportunity of examining.

A new Wesleyan chapel, built from plans, selected in competition, by Messrs. Potts, Pudcup, and Dixon, of Oldham, was opened at Pickering on Friday. It has cost £3,000, replaced an older one on the same site, and is Renaissance in style. The body of the chapel will seat 470 persons; and in addition there are an assembly-room, a couple of class-rooms, and lecture-room, besides caretakers' houses, and extensive kitchen and cellar provision. Messrs. Martendale and Barnes, of Pickering, were the contractors.

On Tuesday, March 25, the foremen and workmen engaged on the London contracts now being carried out by Messrs. Foster and Dicksee, of Rugby and Manresa-road, S.W., had their annual dinner at Clout's Restaurant, Victoria-street, S.W., when upwards of 100 were present. Mr. Dicksee was in the chair, and was supported by Mr. Goddard, the head of the London staff.

Five thousand bricklayers and masons in Vienna have struck work, demanding that their working hours should be reduced to eight, and their minimum wages be fixed at two florins per day. Twenty thousand of their fellow-workmen are threatening to follow their example; but the employers state that their trade is suffering from unusual depression.



## WAYSIDE NOTES.

AT the meeting of the Institute on Monday evening the subject of the memorial recently presented to the Council was discussed; but further discussion is adjourned until the 21st inst. The most remarkable feature of the meeting was an admirable speech, in favour of the Institute's seeking statutory powers, by Mr. John Wreghitt Connon, of Leeds. Mr. Connon spoke with the earnestness of conviction, and the weight and deliberation of his remarks evidently impressed his audience. For not only were those who earnestly desire the Institute Council to take steps necessary to make close the profession of an architect, enthusiastic over Mr. Connon's speech, but all, of every shade of opinion, pronounced it to be excellent.

Whatever may be thought of the significance of Professor Roger Smith's amendment, as affecting the future action of the Institute Council, it is regarded by those in favour of the compulsory examination scheme as an admission of the righteousness of their principles. It matters little that this amendment urged more inaction and procrastination on the part of the Council. It admitted the principle—and that is the great point. The significant thing will be the result of the poll, which is to be taken. I regard the issue hopefully, because country members, who could not attend Monday's meeting, are the class to whom the need for prompt action is most apparent. Anyhow, be the result what it may, I see no reason so far to complain of the way things have gone. The consideration shown to the compulsory examination question by members whom one would have expected to have obstinately opposed any idea of closing the profession, was an encouraging feature. So long as tolerance and kindly feeling are shown, one can put up with defeat if necessary. But it is my earnest hope that the poll may be a clear index of a growth of the principles among members of the Royal Institute of British Architects which are undoubtedly in the ascendant outside that body.

Order is Heaven's first law, it is said, and accordingly the 20-draughtsman-power architect of Philadelphia, whose habits the *Engineering and Building Record* made public, is to be commended for his methodical system of office-working. Otherwise, there is nothing very remarkable or novel about this gentleman's manners and customs.

Quarter-scale drawings are all very well in their way, and when a job is small we all acknowledge that they are necessary; but unless one happens to be blessed—or the other thing—with a thick-headed client who cannot be convinced that it is less easy to grasp the arrangement of a plan when to this measure than when prepared to an eighth scale, the 4ft.-to-the-inch is to be regarded as good in theory, but bad in practice. When those halcyon days arrive, in the which an architect will be a more-sought-for and better-paid individual, we shall perhaps be able to follow the example of our Philadelphian confrère and allow one draughtsman to spend the extra time necessary to bestow that two-fold labour which ½ in. scale as against ¼ in. entails. That the larger scale involves exactly double the labour is not only a self-evident fact, but one appreciated by all draughtsmen who have to do with it. Here and there we find offices where the principal has a hankering after the ½ in. scale system, or where, as occurs at times, clients insist upon their plans being drawn out to this measure. But by general consent the scale of ¼ in. to the foot has been adopted as the best for plans of buildings of any importance, and, in spite of individual fads, will continue to remain the most popular among architects.

Our Philadelphian friend finds it better to scheme plans, &c., "at his own home, free from the interruptions unavoidable at his place of business." Many wielders of the T-square on this side of the Atlantic also find that designing and general office cares do not harmonise. Plan-scheming may be said to resemble, in a sense, playing the game of chess—one has to think out moves ahead. Having been racking one's brains for an hour or so, it is not true economy to be obliged to divert one's attention to matters alien to the subject either by persons in, or callers at, the office. Threads are dropped that may never be picked up again, and details that were getting

clear become again obscure. Order once more becomes a chaos, and developing form returns to its original nebulous state.

But it is said that he who best can suffer best can do, and the wisest people are those who constantly endeavour to adapt themselves to circumstances, howsoever adverse. Once begin to flee difficulty and trouble, and will and determination are undermined. I should like to know what would become of the practice of many of our London architects, if they could not work serenely in the midst of distraction of all kind? High-pressure and competition would soon divert the business into other channels if Mr. Irresolute and Mr. Nervous stayed away from their offices to do their work. Those who feel, too keenly, the distracting nature of working between interruptions of one kind and another, may depend upon it that giving way will make matters worse in the end, and that severe self-schooling is the only remedy. I can sympathise with any who feel that office duties and design clash inharmoniously, and after, when designing under the combined influence of distractions of every kind, think fondly of days when I have raised my eyes from my work, and looked out through the open window across summer seas or peaceful countryside. How different from the surroundings and attributes of an office in London! Mr. Ruskin has said that an architect should not live in a great city, and we feel, as the great writer says, that there is something about town life that walls up the imagination; but as we cannot all, if we would, work amidst rural peacefulness, we must remain content to adapt ourselves to circumstances and do the work that lies nearest, in spite of the distraction of bustle, noise, and haste, and of social and business intercourse.

The nature of the designs submitted by the four successful architects in the Harrogate Baths competition is not yet generally known, and probably will not be for a couple of months or so; but I have reason to believe that they must be something extraordinary, and that the architectural profession may flatter itself that it knows a thing or two about the design of public baths. The planners of the *thermae* of the palmist days of the Roman Empire, will, I fear, have to retire into the background and take the traditional back-seat. This is decidedly encouraging; for hitherto public baths have been remarkable chiefly for unscientific planning, and as monuments to the gross neglect of the study of the therapeutic attributes of various baths. But, if I mistake not, we should shortly see that the days have grown less evil. And I hope that we shall not be mistaken, for the Harrogate Corporation, in offering liberal premium-money, deserve to have gained the best possible ideas for the *Kurbad* they contemplate building in the town.

Enthusiasm, and an evident desire to see fair-play characterised the doings of the Harrogate Corporation in connection with this competition; the gentleman (?) therefore, who did the three-card trick, or whatever other kind of trick would best describe the operation you reported last week, doubtless did himself brown, even if he had any chance. And as it is difficult to conceive of anyone judging the work of a proposed bath-house with reference to anything but compactness and suitability of plan and arrangement—unless the elevations are actual abortions—there seems no reason for any complaint as to the awards made. Should events prove otherwise, the Harrogate Corporation will feel like the man who bought an expensive watch because it had a pretty face, and found it was useless as a timekeeper.

The gentlemen to whom the Guinness Trustees have intrusted the design of blocks of dwellings for the poor are all, I believe, skilled in the class of work required. But why no competition? I understand the object of the funds given by Sir Edward Guinness to be to get new ideas on the subject of providing dwellings for the poorest of the poor, and if there had been a competition, with good premiums—which could here have been afforded—it would seem to me to have been more in accordance with the idea of Sir Edward.

I am not fond of discussions of the "Bill Stumps, his mark" description, and don't see that the world will be visibly affected when the sweet uses of the "low side-window" are dis-

covered; still, this archaeological *bête noir* must have a certain interest to all architects. As some contribution to the discussion on this subject, I would refer to some very pertinent remarks made by Mr. Gough in the course of a lecture delivered some years ago to the St. Paul's Ecclesiastical Society. The subject of this lecture was old Rainham Church, Essex. Mr. Gough favours the theory that the low side-window was opened when the sanctus bell was rung—the "hand-bell theory" as your correspondent Mr. C. E. Ponting calls it. I throw in my weight with the sanctus bell. Mr. J. J. Cole, whom Mr. Gough largely quoted in his lecture, favours this theory. Mr. Cole says that "prior to the introduction of the sanctus bell-cots, and commonly when these were not erected, then at the 'low side-window'—the only real opening in the church except the doors, and this unglazed but provided with a shutter—the sacristan stood, and on the elevation of the Host, opened the shutter and rang the sanctus as directed, I think, in the liturgy: 'In elevatione vero ipsius corporis Domini pulsetur campana in uno latere, ut populares, quibus celebratione missarum non vacat quotidie interesse, ubicunque fuerint, seu in agris, seu in domibus, flectant genua.'—Const. Joh. Peckham, A.D. 1281." If this is not a "clencher," what is it? It is, at any rate, my trump card for the sanctus-bell theory.

But I have another of nearly equal value. In the course of the lecture referred to above, Mr. Gough stated that he was indebted to Mr. Edward M. Dewing, late hon. sec. to the Suffolk Institute of Archaeology, for the following extract from Nichol's "Narrative of the Days of the Reformation," which appears to refer to the custom for which Mr. Cole contends:—"John Craddock, hys man be Clarke to ring the bell, and to keep the priest too mass, untill he was threatened that yf he dyd use to putt hys hand owt of the window to ring the bell, that hand soon should make him to smart." GOTH.

## WATER SUPPLY AND SANITARY MATTERS.

DEWSBURY.—Mr. Arnold Taylor recently held an inquiry at the Board Room, Soothill Nether, near Dewsbury, with respect to taking four acres of land otherwise than by agreement, for the purpose of dealing with the sewage of the district. Mr. Malcolm Paterson, M.I.C.E., of Bradford, explained the scheme. The estimated cost is £11,500, inclusive of the main drainage, sewage tanks for lime treatment, and land for intermittent filtration. A special feature of the scheme is the provision for taking trade refuse into the sewers, in accordance with the Rivers Pollution Act, 1875, thus striking at the root of rivers pollution in the manufacturing districts. Soothill Nether is one of the districts proposed to be incorporated by Dewsbury, whose extension scheme was rejected in its entirety by the Local Government Board.

## STAINED GLASS.

BRISTOL.—The last window on the south side of St. Stephen's Church has now been filled with stained glass as a memorial to the late organist, Mr. Samuel Cook. The subject is that of the Ascension, which occupies the three lights. In the centre is Our Lord, in the act of ascending; beneath him on the hill are St. John and another apostle kneeling, gazing upwards. On the right and left are groups of the other disciples, St. Peter being on Our Lord's right hand. Above these figures are the two angels descending, and in the background are seen portions of Jerusalem. The ascending Saviour is surrounded by a multitude of cherubim. The whole is surmounted by canopies of 16th-century ornaments. In the tracery are angels playing various musical instruments, the organ being conspicuous among them, and these also are surrounded by ornament of the Perpendicular period. The window is by Mr. Alfred O. Hemming, of 47, Margaret-street, Cavendish-square, London.

At a recent meeting of the Harrogate town council to consider the competitive plans for the Montpelier baths, Mr. George Corson, of Leeds, the assessor, reported that he had selected the four drawings whose authors will be asked to take part in the final competition.

Queen-street Wesleyan Chapel, Huddersfield, was reopened on Friday. The alterations are mainly internal, and have cost about £2,500. The work has been carried out under the supervision of the architects, Messrs. William Cocking and E. W. Lockwood.



## CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

WE give the second sheet of British builders to-day. The series of British architects will, of course, be continued, and we have already several sheets in hand, so that the anxiety expressed by some correspondents in reference thereto is somewhat premature, as might have been understood from our opening remarks last week.

Mr. Joseph Hill, whose portrait is the first on our plate, represents Messrs. Higgs and Hill, of Lambeth. The firm is composed of two members, William Higgs, son of William Higgs, formerly of Stangate, and, since 1867, of Crown Works, and Joseph Hill, son of William Matthew Hill, of the firm of Hill and Sons, of Charlton Works, Islington, both businesses being amalgamated on the retirement of the late William Higgs, and being carried on at the Crown Works premises, covering about four acres of ground. The following is a list of some of the principal works carried out by the firm:—Royal Marine Infirmary, Woolwich; Chelsea Barracks; Caterham Barracks for Brigade depot; Bedford Barracks for Brigade depot; Barracks at Windsor; Barracks at Newport, Mon.; Hospital at Albany Barracks, Regent's Park; Powder Magazines at Plumstead Marshes; Government and Admiralty contracts in London, Woolwich, Greenwich, Portsmouth, and Waltham Abbey; additions to Marlborough House; bridge connecting Royal Mausoleums at Frogmore; Assize Courts, Winchester; Law Courts, Usk, Mon.; Sessions House, Clerkenwell; County Court Offices, Gravesend; Offices for Lewisham Board of Works; Post-Office, Bedford-street, Strand; additions to Post-Offices, N. district, in Packington-street, Essex-road, and, S.W. district, in Buckingham Palace-road; extensions of Lunatic Asylums at Wandsworth, Hanwell, Colney Hatch, and Hoxton; Sanatorium at Reedham and another at Earlswood Asylums; London Orphan Asylum, Watford; St. Paul's Choir Schools, Carter-lane; City of London Schools, Hanwell; Roman Catholic Schools at Brentwood and North Hyde; Master's residence, &c., Highgate Schools; St. Joseph's College, Tooting; additions to Wellington College, Berks, Royal Cambridge Asylum, Kingston, Orphan Asylum, Beddington, and University College, Gower-street; Police-stations at Snow-hill, Rochester-row, Paddington Green, Kensington, Kingsland, Brentford, Richmond, Shepherd's Bush, Streatham, Wood Green, and Sunbury; Hospital for Consumption, Brompton; Chelsea Hospital for Women, Fulham-road; Cheyne Hospital for Children, Cheyne Walk, Chelsea; North London Hospital for Consumption, Hampstead; Temperance Hospital, Hampstead-road; Hospital for Women, Euston-road; additions to St. Mary's Hospital, Middlesex Hospital, Charing-cross Hospital, Westminster Hospital, St. Bartholomew's Hospital, King's College Hospital, St. George's Hospital; Medical Schools at Westminster and Charing-cross Hospitals; Examination Hall for Royal Colleges of Physicians and Surgeons, Savoy-place; additions to Royal College of Surgeons, Lincoln's Inn-fields; offices of London School Board, Victoria Embankment; Hand-in-Hand Insurance Offices, New Bridge-street; British Equitable Assurance Offices, Queen-street-place; blocks of offices in Throgmorton Avenue and Great St. Helen's; St. George's Dwellings, North-row, W.; Mortimer Mansions, W.; new buildings for Peter Robinson, Oxford-street; "Harcourt House," Cavendish-square, for the late Duke of Portland; "Frognaal," Faringdon, Berks; "Foxbury," Chislehurst, Kent; mansions at Stanhope Gardens and Queen's Gate, Kensington, St. George's-place, Knightsbridge, Esher, Surrey; additions to "Montague House," and new stables for Lord Portman; additions to Stoke Park, Guildford; Union Bank of London, (head offices), corner of Princes-street, E.C.; and branch Bank in Sloane-street, Chelsea; Commercial Bank of Scotland, 62, Lombard-street; London Joint Stock Bank, Great Tower-street; City Bank, Great Eastern-street; Central Bank of London, Tooley-street, S.E.; London and County Bank (branch banks), at Aldersgate-street, Upper-street, Islington, Caledonian-road, Newington, Shoreditch, Brixton, Deptford, Greenwich, Woolwich, Hastings, Horsham, and Sittingbourne; Crown Swimming Baths, Kensington Oval; Victoria Swimming Baths, Peck-

ham; St. Luke's Church, Redcliffe-square; All Saints' Church, Surrey-square; Church, Woolwich Dockyard; Holy Trinity Church, Sloane-street; Spurgeon's Tabernacle; East London Tabernacle; Maze Pond Chapel, Old Kent-road; Wesleyan Chapel, Ealing; Wesleyan Chapel, Lewisham; Union Chapel, Brixton-hill; Kenyon Baptist Chapel, Solon-road, Brixton (a memorial of the late William Higgs); Presbyterian Church, Notting-hill; and several other churches and chapels; cases and fittings in the Natural History Museum, South Kensington, and British Museum. Mr. Hill's photograph was produced by Mr. George Glanville, of Tunbridge Wells.

Mr. Thomas Boyce was apprenticed to and taught his business by Mr. Edward Conder, of Baltic Wharf, Kingsland-road Bridge. He commenced business in 1872 at Eagle Works, Hackney, but subsequently, in 1883, moved his offices to No. 8, Hart-street, Bloomsbury. He has built a number of noblemen and gentlemen's mansions in different parts of the country. Amongst the works carried out by him in London are the Metal Exchange and buildings attached in Whittington Avenue, Leadenhall-street; the Legal and General Insurance Offices, in Fleet-street; the Constitutional Club, in Northumberland Avenue; the Badminton Club, in Piccadilly; and the Green Park Chambers, in Piccadilly.

Mr. John Mowlem Burt is the present senior partner of the firm of John Mowlem and Co., building and engineering contractors, who, amongst other vast works, are now building the Imperial Institute at South Kensington. He is a great-nephew of the late Mr. John Mowlem, the founder of the firm, and son of Mr. E. Sheriff Burt, who was, in conjunction with Mr. Joseph Freeman, for many years at its head. The other partners of the present firm are his cousin, Mr. William Robert Freeman, and his brother, Mr. George Burt, jun. Mr. J. M. Burt was born in the year 1845. The first work in which he was actually engaged with the firm was in connection with the Exhibition of 1862, and he has from that time been actively engaged in the management of the business. He became a partner fifteen years since. He is a Freemason, is on the Courts of the Glass-sellers' and Loriners' Companies, has served the office of Chief Burgess of Westminster, and is a Deputy Lieutenant for the City of London. The portrait of Mr. Mowlem Burt is from the studio of Messrs. West and Son, of Southsea.

Mr. James William Hobbs, J.P., is managing director of the well-known firm of contractors, Messrs. J. W. Hobbs and Co., Limited, which business he was the founder of. The following are amongst some of the notable buildings erected in recent years by Mr. Hobbs:—The Hotel Victoria, Whitehall Court, Albert Gate Mansions, Carlisle Mansions, Westminster, and he is now engaged upon the development of the Salisbury Estate on the site of Cecil- and Salisbury-streets, Strand. Mr. Hobbs is President of the Builders' Benevolent Institution for the current year. His portrait is by Mr. S. Philips, of Croydon, and was taken during his Mayoralty of Croydon, which office he held for two years in succession.

Mr. F. J. Dove is senior partner of Messrs. Dove Brothers, of Islington. This firm have made a special feature of ecclesiastical building-work, and in that respect are thought to be somewhat unique as being the largest builders of churches in this country. They have also executed many other important works; amongst others being Huntsham Court, Devonshire; Slaughman Hall, Sussex; Doldowid Hall, Brecon; additions to Riby Hall, Lincolnshire; Gogmagog Hills, for the Duke of Leeds; Bridehead House, Dorset; Littleborough, Lancashire; Patteson Court; additions to Beaulieu, Hants, for Baron Montague; Temple Bar Branch of the Bank of England; large offices and printing warehouses in Bream's-buildings for the proprietors of the *Field* and *Queen* newspapers; foundations to the Law Courts; buildings in Northumberland-avenue, &c., &c. The firm was founded about 70 years ago by Mr. W. A. Dove, and has been carried on in the name of Dove Brothers for nearly 40 years. Mr. F. J. Dove, now the senior partner of the firm, is in his 60th year; he was educated at a private school in Islington, and trained for the business by spending some time in his father's workshops, and afterwards studying architecture for some years in the office of Messrs. Gough and Roumieu. Prior to becoming partner he acted as superintendent

and foreman upon some of the firm's contracts. Mr. F. J. Dove occupied the position of President of the Builders' Benevolent Institution in 1880, with which institution he had been identified for many years. He was also President of the Central Association of Master Builders of London for three consecutive years, and is also the Vice-President of the Builders' Accident Insurance. The firm was amongst the first of London builders to carry out works in forming insulated chambers for the storage of frozen meat, and they have done this very successfully at Smithfield, the Foreign Cattle Market, Deptford, and below Cannon-street Station. A large proportion of work done in restoring City churches has also fallen to their share. There is nearly always work being carried out at one or the other of these buildings, such as St. Sepulchre's, Holborn, St. Vedast, Foster-lane, St. Mary's, Aldermanbury, All Hallows, Lombard-street, St. Magnus, Thames-street, St. Olave's, Hart-street, St. Mary-at-Hill, St. Bartholomew's, Smithfield, St. Giles's, Cripplegate, and lately St. Andrew's-by-the-Wardrobe. As to their church work generally, we have a list before us of nearly three hundred instances, too numerous to mention, including several works under Sir Arthur Blomfield, A.R.A., and the late Mr. Geo. Edmund Street, R.A. The photograph of Mr. Dove was taken at Islington by Mr. F. C. Turner, of Upper-street.

Mr. John Thompson, of Peterborough, is famous in connection with works of restoration. It is sixty years ago since Edward Blore—afterwards the master of William Burges—entrusted the contracts for the restoration of Peterborough Cathedral to John Thompson (the father of the present head of the business) and Francis Ruddle. They were not partners, although they co-operated by dividing the works of a building between themselves. Mr. Thompson took the stonework in the cathedral contract, and Mr. Ruddle the carved woodwork. Among other contracts of theirs was one for a large part of the work in the choir of Westminster. After the death of Mr. Thompson, senior, the present Mr. Thompson assumed all the responsibilities of the two establishments. Mr. Ruddle continued to take an active interest in the new arrangements. The restoration of a large part of no less than six English cathedrals was undertaken by Mr. Thompson—viz., Hereford, Ripon, Chester, Lichfield, Bangor, and Peterborough, the works at one sometimes extending over several years. Among the numerous churches in which his work can be found we may mention the following:—Milton Mowbray, Oakham, Holy Trinity, Coventry; St. Michael's, Coventry; Higham Ferrers, Ashley, Rhyl, Holyhead, Bridlington Priory, Halifax, Fife, Cromer, Warmington, Mirfield, Abingdon, Wolferton (for H.R.H. the Prince of Wales). Mr. Thompson also erected the new chapel of Balliol College, Oxford, and the new church at Hanbridge, Chester, for the Duke of Westminster. Two of the most important of his secular works are the Glasgow University Buildings, which were commenced in 1866, and the Royal Holloway College, and we may also mention the Grocers' Schools, schools, mansions, &c. Some of the employés may claim to be as long connected with the business as Mr. Thompson himself, and can point to forty or fifty years of loyal service. Mr. Thompson has been twice Mayor of Peterborough, and at present he is one of the aldermen of the city. The following are some of the works in hand or just completed:—St. Michael's Church, Coventry; Bedworth Church, near Nuneaton; Bennington Church, Herts; Terrington Church, Norfolk; Cromer Church, Norfolk; Gedling Church, Notts; Long Crendon Church, Thame; choir fittings, Leamington Church; St. Andrew's Chapel, Northampton; St. Mary's Chapel, Dalkeith, Scotland; Peterborough Cathedral, and choir stalls for same; Eton College, Windsor; Chapter House, Lincoln Cathedral; Croyland Abbey; works at Llandaff Cathedral; Flixton Hall, Suffolk; interior fittings, Denton Hall; tower of Ludlow Church; west front, Rochester Cathedral; Sandy Lodge (the Right Honourable the Speaker); Irnham Hall, Lincolnshire; Rivulet House, Runtun, Norfolk. Mr. Thompson's portrait is the work of Mr. T. T. Groves, of Peterborough.

[When referring to the firm of Messrs. Woodward and Co., in our last week's issue, it should have been stated that Mr. James Hughes and Mr. Richard Thorn are senior partners.]



# "REGISTRATION" AT THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE crowded meeting held under the chairmanship of the President, Mr. Alfred Waterhouse, R.A., on Monday evening last at the R.I.B.A., if not unanimous, was undoubtedly good-tempered, enthusiastic, and very much in earnest. This Special General meeting was convened to consider the desirability of statutory examination, which shall be compulsory on all seeking to practise the profession of an architect, and the motion "That at as early a date as possible, statutory powers should be sought to establish, as in other professions, a system of compulsory examination to be held by the Institute, and to be extended to all architects hereafter entering the profession, whether as members of the Institute or not." The President remarked at the outset upon the vital importance of the question of Registration, and urged upon the meeting the desirability of discussing it without personal feelings or biased considerations, so that the subject might receive their careful judgment in an impartial spirit. The notices calling the meeting, and the requisition which occasioned it, having been read, some communications received from the Bristol Society of Architects, the Liverpool Architectural Society, and the Northern Architectural Association, on the question of Registration, were likewise read by the secretary. The Bristol Society and the Northern Architectural Association urged the necessity of some such measure conferring statutory powers, but the Liverpool Society considered that the time had not yet arrived for a successful plan of compulsory examination. The debate was opened by Mr. John Wreghitt Connon, F.R.I.B.A., of Leeds, who in a very telling and moderate speech, well-reasoned, effective, and at times eloquent, forcibly advocated the adoption of the first resolution before the meeting. He desired to deal only with the general principle of the question of Registration, and he claimed for it the support of the Institute. All he asked was an admission as to the necessity and urgent need of the adoption of the abstract proposition, leaving the details for the careful consideration of that body who alone could and ought to deal with the question. The present state of the profession was eminently unsatisfactory, only about one-seventh to one-tenth of the whole body of practising architects being members of the Institute. He said that the power of their great central Society was growing weaker and weaker—a remark which called forth much dissent from those present; but to this the speaker remarked that it was only a question of statistics. It was not the fault, but the misfortune, of the Institute that it was at present unequal to the task of the proper exercise of that wholesome influence in controlling the conduct of persons acting as architects which was so much to be desired, not only in their own interests, but for the benefit of the public. The medical and legal professions were successfully working under Registration, and about a dozen other societies had in some form or other adopted the measure with advantage. Indeed, he would ask which one of them would give up Registration now that they had obtained its benefits? And further, this being so, why should not this success, obtained by others, be equally secured by architects? In the interests of the Institute itself he urged the question. In Leeds, out of seventy architects at work there, only seven were members of that body, and they by no means the leading practitioners in the town. The Institute was now viewed by outsiders as a selfish corporation, and the public looked upon it often with suspicion. The public had given them no powers, and therefore considered their society unable to work with effect in the public interest. Once obtain statutory powers, and this opinion would be rectified. Expulsion from the Institute never injured any man yet in his practice, much as that fact would, no doubt, damage such a one in the esteem of his fellows. With other professions Registration made all the difference. Men would contest expulsion from their societies at every cost, and spend their last shilling to avoid so great a catastrophe. That Institute had the highest sense of honour, and its aims were of the noblest character; but its misfortune was its weakness—its powerlessness—its want of widespread utility. It was also, Mr. Connon thought, unfortunate that the initiative step in this matter should have been taken by another society; but, for his own part, he never

swerved from entire loyalty to the Institute, which, he was sure, would never permit prejudice to sway its judgment, or allow the question to receive only a partial hearing. He only contended for principles, and left details for time to work out in their committees and council. Difficulties there were, undoubtedly, in the way; but no measures of reform were without objections; and, if the council of the Institute would only exercise as much energy in removing these difficulties as they had displayed ingenuity in inventing them, he was sure of the progress to be speedily obtained. The heads of the profession might see in the change no advantage to themselves, but for the sake of their poorer brethren, the measure should be carried. Mr. Hugh Roumieu Gough, F.R.I.B.A., seconded the resolution, and said that the Institute undoubtedly was the best body to carry out such a scheme as this which was no longer Utopian. He denied that the question was brought forward in antagonism to the Institute; on the contrary, its promoters would gladly hand over the result of their labours to that central body, who would give the proposal a fair consideration. In France, Canada, and Australia, measures of Registration, were being formulated and attempted among architects. The present was the time, and if compulsory examinations were good for the Institute members, they were good for the whole body of the profession. Professor Roger Smith, F.R.I.B.A., before proposing an amendment, paid a deserved tribute to Mr. Connon's speech, with which he almost entirely agreed—in fact, he had long felt the importance and force of the question of Registration, the abstract principle of which he certainly, for one, adopted; but the difficulties before them were so serious and important, that in his judgment it would be better to postpone dealing with the matter, at any rate, for a few years. This, in fact, was the burden of his amendment: that, while not opposed to the desirability of Registration and compulsory examination, the difficulties were so insuperable that time should be allowed for their consideration, and in order that the more limited plan now in force at the Institute of compulsory examinations should have an opportunity of strengthening their hands before bringing the greater scheme before the public. If it were practicable to exclude all unworthy architects, and provide for all competent men being employed, no one would reasonably oppose the measure. Parliament could easily say, no doubt, that only competent architects should be employed, and the House of Commons could pass such a measure; but he thought it would be disadvantageous for architects to ask Parliament to take up this question just now. The exigencies of the work carried out by the profession were so involved, and while it was not difficult to prevent persons doing the work of doctors, it was essentially so in the matter of building work, which was so vast and varied in character and scope. The Society of Engineers was not registered, and they opposed the Bills brought forward in that direction. If such an Act passed, all, however unworthy, would have a status given them, and a certain class of perfectly unqualified persons would be certified as capable of acting as architects. The Institute had made a new departure. By all means give that time to work, and allow the scope of their new Charter time to develop their powers and influence, after which, take up Registration, which must come in a few years, and no doubt will be passed with éclat. Mr. Paul Waterhouse, M.A., A.R.I.B.A., seconded the amendment, and said that those who most loudly abused the Institute had the least knowledge of its working, as well as of the very thorough work which it carried on in an honest endeavour to keep pace with the progressive movement of the age. It was often urged that the public were clamouring for this measure of Registration; but as far as he could judge, this was very much of a bogus cry, unwarranted by facts. As an Associate, he said that the amendment entirely coincided with his views on the matter. Mr. G. A. T. Middleton, A.R.I.B.A., spoke in favour of the resolution, pointing out that Professor Smith had agreed to the abstract question embodied in the proposition before the meeting. Once let the Institute adopt that proposal, and the movement out of doors would be gladly dropped in the favour of the Institute, which was undeniably the only body who could efficiently advocate its adoption by Parliament. If not, then they would, outside, again and again urge it

forward, and till life was taken from them they would strain every effort to make an Act of Registration the law of the land. Mr. William White, F.S.A., supported the amendment, though if the movement was desirable, it seemed to him the sooner the better, only "do not marry in haste and repent at leisure." He had advocated Registration for years, though, for his own part, he thought the present was not precisely the time to bring the matter forward. Guarantees would be necessary, and no means should be afforded for unqualified architects and would-be architects for obtaining a status by a side wind, as it were. Mr. Alex. Payne, F.R.I.B.A., though fully in accord with Mr. Connon, supported the amendment because of the immense difficulties he foresaw in adopting the resolution. No one has defined what an architect is, and he thought it essentially to the point that some exact definition should be made between engineers and architects on the one hand, and between architects and builders on the other. The public would never consent to a measure which would prevent engineers from collecting fees for doing architectural work. Mr. Wm. Woodward, A.R.I.B.A., in a vigorous speech, pointed out that the pith of the amendment was not that alteration in existing matters was unnecessary, but that now was not the time to bring improvement to the front. But he (Mr. Woodward) denied that any substantial or tangible reason for delay had been advanced by Professor Smith or his followers. He challenged them to point out clearly what was likely to occur at the end of, say, five years to advance this question which did not exist to-day. What Professor Smith might deem to be rapidly, he (Mr. Woodward) might consider as the essence of slowness. He remarked that there was not any analogy between engineers and architects. The former were intrusted with works nearly always large and important, and only well-tried men were employed to carry them out; whereas, with building matters, which were necessarily of less magnitude, hundreds of men operated as architects who had no right whatever, either from education or skill, to carry on the practice, which resulted in injury alike to the public health and well-being and to the profession of architecture. He insisted that now was the time to move—that no good could come by delay, and expressed the hope that the resolution of Mr. Connon would be voted upon and carried that evening. Mr. Robert Walker, F.R.I.B.A., St. Martin's-place, very warmly supported the motion, and said registration must come—"nay," said he, "it is already upon us." The Bill now before Parliament he unreservedly condemned as a mischievous measure, ill-digested and unworthy of their support; but he was sure the public were not indifferent, while his many years' experience as a metropolitan district surveyor forced the opinion upon him that Registration was inevitable, and, moreover, desirable. Mr. Maurice B. Adams, F.R.I.B.A., thought it most necessary that the Institute's position should be strengthened by a measure of Registration or some statutory powers, which would give a reality to its position and prevent so eminent a body from being made ridiculous before the public, as only recently was the case in one of the law courts when the Institute's scale of charges was treated, if not with contempt by the judge, at any rate, with by no means the consideration it deserved. Often architects were led to accept fees quite inadequate and out of proportion to their just claims rather than risk a trial at Queen's Bench, where no reliable help could be obtained through the Institute as to the justice of their charges. The "Custom of Trade" came in, men were engaged on both sides, the one swearing against the other with the glorious uncertainty of anything like a fair result to the claimant, whose charges were not infrequently divided by two on the average principle so popular with juries when they know nothing about the merits of the case they are called upon to try. The dignity of the Institute demanded some such measure, and if the leaders of the Institute failed to realise its need, it was certain the rank and file of the profession, particularly in the provinces, felt its necessity. Let the Institute adopt the principle, and so prevent it from being spoiled by partial and inefficient advocacy outside. Mr. Douglass Mathews, F.R.I.B.A., supported the amendment, and urged a middle course, which he thought would be found in establishing a register to enrol all



qualified architects, and then on this register base an application for general registration in a few years' time. Mr. Lacy Ridge, F.R.I.B.A., contended that no one defined the duties of an architect in a way clear enough to present to the House of Commons, and so make it evident as to who alone should act as an architect. The burden of this definition rests with the proposers of the resolution and not with the movers of the amendment. He saw great difficulties accruing from any scheme of taking in all sorts and conditions of men who would claim to be architects, and, he said, "Wait till the Institute has well established itself as an examining body." Mr. C. H. Brodie, A.R.I.B.A., said that if the general body adopted the resolution, the Council should resign. They had opposed the Bill before Parliament, and if the general assembly voted in favour of this proposition, the resignation of the Council must follow. This statement was received with much laughter. Mr. Francis Hooper, A.R.I.B.A., advocated the passing of the resolution, and referred to the case brought forward by Mr. Maurice Adams as one evidence of the wisdom of its adoption. Mr. Ralph Nevill, F.S.A., spoke against the measure, and said why in country places incompetent men were employed as architects was, that till now there had been so few good ones there to employ. The public did not want highly-gifted architects to build farms and cottages. He himself had been thus engaged to design such buildings; but it was soon found out how to get on without him, so that he was not employed again, and they sent for a "practical" man in the neighbourhood. (Laughter.) Passing examinations did not necessarily make good architects, and it was a monstrous proposition to suppose that no architects could be competent unless they passed examinations. Many ex-builders became excellent architects, and better than many who were turned out of swell offices. Mr. Phené Spiers, F.S.A., urged the utility and permanent value of examinations, and spoke in favour of Registration, instancing the Registered Plumbers and Professors of Sanitary Science. He advocated time to be given for the Institute's plan of examination, which was growing rapidly, to develop, and then go to Parliament. The President (Mr. Waterhouse) said that the Institute had doubled its numbers within the past ten years, because of the educational facilities afforded. These had been taken full advantage of, in so far as they had had time and opportunity, and while he considered the issue before them of the most vital importance, he would urge that it would be wise not to press the subject forward just now. They would not wait many years; but time is necessary to consider the exact lines of Registration to be adopted. While country members of the profession, no doubt, advocated Registration, the two leading provincial societies (Manchester and Liverpool) voted dead against it. Most of them agreed, and were in accord, as to its importance and necessity, but how best to do it was still an open question. The amendment was put and subsequently carried. The voting was 106 for it and 37 against it. The second resolution was withdrawn, and the third was not put. These were as follows:—2. That when such compulsory examination comes into force, the position of all existing architects shall be completely respected. 3. That, whether these (Nos. 1 and 2) be carried or not, a poll be taken by voting-papers, in order that under any circumstances the opinion of the entire body of professional members may be ascertained. It was ultimately, however, resolved, on the suggestion of Mr. Arthur Cates, vice-president, that a poll should be taken of the entire body of professional members of the Institute on Professor Smith's amendment, as adopted by the meeting, and it was agreed that a full report of the discussion—of which we have given a summary above—should be circulated to the members with the voting-papers. The meeting adjourned, shortly before eleven, to the 21st instant.

#### A NEW SYSTEM OF SEWER VENTILATION.

AN experiment in sewer ventilation is being made by the Portsmouth Corporation on one of the main sewers of that borough, under Mr. Murch, the borough engineer. The drainage committee ordered the experiment to be made some months ago, upon the advice of Mr. Percy Boulnois, the late borough engineer of Portsmouth; but, owing to his appointment as city

engineer of Liverpool, he has left the investigation and reports upon the system, as far as Portsmouth is concerned, to be made by his successor. The section of main sewer chosen for the experiment, and which borders on the Canoe Lake at Southsea, was selected by Mr. Boulnois as being in need of ventilation, and therefore as imposing a severe test upon the invention, the object of which is, not only to ventilate the sewers, but, at the same time, to obviate the nuisance and danger to the public health which arises from the foul emanations escaping from the sewer gratings in the roads. Although all sewer towns suffer alike, the importance of the question as affecting the prosperity of a watering place like Southsea cannot be over-estimated, especially as the low-level main sewer of this borough passes all along the sea-front from Portsmouth to Eastney. The results of the experiments are pronounced by the inventors to be satisfactory, records taken during the last three months proving that volumes of fresh air are regularly forced into the sewer through the gratings, instead of foul air coming out of the gratings, thus preventing smell, and also changing the air of the sewer about once in an hour. The inventors of the system appear to have surmounted the difficulties incidental to sewer ventilation by the expedient of separating the "air way" from the "sewage way," by putting a tube within the sewer, the tube for air being disjointed at intervals and otherwise specially arranged, so that although it collects the foul gases and carries along the fresh air current to dilute them, it is expected to be free from the disturbing influences occasioned by variations in flow of sewage and of temperature. Mr. Archibald Ford, C.E., architect, and Mr. E. W. Wright, ventilating engineer, both of Portsmouth, are the joint inventors. They have had a special form of sewer and drain-pipe made for them to meet the arrangements of the double tube, so that their system is not only applicable to existing and new large main sewers, in which tubes can be fitted, but also to new sewers and drains of smaller size. Water is used at Southsea to introduce fresh air into the sewers; each cubic foot of water being expected to force in as much as 1,200c.ft. of air. At Cosham the water will be afterwards utilised again for automatically flushing the sewers. The system with the patent sewer pipes is now being adopted on a new building estate on Portsdown Hill, Cosham, Hants, belonging to Mr. G. Coffin.

#### PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXIII.

By HENRY LOVEGROVE, F.S.I., Surveyor.

##### ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.

###### FOUNDER AND SMITH.—CAST-IRON STANCHEONS.

	ft.	in.	ft.	in.	
8	1	2			
	15	6	14	8	1½ sides.
8	15	6	62	0	Add ends.
4	15	6	31	0	1in. inside flange.
8	1	6	14	0	2in. top and bottom plates.
8	1	2	14	0	2in. top and bottom plates.
8	6	3	0		Add bracket.
8	4	0	32		Holes cast and rimed for ¾in. bolts.
4	4	0	16		¾in. bolts, 10in. long, with H. N. and W.
4	4	0	16	0	Do., 6in. long, and do.
4 1			4		Hoisting and fixing cast-iron stanchion 15ft. 10in. high, weighing 33½wt. each, ground floor level.
	2	0	2	0	Pattern for stanchion 15ft. 10in. high, T-section, 1½in. metal, and 2in. top and bottom plate, and brackets.
	1	0	2	0	6in. Scot's Gate ash York stone, base 1ft. 10in. by 1ft. 10in., holed for 4 ¾in. bolts, set in cement.
4	1	7			
	1	3	7	11	7lb. lead seatings for stanchions.
4	15	10			
	3	10	242	9	4 C. on iron.
8	1	6			
	1	3	15	0	Add.

###### STANCHEON, FIRST FLOOR.

8	1	2			
	14	8	136	11	1½in. C.I. sides.
8	14	8	58	8	Add ends.
4	14	8	29	4	1in. do. inside flange.
8	1	6			
	1	1	13	0	2in. stop and base-plate.

2	ft.	in.	ft.	in.	
	2	0	3	0	1½in. add bracket for wood bracket under tie beam.
4		9			
	4	6	1	6	2in. brackets.
4	4	16			Holes cast and rimed for ¾in. bolts.
6 2		12			Do.
2	1	0	2	0	¾in. W.I. bolts.
2 3		6			H.N. and W.
4	2	8			¾in. bolts 9in. long with H.N. and W. to secure stanchions together at top.
4	1	4			Hoisting and fixing stanchions 15ft. high, on first floor level.
	1	1			Pattern for stanchion as before 15ft. high, with top and base plates, with three brackets at top.
	1	0	1	0	Do. do. and one bracket at bottom.
4	1	6			
	1	1	6	6	7lb. lead seating.
4	15	0			
	3	10	230	0	4 C. on iron.
4 2	1	6			
	1	1	13	0	R.I. joists 56lb. per foot, and hoisting and fixing 15ft. from ground-floor level.
	39	2			Do. 56lb. per foot, and hoisting and fixing 30ft. from ground-floor level.
	39	2			
	4	0	156	8	4 C. on iron.
	39	2			
	4	0	156	8	Add.
2	11	0	22	0	R.I. joists 56lb. per foot, and hoisting and fixing 15ft. from ground-floor level.
2	11	0	22	0	Do. and hoisting and fixing 30ft. from ground-floor level.
12	2		24		Holes for ¾ bolt cast and rimed in stanchions.
12	2		24		¾in. bolts 4in. long with H.N. and W. to fix end of R.I.J.
12	2		24		¾in. hole through R.I.J.
4	1		4		3in. tooled York stone template 12in. by 9in.
4	1		4		Do. 1ft. 10in. by 1ft.
2	11	0			
	4	0	44	0	4 C. on iron.
2	11	0			
	4	0	44	0	Add.

#### INTERNAL PLUMBER.

All the water supply to be executed in accordance with the water company's regulations. Allow for paying all fees legally demanded. The lead pipes to be of the following weights:—

#### SERVICE PIPES.

6lb. per yard run.  
9lb. " "  
12lb. " "  
16lb. " "

#### WASTES.

7½lb.  
14lb.  
24lb.

2	1		2		
	5	0	10	0	1½in. lead warning pipe.
2	1	0	2	0	1½in. B. boiler screws and double nut.
2	50	0	100	0	¾in. lead service pipe, and digging trench not less than 2ft. 6in. deep for same, and filling-in earth, and ramming, and levelling provisional.
2	1		2		¾in. brass ferrule.
2	1		2		Tapping water company's main.
2	70	0	140	0	¾in. lead service.
2	1		2		¾in. brass ball-valve and copper ball.
			4		¾in. B. screw-down stop-cock to main.
			2		Holes in W.I. cistern for ¾in. pipe.
			2		¾in. brass boiler screws and double nuts.
	30	0	30	0	¾in. lead service from cistern to urinal, &c.
	15	0	15	0	Add to lavatory.
	7	0	7	0	Add.
	5	6	5	6	Add.
	1				¾in. soldered joints.
	2				¾in. brass piston-valves for lavatory.
	2				12in. diameter white glazed wash-basin, with brass plug, chain, and washer, and fixing in slate top.
	25	0	25	0	1½in. lead waste.
	1				1½in. soldered joints.
	1				End of 1½in. lead pipe made good to trap.
	1				Attend plumber to lavatory with two basins.
2	4	0	8	0	¾in. lead supply to W.W. preventors.
			2		¾in. soldered joint.
			2		Twyford's Unitas w.c. apparatus and fixing.
			2		Water waste preventors, with iron brackets and fixing, including chain pull and ring handle, p.e. 25s. each.



ft. in.	ft. in.	
2	7 0	14 0 1 1/2 in. lead flushing-pipe.
		2 Plain clean deal seat and brackets.
	7 0	2 Attend plumber to w.c.
		1 1/2 in. lead supply to urinal.
		1 1/2 in. soldered joint.
	4 0	1 1/2 in. brass stopcock.
		1 1/2 in. copper perforated pipe for urinal.
	5 6	1 Stopped end.
	1 9	9 8 1 1/2 in. planed one side lavatory top on bearers.
		2 Perforated rebated hole for 1 1/2 in. basins.
	5 6	5 6 Labour rounded edge to 1 1/2 in. slate.
	9 0	9 0 Scribing 1 1/2 in. slate to wall.
2	6 0	12 0 3 in. by 2 in. fir wrot. bearers.
		4 Cut and pinned into wall.
2	6 0	8 0 4 C.
	1 9	8 9 1 in. slate, planed both sides, division to urinal.
3	6 9	20 3 Labour rounded edge to 1 1/2 in.
		3 Quadrant rounded corners.
	4 0	5 0 1 in. slate, planed one side, back fixed with proper cramps to wall.
2	1 9	17 6 Add ends.
	4 0	4 0 Labour rounded edge to 1 1/2 in. slate.
2	5 0	10 0 Labour to rebate for 1 1/2 in. slate and red lead joint.
	5 0	5 0 Labour to groove for do. and do.
	4 0	4 0 6 by 4 slate cir. sunk channel set in cement.
		1 Hole through do. for brass grating 3 in. diameter.
		1 3 in. brass grating and fixing in slate.
	4 0	8 0 1 1/2 in. slate planed one side paying, bedded and jointed in cement.
	2 0	45 0 3 in. lead service in girls' lavatory, &c.
18 0	18 0	4 Add.
		1 Soldered joint.
		4 Basins as before.
		4 3 in. B. piston-valves as before.
	0	1 1/2 in. slate planed one side, lavatory top as before, including joints.
1 9	19 3	4 Perforations as before, including basins.
		11 Labour rounded edge to 1 1/2 in. slate.
14 6	14 6	14 6 Labour scribing 1 1/2 in. slate to brick-work.
2	11	23 0 3 in. by 2 in. fir wrought-framed bearers.
		4 Ends cut and pinned.
3		0 Add legs.
2	1	4 C.
3	2 0	5 0 1 1/2 in. lead waste.
	14 0	3 9 Add.
3	1 3	3 Soldered joints.
		1 End made good.
		1 Attend plumber to lavatory, with 4 basins.
4	4 0	16 0 1 1/2 in. lead supply to water waste preventer.
		4 Soldered joints.
		4 Units w.c. apparatus as before.
4	7 0	23 0 Water waste preventers as before.
		4 1 1/2 in. lead flushing-pipe.
		4 Planed clean deal seat as before.
		4 Attend plumber to w.c.

## Building Intelligence.

**ALLOWAY, NEAR AYR.**—Alloway Church, which has been since last autumn undergoing extensive alterations and enlargement, was reopened on Sunday. The new church of Alloway was erected and endowed in 1858, and consisted of the nave and a north transept. In 1876 the south transept was added, but the seating accommodation again became insufficient for the increasing population. The main features of the present enlargement are the lengthening of the nave of the church to the west by 13 ft., and the addition of a chancel at the east end. The chancel floor is raised 2 ft. above the nave. On the south side is a new organ chamber. The seats for the choir are fitted up in the north and south sides of chancel. On the north side of chancel a new session-room and vestry have been built. The enlargement has provided 114 additional sittings. Gas has been introduced into the church, and ornamental hammered iron pendants erected. The slating on the whole church has been renewed, and the ventilation and heating arrangements improved. The new pulpit is of oak, and is erected on a stone base at the north corner of the chancel arch. The Communion table and minister's and elders' chairs are also of oak, and these, as well as the pulpit, were made by Messrs. John Reid and Son, cabinetmakers, Ayr. Messrs. J. and D. Meikle, of Ayr, were

the principal contractors for the work. The improvements have been carried out from the designs of Mr. J. Macvicar Anderson, V.P.R.I.B.A., London, assisted by Mr. John Eaglesham, of Ayr. The cost will be about £2,000.

**BLOOMSBURY.**—The foundation-stone of the Jubilee Wing of the Great Ormond-street Hospital for Sick Children, which will complete this building, was laid on Wednesday week. The addition to the hospital, which is to be finished within about 18 months, has been designed by Mr. Charles Barry, and Mr. W. J. Mitchell, of Dulwich, is the contractor. The design externally has necessarily been varied from that of the present building, as the levels of the floors—save the basement—are different. The wards are more lofty and the windows larger. Eighty-nine additional beds are provided by the new wing, raising the entire accommodation of the hospital to 214 beds. The committee have in hand £21,000, which will suffice to construct the mere structure itself, but £9,000 additional is needed for the purposes of lighting, heating, fitting, and furnishing.

**CARDIFF.**—The Exchange at Cardiff, which was only opened four years since, is now being enlarged for the second time, the total expenditure on the building up to the present having been £66,000. The work now in hand consists of a club, having provided on the ground floor a dining-room 50 ft. by 20 ft., with a smoking-room of similar dimensions in the basement. Over the dining-room will be suites of offices, and in the topmost story a kitchen, having service lifts traversing the whole height of building. The wing will cost £4,000, and is being carried out under the supervision of the architects for the original scheme, Messrs. Seward and Thomas, by Mr. Clerke Burton, also of Cardiff. In the near future the directors intend to rebuild the floor of the Exchange, the original outlay on which was restricted in anticipation of more costly structural features, and which will allow of vaulted apartments and corridors, giving in the basement stores, fireproof strong-rooms, and cellars. A hydraulic lift is to be placed in the building close to the north entrance.

**SELBY.**—The Selby Board of Guardians adopted at their last meeting a scheme and plans prepared by Mr. H. L. Tacon, of Westgate, Rotherham, for the reconstruction of the workhouse at an estimated cost of £4,870. The works will include new isolation hospital, to be built on the site of the present infirmary, the new infirmary to be built on the north side of the garden and porter's lodge; new male and female wards, to be erected on the site of the present male vagrant ward and stone-yard, the board-room, clerk's office, waiting-room, and relieving officer's pay-room. New inmates' workshops to be built on the men's yard, the new laundry and wash-house to be erected next to the kitchen; new larder and mortuary to be built on the north wall of girls' yard. The drainage is also to be entirely reconstructed.

**SPAIN.**—The Roman Catholic Church of St. John the Evangelist was consecrated on Dec. 27, 1889, by Canon Alimaty, delegate of the Bishop of Palma. The whole of the exterior is of black marble carried out in Early Gothic style, the marble being obtained from the estate known as La Albufera de Decudia, the property of Mr. Lee La Trobe Bateman, by whom the church was designed and carried out. The interior fittings are of a very elaborate and costly character, consisting of silver and silver-gilt altar vessels and furniture, processional crosses, sanctuary and other lamps, candlesticks, vases, &c. There is also a fine altar and tabernacle in carved oak, with figure of the patron saint in centre panel, carved oak screens for the Confessional, and various other oak work. The embroidery has all been specially designed, and consists of complete sets of vestments, frontals, bookmarker, worked in gold and silk. The whole of this interior work has been entrusted to and carried out by Messrs. Jones and Willis, of London and Birmingham.

At a meeting of the Cardiff Literary Society on Tuesday evening a lecture was given on "Early Printing and Book Embellishments," by Mr. Edwin Seward, F.R.I.B.A., who exhibited a valuable collection of books and engravings, which the lecturer showed as illustrations.

## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

## TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. G. R.—J. D. and Son.—M. S.—R. W.—B. and Son.—H. H.—L. and W.—B. T. S.—J. A. W.

## "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Toby," "Niger," "Coombe," "Skip Jack," "Wallaby," "Country Bumpkin," "Sea Foam," "The Red Rover," "Cawder," "North Star," "Menelaus," "Dot," "Koko," "Streona," "Y" in a circle, "West Anglian," "Waverley," "Anvers," "Syak," "Tyne," "So-and-So."

## Correspondence.

### R.I.B.A. EXAM.

To the Editor of the BUILDING NEWS.

SIR,—In "Wayside Notes," on page 445 of your last week's issue, "Goth" accuses the Board of Examiners of "rushing candidates through." As one who has passed the examination, I think a protest should be lodged against such a statement, as tending to lower the qualification.

My opinion, and the opinion of those candidates with whom I had conversations after the exam., was that the examiners were by no means too easy; and I can only feel a certain conviction that the number that are not passed is a proof that there is no attempt at the "rushing" of which "Goth" writes.—I am, &c.,

EDMUND J. BENNETT.

Gravesend, March 30.

### COMPETITION DEGRADED.

SIR,—We have not yet got to the bottom of the scale of competitive degradation. We thought we had, considering some of the conditions attached to competitions; but there is a still lower depth. The R.S. Authority at Leighton Buzzard want a scheme of drainage and water supply, and have invited engineers to respond to their wishes.

1. The Authority ask for report, with plans and detailed estimates.
2. They do not bind themselves to accept any plan.



3. They offer no premium.  
4. They do not say whether they will claim the plans, &c., as their property—perhaps they will.

In short, the matter is reduced to this:—Engineers are permitted to work for nothing and without any assurance of getting a penny for their labour. What a chance is here! Permit me to put a parallel case. I want to have the skill and experience of half-a-score professional men on a difficult matter. I do not bind myself to accept their skill and their work when I have got it. I guard myself against paying a single penny. If I should get some excellent opinions and valuable documents, I do not undertake, even if I act upon them, to give anything to their authors. In short, I am a cautious, calculating humbug, and I want other people's brain and work for nothing. Shall I find any fools big enough in folly to give it me? I trow not; so also I do trust the Leighton Buzzard R.S. Authority will advertise in vain until they amend their shabby proposals. It is said there is a flat born every minute. I begin to think it must really be so.—I am, &c.,

CIVIL ENGINEER.

#### "WHOSE END IS TO BE BURNED."

Sir,—I have to record yet another church of historic interest burnt.

Surely there is disaster hanging over every church that has been, or will be, built, if the future generation is not more cautious than the present.

The following is an extract from the local paper, March, 29 1890:

"Guestling Church was totally destroyed by fire early on Sunday morning last."

The Norman tower, the Early English chancel, the nave and roof were gone entirely—nothing remained but the aisle walls and the pillars. The church was quite restored five years ago at a cost of £1,700.

The fire originated through the overheating of a flue. This flue is a common pipe connected with a tortoise stove. It runs in an oblique manner through the roof, and at the corner of the roof, where the pipe passed through into the open, "the fire first began." Heroic efforts were made to save the ancient building, but with no avail. Guestling is five miles from Hastings.—I am, &c.,

CONSTANT READER.

#### LOW SIDE-WINDOWS AT ELY.

Sir,—Allow me the privilege of thanking Mr. Ponting for his interesting letter in your last number, and of assuring him that I should have much pleasure in showing him the chapel. My conjecture in reference to these low windows is perhaps more prosaic than plausible, yet the tinkling of the hand-bell does not commend itself to my judgment as an acceptable substitute; for, in the first place, the chapel has a bell-cot forming the termination of a newel staircase at the north-west angle of the building. I can discover no trace of friction or grooving by a bell-rope, and I fancy that the bell was struck at the proper moment by a person standing at the head of the stairs. The niche or recess in which he possibly stood is closed by a small wooden door, recently renewed. In the second place, the position of the chapel in relation to the dwellings of the citizens is such as to preclude the idea that the sound of this sanctus-bell, still less that of a hand-bell, could reach any ears save those of the prior's own servants or guests. The abodes composing the town or city of Ely were clustered together, as they still are for the most part, to the north and west of the monastic buildings and the palace of the bishop. The chapel of the prior was shut off from the street by the whole of the vast pile of the abbey church or cathedral, by the guest-hall—a huge and lofty edifice, now the Deanery; by a row of buildings, which included a hall adorned by a magnificent fireplace and chimney-piece, still preserved. The northern low window looked into a little court, hemmed in on three sides by the domestic offices of the prior's residence. The southern side of the chapel overlooked the gardens and pleasure-grounds, now called the Park, and which have never been encumbered by buildings of any kind.

From all this, it will be seen that the ringing of the sanctus-bell could have had little concern for the inhabitants of the town of Ely, and it seems to me well-nigh incredible that a beautiful and costly window on each side should have been introduced for the purpose of ringing it. To

my own mind, the notion of a freak or fancy on the part of the wealthy and powerful churchman who built the chapel, and who had at his elbow a true artist—*flos operatorum* in his generation—to carry out his wishes, is a far more attractive solution of the mystery.—I am, &c.,  
Ely, March 30. W. E. DICKSON.

#### THE RAILWAYS OF SCOTLAND.

Sir,—In a notice by the BUILDING NEWS of a book which I have just published under the above title, I find the following passage given in inverted commas: "From London to Perth, by West coast, is said to be now 450 miles; it will also be by the bridge 450." May I be permitted to explain that the words are not mine. That the distance from London to Perth by a road that has been open more than forty years is 450 miles, is matter not of assertion but of simple and easily ascertainable fact, and has no more to do with the completion of the Forth Bridge than with that of the Channel Tunnel.

One point more. You say, "there is too clearly a desire on the part of the author to push a scheme." What the scheme may be you do not say, and I cannot guess; for I can hardly think you would characterise as pushing a scheme an expression of opinion that the maintenance of the *status quo* in Scotland is for the interest of the public. If to desire to see, in lieu of monopolies or quasi-monopolies, the maintenance of free competition between fairly well matched rivals is to push a scheme, then the two Houses of Parliament have been pushing schemes for half a century past.—I am, &c.,

W. M. ACWORTH.

St. Margaret's, West Dulwich, April 1.

#### CHIPS.

Mr. J. P. St. Aubyn has prepared plans for the restoration of the reredos in the parish church of St. Austell, Cornwall. The work will be carried out by Mrs. Arthur Coode, in memory of her brother.

The Ratcliffe local board having applied to the Local Government Board for power to borrow £25,000 for works of sewerage and sewage disposal, Mr. J. T. Harrison, E.C., held an inquiry at the Local Board Offices on Friday. There was no opposition.

Mr. R. Herbert Carpenter, F.S.A., gave a lecture on "St. Patrick's Cathedral, Dublin," before the members of St. Paul's Ecclesiological Society at St. Paul's Chapter House, E.C., on Thursday evening, the 27th March.

At the end of two years' service as town surveyor and water engineer of Weston-super-Mare, Mr. Arthur E. Collins, Assoc.M.Inst.C.E., has had his salary increased from £300 to £350 per annum by a unanimous vote of the Weston-super-Mare Improvement Commissioners.

A new police-court has been erected at Bromsgrove, and especial attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilator, and fresh air admitted by their air inlets.

It is proposed to raise £1,000 for the purpose of endowing technical scholarships in connection with the new engineering laboratories at University College, Liverpool, so that about forty workmen and apprentices can attend the evening classes in the college. In order to raise the money and secure the interest of the workers, an industrial exhibition will be held in the college during the ensuing month of July, and the entire machinery of the place will be set in motion in connection with the exhibition.

At St. John's Roman Catholic Church, Burwash, a new high altar and reredos was consecrated last week. The work is carried out in Caen stone, and has a lofty crocketed canopy, the lower part of which contains the tabernacle, which is of oak, carved and gilded. Mr. Bernard Whelan was the architect, and Mr. E. Thurbon the builder.

A central public library for Battersea was opened by the Rt. Hon. A. J. Mundella, M.P., on Wednesday. A branch library was opened in October, 1888, in Lammas Hall, Old Battersea; another branch is in course of erection in Lurline-gardens, near the Albert Palace, and will be opened in the autumn of this year. The central library, which stands in the exact centre of the parish on Lavender-hill, and near to Clapham Junction, is to be the chief of these. It is of red brick with Portland stone designs, erected from the designs of Mr. E. W. Mountford. On the ground floor are reading rooms and the lending-library department; above is a reference library. The total cost has been less than £10,000. The library opens with £16,650 books at its disposal.

## Intercommunication.

### QUESTIONS.

[10259].—**Rustless Iron.**—Can malleable iron castings be treated, by Barff's or other process, to render them non-rusting, if coated, as paint would do? There are half-a-dozen castings in a small machine I am making—all out of sight, except a small piece in. by in. by in. —would dull heating and dipping in oil be any good? What is cost of apparatus, as several thousand castings have to be done?—MODEL-MAKER.

[10260].—**Sulphur and Iron Filings.**—Will some one please say in what proportions these should be melted for fixing wrought-iron railings with?—C. F. M.

[10261].—**Sound-Proof Plastering.**—Can any of your readers tell me if non-conducting composition for plastering walls and ceilings is any good?—C. F. M.

[10262].—**Change in the Colour of Paint.**—Some seats facing the sea which were painted drab colour have, by the action of the salt spray, become a deep blue. An explanation of this change by some correspondent will greatly oblige.—WESTON.

[10263].—**Tall Chimney Construction.**—Why do some architects put cast-iron caps on the top of tall chimneys? Is it better than stone or brickwork to finish off with? Should I derive any benefit by building a tall shaft with brickwork in cement—would not good mortar do as well? Which will stand the greater heat—brickwork in cement or brickwork in mortar?—INQUIRER.

[10264].—**Prime Cost.**—Is prime cost the amount of the article specified, as taken from the trade list; or is it subject to the usual discount therefrom? If the latter, can the contractor lay claim to it, or should it be allowed to the employer?—FAIRPLAY.

### REPLIES.

[10249].—**Beam.**—By removing the two columns, the bending moment of the beam will be three times greater than before, supposing a distributed load on the beam, and therefore its size may be increased, say to 12in. by 9in.—G. H. G.

[10250].—**Seasoned Timber.**—Inspection will seldom discover if the wood has been properly seasoned. One of the principal tests is weight. In properly-seasoned timber the weight is less than when unseasoned. Tredgold says the reduction in weight should be about one-fifth to one-third. The surface of good timber should not be woolly or dull in appearance. Rivington's "Notes on Building Materials" describe the characteristics of good timber, and will be found useful to an architect. See also Laslett's work on "Timber and Timber Trees."—G. H. G.

[10251].—**Concrete Floor.**—With so small span  $4\frac{1}{2}$  to 5in. thickness of well-made concrete, with good cement and aggregates, on good joists not over 30in. centre to centre, will do flat. If good abutments, the same will do without iron joists, if it rise  $\frac{1}{4}$  to 1in. to the foot of span, and if well executed, in opinion of—J. P.

[10252].—**Old Mortar** should not be used as an aggregate, with lime or cement, for fresh mortar; it's no better than road scrapings, though too often used where sand or other grit is too expensive.—J. P.

[10253].—**Cement Flat.**—No such flat can be made perfectly water-tight by concrete on iron girders; unless quite free from deflection and expansion of the iron joists or girders. Good asphalt, owing to its elasticity, is best.—J. P.

[10258].—**Rain Driving through Stone.**—Before "E. T. S." made the assertion that rain had driven through a 9in. thickness of Ham Hill stone he should have made a more careful examination of the work he refers to. The fact he mentions, that water "was lying in pools on the window seats" is quite enough of itself to prove that he has made a great mistake or a great misstatement. The "pools" of wet could only have come through the beds of the walling above the stone. In parts of Somerset and Dorset, and in very exposed places, Ham Hill stone has been more largely used than any other for many centuries past. I am in a position to say that no rain has ever driven through a 6in. thickness of solid Ham stone, much less a 9in. thickness. There is perhaps hardly any freestone to be found which receives less moisture than Ham stone of good quality. "E. T. S." should get the assistance of a good practical mason to examine the walling, and he will, I have no doubt, find out where the wet comes in.—EXPERIENCE.

[10258].—**Rain Driving through Stone.**—If "E. T. S." will write me, I will furnish a certain preventative against water passing through the stone.—JAS. PULHAM.

Ward's City of London School for Girls, which is about to be removed from Bishopsgate on account of extensions, will be rebuilt on a site on the Thames Embankment, at the rear of the Guildhall School of Music. The school will be rebuilt to accommodate 556 girls, and is expected to cost about £15,000.

Works of water supply have just been carried out by the Water Commissioners of Dundee in the district of the Monifieth local authority, and this week the main pipes have been charged. The cost has been, for the six miles of new mains, £2,327 1s. 6d., being £23 2s. 6d. over the outlay as estimated by Mr. Watson, engineer to the Commissioners.

As a memorial of the late Mr. J. F. B. Firth, a marble bust and pedestal are proposed to be placed, by subscription, in the meeting-room of the London County Council at Spring-gardens.

Mr. Thomas, C.E., county surveyor of Carnarvon, has been elected county surveyor of Buckinghamshire at a salary of £500.



## LEGAL INTELLIGENCE.

**DISTRICT SURVEYORS' FEES FOR BLOCKS OF TENEMENTS.**—Messrs. Sutton and Dudley, builders, were summoned by adjournment to the Lambeth Police-court last week by Mr. George Lansdown, district surveyor, for the non-payment of fees claimed by him with regard to a block of model dwellings in Lion street, Kent-road. Mr. Partridge now gave his decision. He said the defendants were summoned, under the Metropolitan Building Act, for certain fees alleged to be due on the ground that the buildings were separate. There were ten blocks under separate roofs, with one common entrance from without, and one common staircase leading to separate chambers or tenements within each, the area of each block being less than 3,600sq.ft. The dispute was whether the fees were to be charged upon each set of tenements or upon each block only. For the defendants it was contended that the fees could not be assessed upon each tenement, but only upon each block. The sub-section of the Act (Section 27) recited, "If any building in one occupation is divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from without, every such tenement shall be deemed a separate building." The sub-section dealt with buildings being separate sets of chambers or tenements, and was not applicable to the present case. He held, therefore, that the surveyor was entitled to claim only for each block contained under one and the same roof, but not for each tenement contained under such roof as a separate building. He therefore decided for the defendants, leaving the parties to arrange upon that basis the amount of fees, upon which there was no dispute.

**TRESPASS ON A PARTY-WALL.**—MESSENGER V. LOADER, AND GROOM V. LOADER.—These actions have been tried together in the Court of Chancery before Mr. Justice Ford North. The plaintiffs are respectively lessor and lessee of the Highlander beerhouse, High-road, Lee, and the defendant is a builder, who, after serving the usual party-wall notice, proceeded to build a separate external wall to his premises adjoining the party-wall. The plaintiffs, for whom Mr. Cozens-Hardy and Mr. Moyes appeared, claimed damages of trespass, and for damage to the wall, calling the manager of the house, and Messrs. Pountney and Roberts, surveyors. The defendant called Mr. Charles Bell, F.R.I.B.A., and Mr. H. Lovegrove, F.S.I., to prove that the old wall was a party-wall, and that the alleged damage could be made good for a few pounds. The judge decided to dismiss the action by the freeholder (Messenger), each party to pay his own costs, and in the other action he awarded £25 damages for the trespass with costs on that part of the action only, as he dismissed that part relating to ancient lights.

## CHIPS.

A lecture under the auspices of the Dundee Institute of Architecture, Science, and Art, was delivered in the Y.M.C.A. Hall in that city on Thursday, the 27th ult., on the subject of "Ventilation." There was a good attendance, and Mr. Charles Ower, architect, of Dundee, presided.

The Union Workhouse at Tunbridge Wells is about to be extended at an estimated cost of between £5,000 and £6,000, from plans by Mr. William Oakley, surveyor to their rural sanitary authority.

The County Council of Flintshire have decided to appoint a county surveyor to look after the roads, to inspect every road at least once a fortnight. They further agreed to offer the very inadequate salary of £160 a year only, and give his assistant or inspector £130.

Messrs. Luxton and Co.'s cabinet works at Col-lumpton, Devon, were destroyed by fire on Tuesday week, when damage to the extent of £2,600 was done, and the workmen lost tools valued at £300.

The city council of Manchester decided on Wednesday to advance the salaries of Mr. H. Chenery and Mr. T. A. Lomas, the surveyors of paving respectively for the northern and southern districts of the city, from £215 to £240 a year each.

A bronze bust of the late Colonel F. Duncan, C.B., M.P., was unveiled in the main entrance to Holborn Town Hall on Wednesday week. The sculptor is Mr. Conrad Dressler.

Messrs. Jones and Willis recently made for the parish church, Carmarthen, an angel lectern in brass. This appropriate and very uncommon idea represents an angel, almost life-size, standing upon a richly-chased globe, supported by cusped and crocketed buttresses. The figure is modelled in a spirited manner, giving due effect to the sacred character of the work, the facial expression and the hair being particularly good. A copy of this lectern, cast from the original model, can now be seen at the showrooms, 43, Great Russell-street, near the British Museum.

## Our Office Table.

WE regret to announce the sudden death of Mr. Ernest Claude Ayton-Lee, F.R.I.B.A., till recently of James-street, Bedford-row, W.C., which occurred at his residence at Ramsgate on Saturday last. Mr. Lee, who was only 43 years of age, had been suffering for some years from hæmorrhage of the lungs, and spent the winter of 1887-8 in Australia. On his return he resumed practice, but removed from Teddington to Ramsgate. The cause of death was aneurism of the heart. The younger son of a clergyman, trained in the office of the late William Burges, A.R.A., Mr. Lee became an accomplished draughtsman, and when in his 24th year he carried off in the same session of the R.I.B.A., that of 1870, the Soane Medallion and the Pugin Travelling Studentship, he joined the Institute as an Associate in 1869, and became a Fellow in 1880. The possession of private means undoubtedly prevented him from undertaking so much work as his originality and his powers of draughtsmanship and design warranted, and his practice largely consisted of churches and mansions. In his earlier years Mr. Lee took an active part in the working of the Architectural Association, which he joined in 1864, and he ascribed much of his dexterity with the pencil to the training received in the Class of Design. In the session of 1880-1, having served the Association in subordinate capacities, he occupied the Presidential chair. This year of office was marked by the inauguration of the A.A. Travelling Studentship, and by the augmentation of the value of the prizes given in the classes, in both which directions the President offered substantial pecuniary aid. He was, as is mentioned in the A.A. Notes for April, "a constant and greatly valued contributor to the Sketchbook," and also took part for many years in the annual excursions of the Association, and was a genial member of the party. Among his works we may mention the rebuilding of the parish church of St. Mary, Whitechapel, carried out at a cost of £20,000, borne by Mr. Lee's uncle, the late Mr. O. E. Coope, M.P., a church illustrated in the BUILDING NEWS for September 8, 1878, and again, as reconstructed after the destructive fire of August, 1880, in our issue of May 12, 1882. He also rebuilt the parish church of Brentwood, likewise at Mr. Coope's expense, and this building was illustrated by us on July 25, 1879; June 23, 1883; and July 11, 1884; and Berechurch Hall, Colchester, the residence of Mr. Coope, a drawing of which we published in our issue of June 16, 1882. Among other buildings may be mentioned a bank at Colchester, illustrated by us April 11, 1879; Holy Trinity Schools at Westminster, also given in our pages; churches at Woodford and Collier-row, Essex; the Grange and cottages at South Weald and Midhurst. He won, in 1883, one of the premiums in the Art Museum competition, Dublin. He was an occasional exhibitor at the Royal Academy, and besides many architectural drawings, we recall on the walls of Burlington House a water-colour sketch of old house at Mont St. Michel, hung in 1877, and another drawing in the same medium of the Hôtel Bourgtheroude at Rouen, exhibited in 1887. Mr. Lee married, ten years since, the sister of his friend and fellow-pupil, Mr. H. W. Lonsdale, and is survived by her and by their only daughter. The funeral takes place on Saturday next, at Teddington Cemetery.

It will be recollected by some of our readers that about two months since the Newcastle Society of Antiquaries were exercised in mind by the receipt of a demand from the vicar of St. John's Church in that city, for the restitution of the piscina formerly belonging to that church, and which has for many years been exhibited by the Society in their museum at the Castle. Several members, led by Canons Franklin and Hicks, considered the piscina was virtually stolen property, and urged that it should be returned; but Mr. C. C. Hodges and others suggested that a more prudent course would be to inquire into the circumstances under which the Society obtained possession of the piscina, especially as a by-law of the Society forbids its council from giving away any of its property unless it is duplicated. The result of an adjournment has been to confirm the opinion that the Society is legally in possession of the piscina, for it was

presented by the contractors for the restoration of St. John's Church so far back as July, 1844. It will, therefore, continue to be shown in the Castle Museum at Newcastle.

Mr. CHARLES SWINSTEAD, who died on March 22nd, was in his 75th year. He was appointed one of the masters of the National Art Training School when the Department of Science and Art initiated the system of sending its students, as part of their training, to teach in the parochial schools of London, his office being the inspection of the work done by the students, and teaching them how to teach others. In this way the whole of the masters in training for many years came into contact with him, and it may safely be said that all found him a true and kind friend, many of these friendships only terminating with his life. He subsequently founded the North London and Hornsey Schools of Art, where many students have profited by his exceptional teaching powers, and have been drawn to him by his geniality and love of art.

On Saturday a meeting was held at Gloucester to consider the formation of a scheme to improve the approach to Gloucester Cathedral. Plans have been prepared by Messrs. Waller and Son, the cathedral architects, for the improvement. Nothing worthy of preservation on antiquarian or other grounds will be destroyed, and the interesting remains of King Edward's Gateway will be brought into prominence. The cost of the improvements, after allowing for aid given by the corporation in constructing the new roadway and pavements, is estimated at £14,000. Towards this sum upwards of £4,000 has already been subscribed.

At the last meeting of the London School Board, the Works Committee brought up a report stating that, having regard to the great pressure of work in the architect's office, and to the large number of schools still to be erected, the planning of which has not yet been begun, the committee were of opinion that the assistance of outside architects, who had had special experience in the planning of schools, might be obtained to design some of the schools which were to be erected on sites at present in the possession of the Board. The committee accordingly recommended that five new schools should be planned by, and built under the superintendence of, five outside architects. A long discussion ensued, and on a division the report was, by 24 votes to 11, referred back to the committee for recommendation.

THE Bill introduced by Mr. James Stuart, to provide for the better housing of the working classes in the metropolis, embodies the principal provisions of the Bill of last session, and empowers the County Council to buy, sell, hold, let, or hire land; to build and manage buildings, and let rooms; and to lay out land for providing suitable dwellings inside or outside of the metropolitan area for use by the population engaged in the industry of such area; lodgings, baths, wash-houses, halls, open spaces, lands, kitchens, nurseries, dining-halls, or other rooms for joint use. The funds of the County Council to be used for these purposes will include any accumulations of any such moneys and any sums received by way of compensation, payment, repayment, sale of materials, chattels, or effects. The Bill provides for the rating of ground values to the extent of one-sixth part of the gross ratable value of the premises erected thereon, and for the levying of a rate for houses of the working classes not exceeding 6d. in the pound on the annual ground value, the tenant paying the rate and deducting it from the rent. Vacant land is also to be rated on an annual ground value equal to 5 per cent. of the amount which the land would sell for.

## MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Liverpool Architectural Association. "Orms-kirk Parish Church," by W. E. Hill.  
THURSDAY.—Edinburgh Architectural Association. "Accessories of Architecture," by John Keppie, Pres. G.A.A., Glasgow. 8 p.m.  
FRIDAY.—Bradford Historical and Antiquarian Society. "Some Bradford Charities," by William Claridge, M.A.

New offices are about to be added to Messrs. Warwick's brewery in North-gate, Newark-on-Trent, at a cost of about £3,400. Mr. Charles Baines, of Newark, is the builder.

At a meeting held at the County Hall, Paisley, on Friday, it was decided to erect in that town a bronze statue of the late Sir Peter Coats, of Auchendrane.



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## TENDERS.

\* \* \* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**BROMLEY.**—For repairs at the Red Cross, Keston, Greyhound, Bromley, and Plough, Bromley Common, for Messrs. H. and V. Nicholl, Ltd. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Pritchard	...	...	...	£244	0	0
Knight, T.	...	...	...	221	0	0
Fisher	...	...	...	183	10	0
Hoare, R.	...	...	...	187	15	0
Payne, D. (accepted)	...	...	...	105	0	0

**ASHTON-UNDER-LYNE.**—For alterations to the Stamford-park hotel. Mr. J. H. Burton, Warrington-street, Ashton-under-Lyne, architect:—

Williamson, J. W.	...	...	£523	0	0
Gibson, J., Dukinfield	...	...	515	0	0
Underwood and Bros., Dukinfield	...	...	496	0	0
Tickle, W.	...	...	493	0	0
Robinson, J.	...	...	490	0	0
Booth, A. H., Stalybridge	...	...	489	0	0
Dean, T.	...	...	465	0	0
Gardner, H.	...	...	460	0	0
Rowland, H. (accepted)	...	...	427	0	0

Rest of Ashton.

**BATH.**—For building Imbecile Institution, for the charity. Messrs. Spackman and Sons, Bath, architects:—

	A.	B.
Mould Bros., Bath	...	£19,700
Kingerlee, J. H., Oxford	...	19,244
Stephens and Bastow, Bristol	...	17,999
Bladwell, J., Bastow	...	17,998
Poole, A., Ilminster	...	17,655
Foster, J., Bath	...	17,632
Shellabeer, G., Plymouth	...	17,404
Laphorn & Goad, Plymouth	...	17,394
Reed, G., Plymouth	...	16,976
Treasure and Co., Shrewsbury	...	16,700
Foster and Dicksee, Rugby	...	16,666
Long, J., and Sons, Bath	...	14,977

A.—If two stories above ground floor. B.—If only one story.

**BIRMINGHAM.**—For fencing-in land adjoining the Bloomsbury schools, and erecting thereon a cookery centre, for the school board:—

Webb, W. and J., Birmingham (accepted) £723

**BRIDGEWATER.**—For repairs, &c., at the Congregational Church, near Petherton. Mr. G. B. Jewell, Yeovil, architect:—

Clatworthy and Townsend (accepted).

**BRIDGEWATER.**—For the erection of farm-buildings at Classy, for the Right Hon. Viscount Portman. Mr. G. B. Jewell, Yeovil, architect:—

Clatworthy and Townsend (accepted).

(Lowest of three tenders received.)

**BRIDGEWATER.**—For repairs, alterations, &c., at Huntworth House, Huntworth. Mr. G. B. Jewell, Yeovil, architect:—

Builder's work:—Properjohn (accepted).

Heating and plumber's work:—Petter, Yeovil (accepted).

**BRIDLINGTON.**—For laying out new streets on Cowton's Charity land at Bridlington Quay, for the Charity Trustees:—

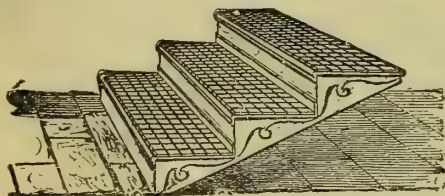
Owston, C.	...	...	£423	0	0
Kennard, J.	...	...	375	0	0
Davison, J. N. (accepted)	...	...	360	18	0
Bailey, R.	...	...	340	0	0

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<b>Railway Stations.</b>	Broadstone, Dublin	Ealing Terminus	Kenilworth	Monkwearmouth	Slough	Westminster	Dublin Castle	Schools, &c.	Stratford, Colgrave Road
Accrington	Burdett Road	Earl's Court	Kensal Green	Moorgate Street	Soho	Whitechurch	Police Barracks	Belfast Method-	Stratford, Sal-
Acton Green	Bursough Junction	Edgware Road	Kentish Town	Monument	South Bromley	Whitechapel	Eastney	ist College	way Place
Aldersgate street	Burton	Fallsworth	Kilburn	Newcastle-	South Kensington	Whitefield	Fleetwood	Battersea, St. Sutton	
Aldgate	Bury	Farringdon Street	King's Cross	under-Lyne	Southport	Whitley	Fulwood	Mary's Church St. Jude's	
Althorp Park	Borough Road	Fenchurch Street	King William Street	New Cross	Speke	Willenhall	Halifax	Birmingham, Tayport	
Altrincham	Mersey Tunnel	Finchley Road	Langley Green	Newport	Spring Grove	Bridge	Hamilton, Glas-	Cowper Street	Torrington
Aston	Canonbury	Firsby	Latimer Road	Newton Heath	Steechford	Willesden	gow	Clapham	Upton Cross
Ash Street,	Camden Road	Forest Gate	Lea Bridge	North Brentford	Stepney	Wood Green	Hulme	Colchester	Wandsworth
Stockport	Chalk Farm	Forest Road	Leamington	North Bridge	Stoke	Wormwood	Knightsbridge	Forest Gate	
Birmingham,	Charing Cross	Level Crossing	Leman Street	Northampton (Castle Station)	Stourbridge	Scrubs	Leicester, Glen	Parva	Hospitals.
New Street	Cheddington	Fulham	Leyland	Nottingham	Stratford	Worsley	Manchester	Harrow	Belfast County
Banbury	Cheetham Hill	Geedley	Leyton	Oldbury	Stretford	Wolverhampton	Newbridge	Haverstock Hill	Lunatic Asylum
Barnsley	Chequerbent	Gloucester Road	Leytonstone	Old Ford	Sudbury	Wolverton	Newcastle-on-Tyne	Orphan Work-	ing School
Batley	Clayton	Gower Street	Limehouse	Paddington	Sunderland		Normanton	Jamaica Level	Greenwich In-
Bedminster	Clifton	Grantham	Lincoln	Parsons Green	Sutton Coldfield		Northampton	Leyton, Gram-Guy's Hospital	firm
Bescot Junction	Clitheroe	Greenwich	Little Ealing	Patricroft	Temple		Norwich	mar School	Lincolnshire
Birmingham	Creve	Haggerston	Liverpool Road,	Pickel Bridge	Thornton		Portsea	Leyton, Church County Asylum	
Bishopsgate	Crooked Billet	Hammersmith	Manchester	Plaistow	Torquay		Portsmouth	Road	Middlesex
Blackfriars	Cross Lane	Heaton Park	Liverpool Street	Pleek	Tower of London		Preston	Newhaven	County Lunatic
Bridge	Crumpsall	Hereford, Barr's Court	Llandudno	Plymouth	Tring		Regent's Park	North Bow	Asylum
Blake Street, Sut-	Cullecoates	Highbury	Loudoun Road	Poplar	Tynemouth		Salford	Old Ford	Netley Hospital
ton Coldfield	Dalston	Highdram Road,	Ludgate Hill	Portsmouth	Upton Park		Shorncliffe	Poplar, Byron & Peterborough	
Blaydon-on-Tyne	Daubhill	Hollyhead	Mark Lane	Priestwich	Victoria Park		Trim	Bright Streets	Infirmary
Bletchley	Daybrook	Holmwood	Maidstone	Ruddliffe	Walham Green		Worley	Southsea, Rubery Asylum	
Bolton	Dayholme	Honerton	Manchester	Road	Walsall		Wolverhampton	Church Path	Northfield
Bolton Bridge	Derby	Honerton	Manchester, Ex-	Salisbury Road	Walsall		Wrexham	Southsea, Omega St. Thomas's	Hospital
Bombay, India	Droylesden	Honerton	change	Seething Lane	Waste				
Bow	Drighlington	Honerton	Manchester	Shadwell	Werneth, Old-				
Bowdon Central	Dudley	Honerton	Manchester	Shoreditch	Westbourne				
Brick Lane	Dundee	Honerton	Manchester	Shoreditch	Westbourne				
Bristol	Dundee	Honerton	Manchester	Shoreditch	Westbourne				
Broadfield	Dundee	Honerton	Manchester	Shoreditch	Westbourne				
Broad Street	Dundee	Honerton	Manchester	Shoreditch	Westbourne				

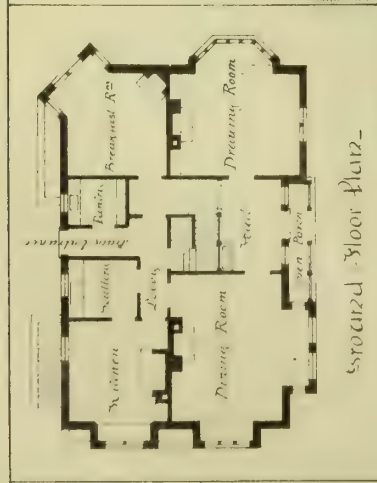
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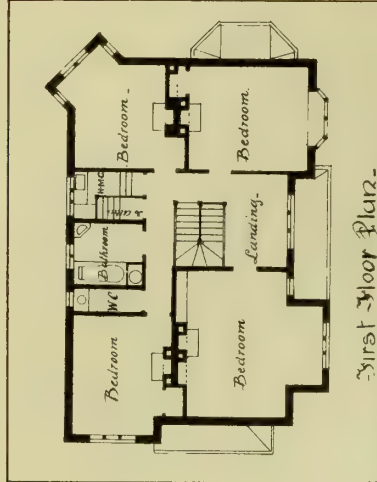




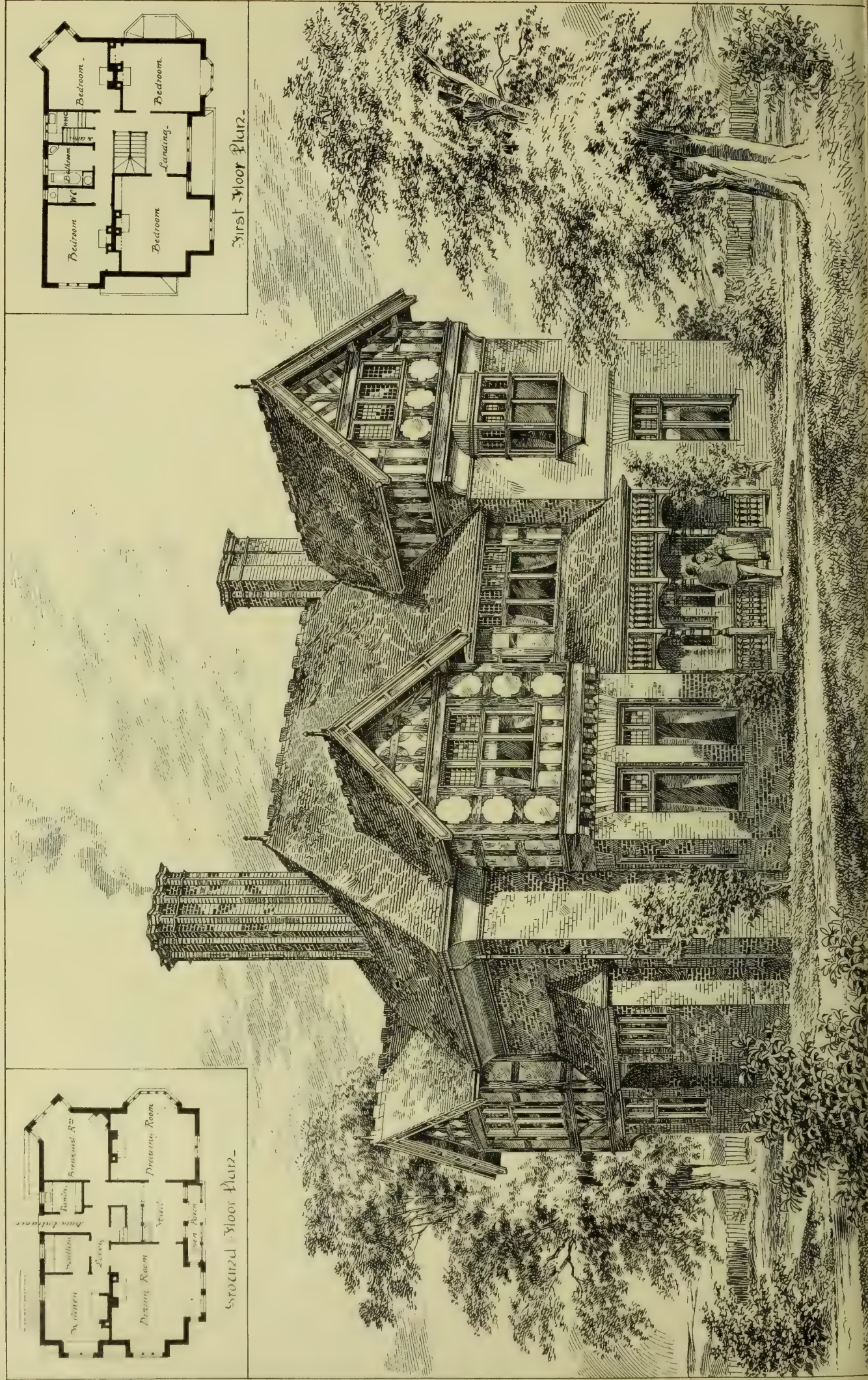
THE BUILDING NEWS, APRIL 4, 1890.



Ground Floor Plan.



First Floor Plan.

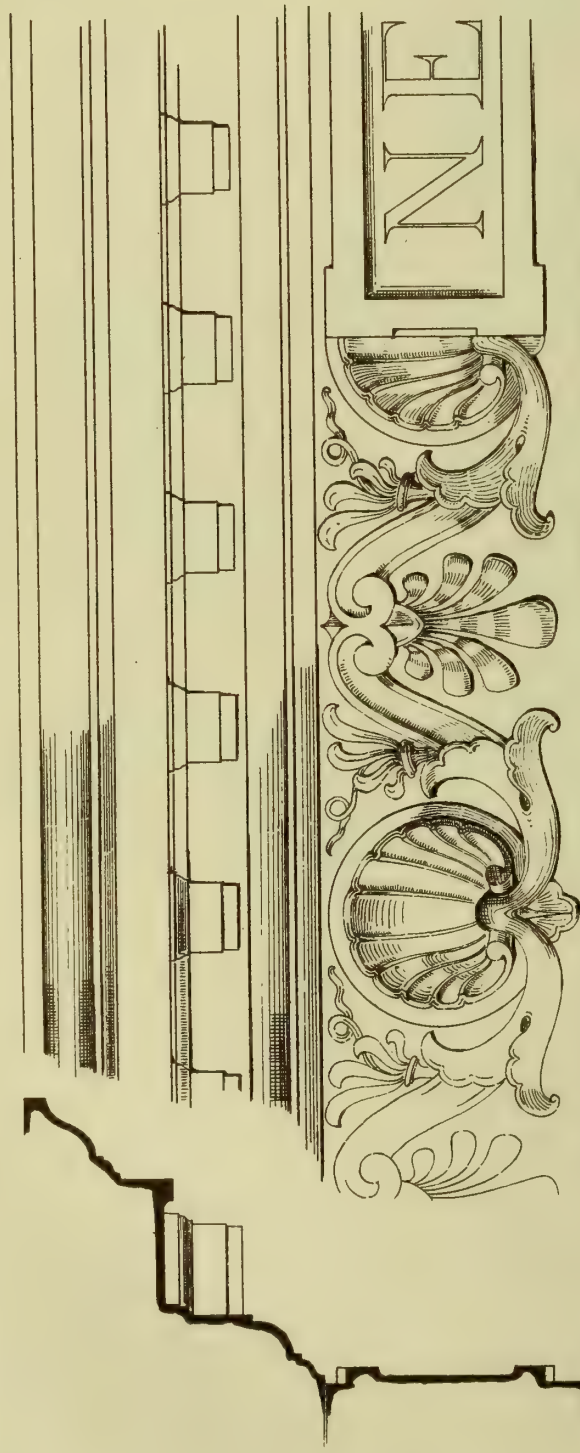






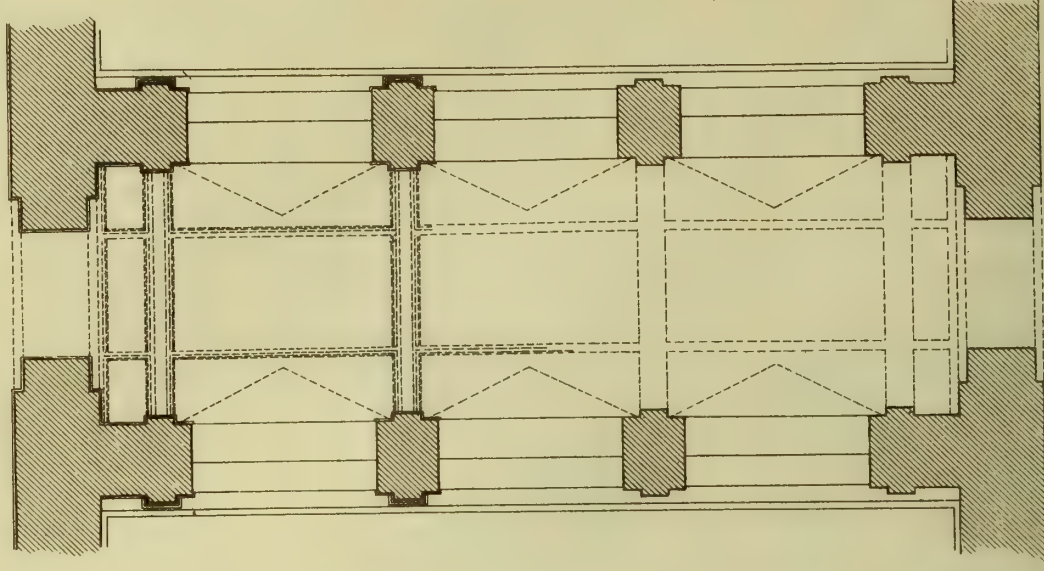


THE BUILDING NEWS, APRIL 4, 1890.



R.A.A.S.

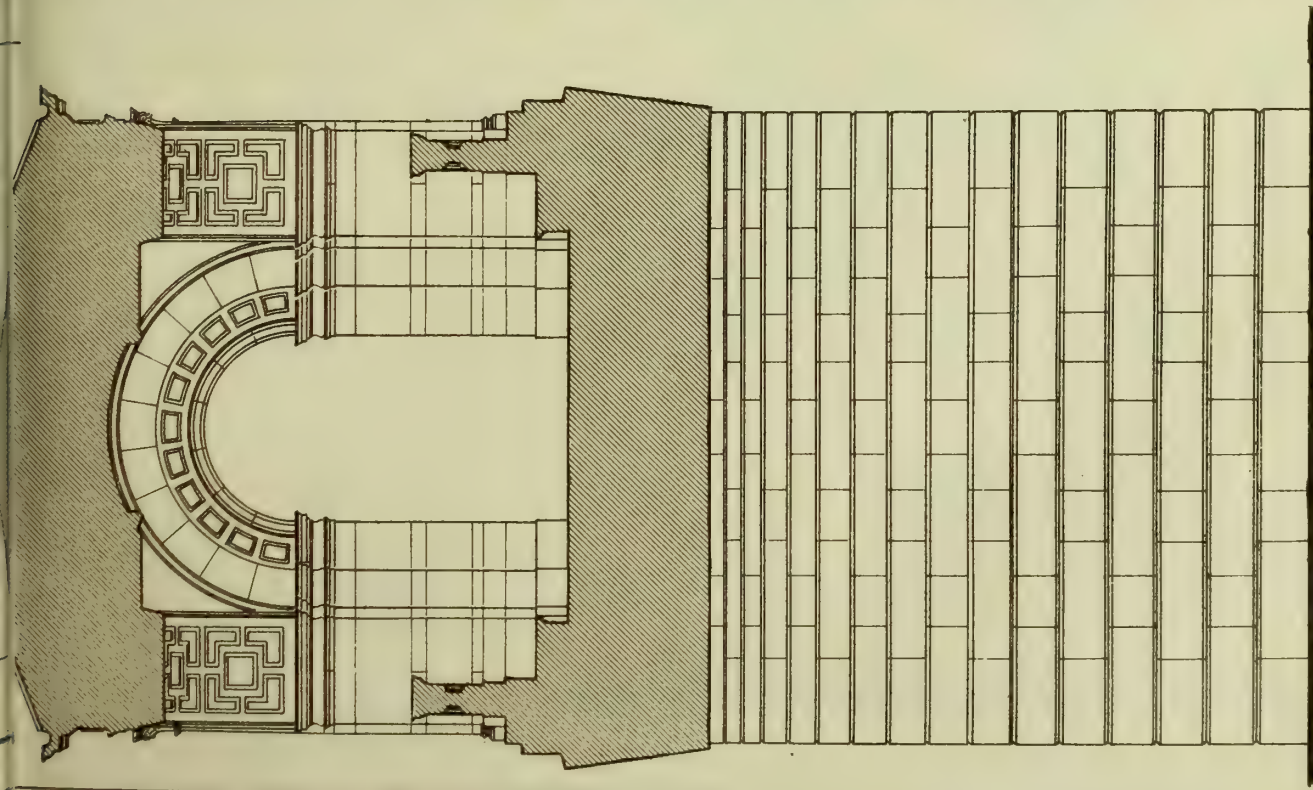
DESIGN FOR A COVERED BRIDGE.



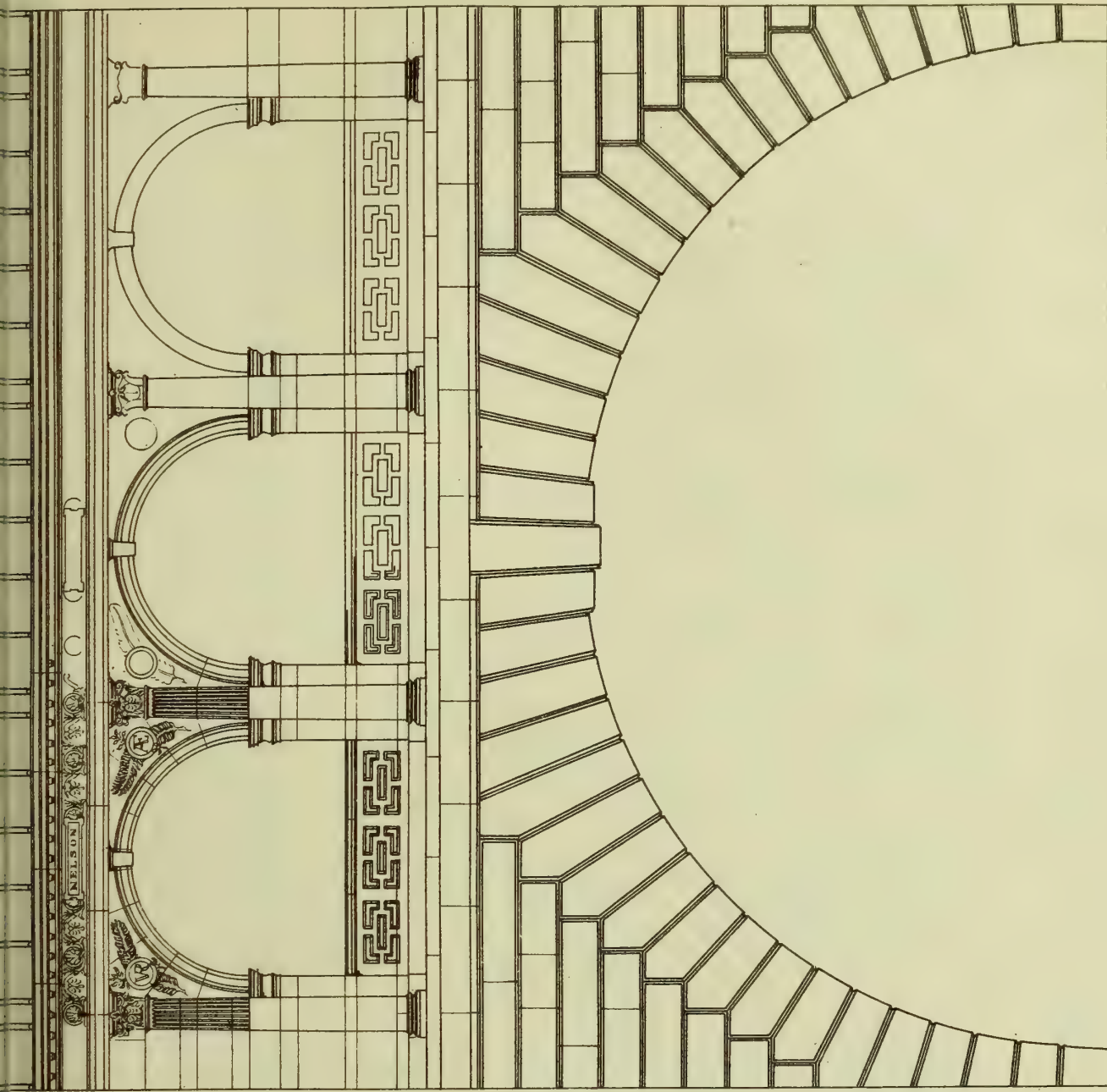
PLAN OF COVERED WAY.

ROYAL ACADEMY ARCHITECTURAL SCHOOL.  
THE PRIZE DESIGN 1889.  
BY THOMAS DAVISON.

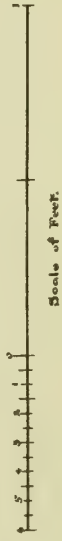




Cross Section.



ELEVATION.





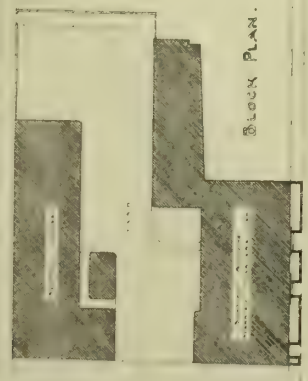




PROPOSED NEW

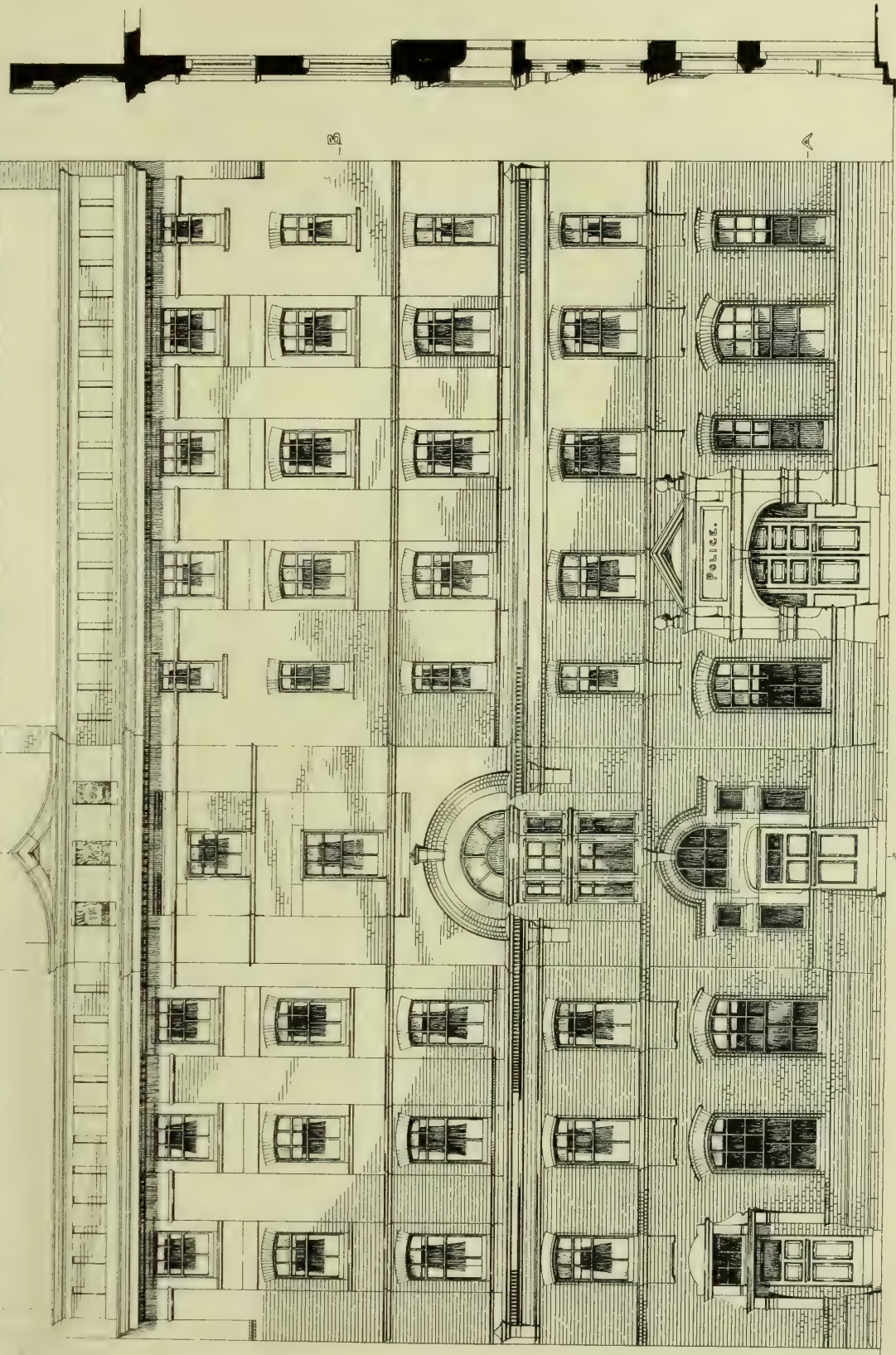
POLICE STATION IN

LEMAN STREET WHITECHAPEL.



BLOCK PLAN.

PLAN AT B.



SECTION AT E.



FRONT ELEVATION.

E

PLAN AT A.

SECTION AT C.D.

*Wm. D. Dyer*  
ARCHT.



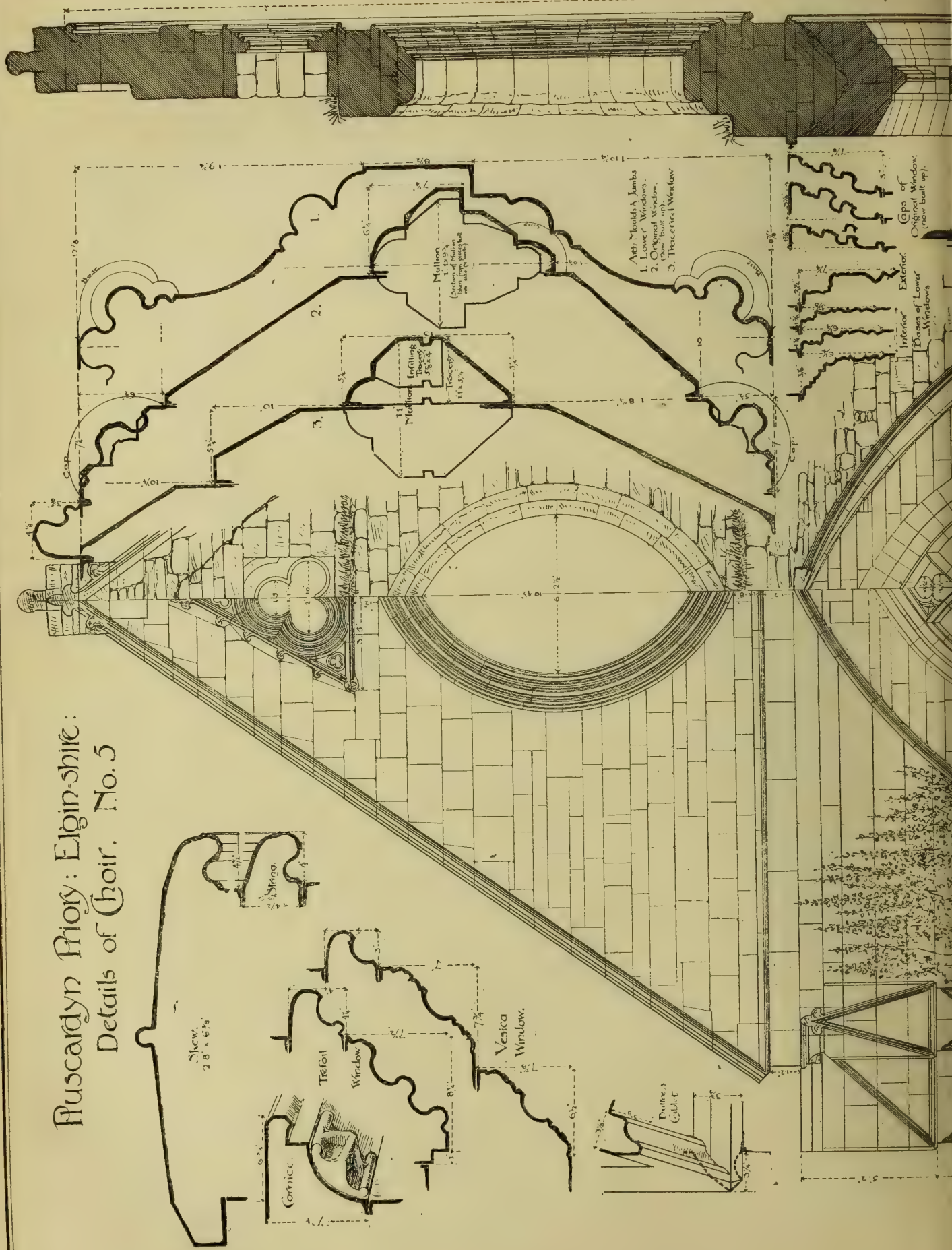




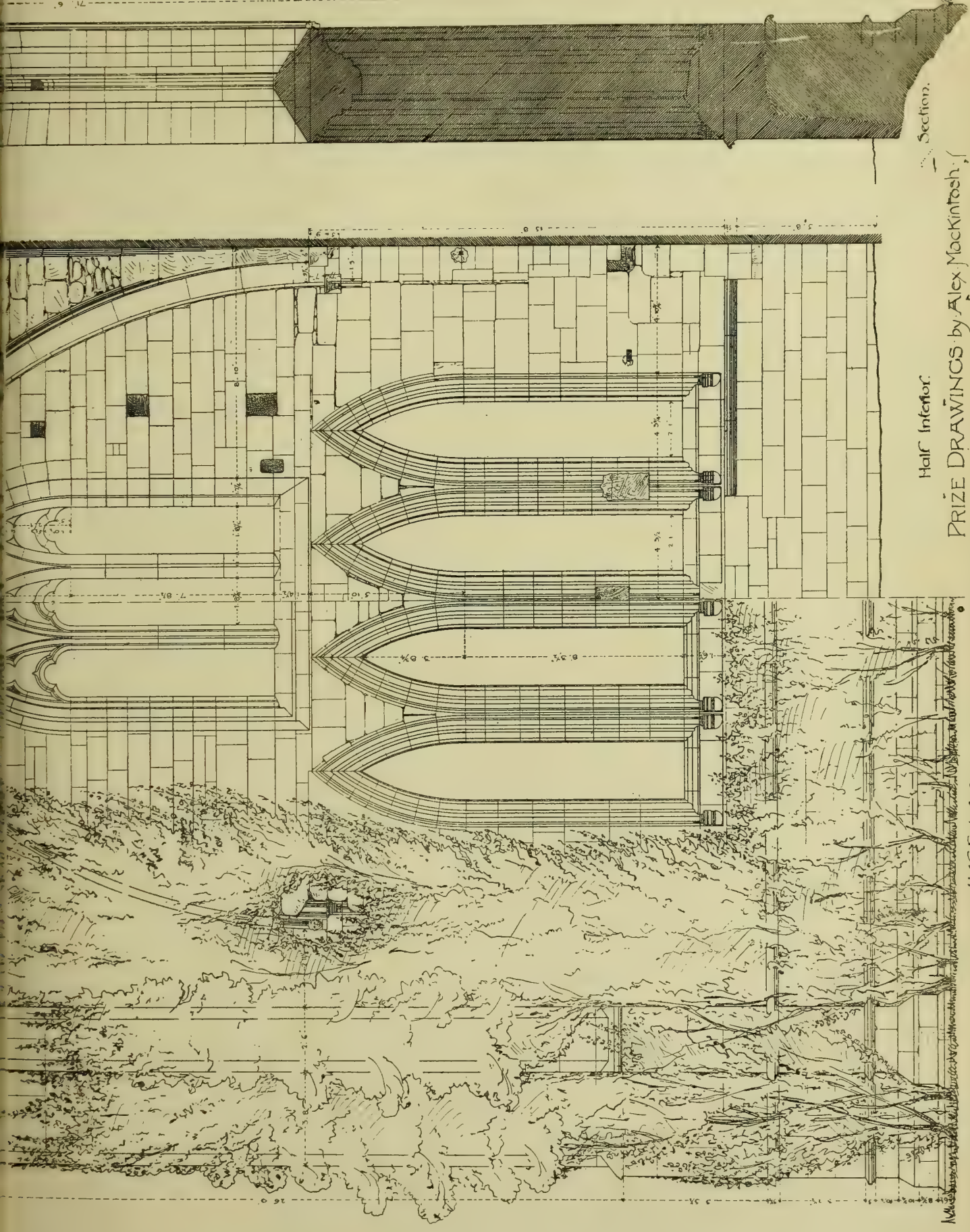




# Ruscardyn Priory: Elgin-shire: Details of Choir. No. 5







Section.

Half Interior.

PRIZE DRAWINGS by Alex MacKintosh.

Half Exterior.

RIBA SILVER MEDAL.

Scale for Elevations.  
Scale for Mouldings.

10 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 10



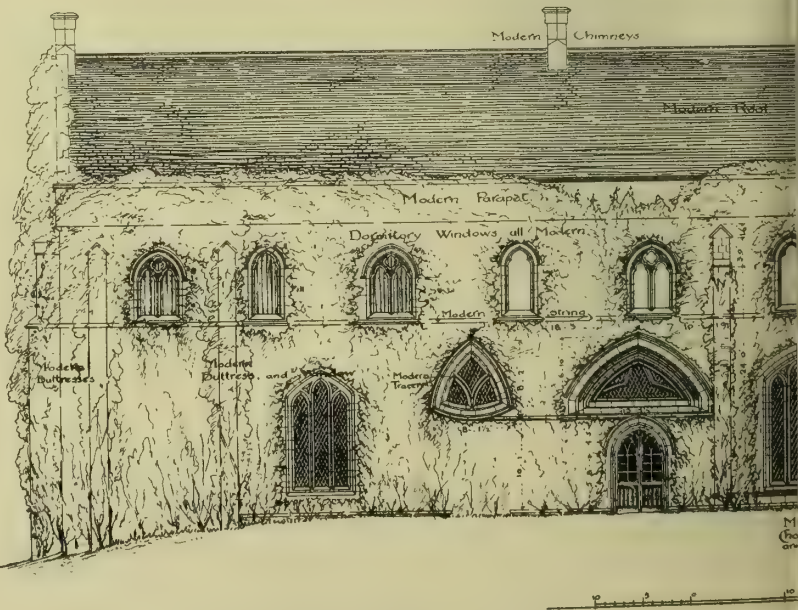
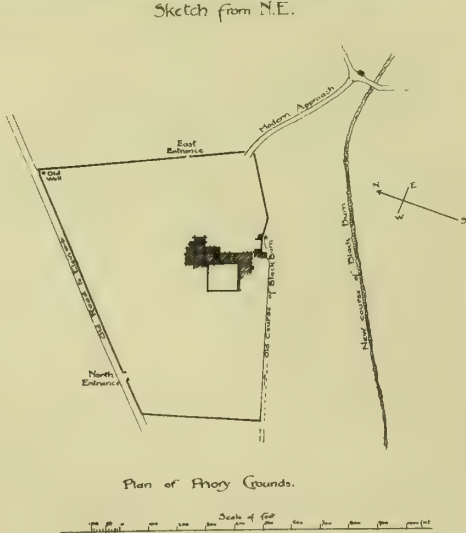
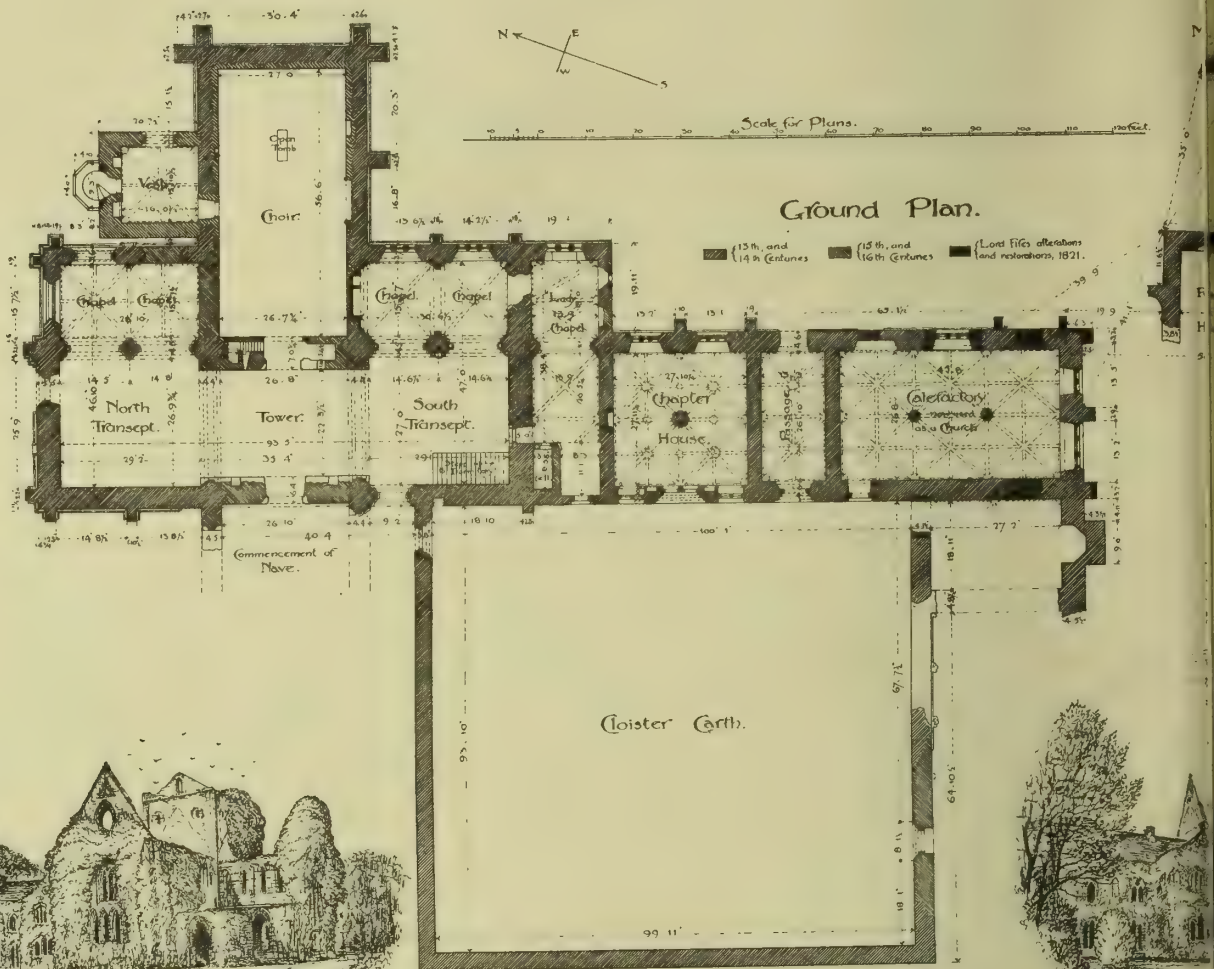






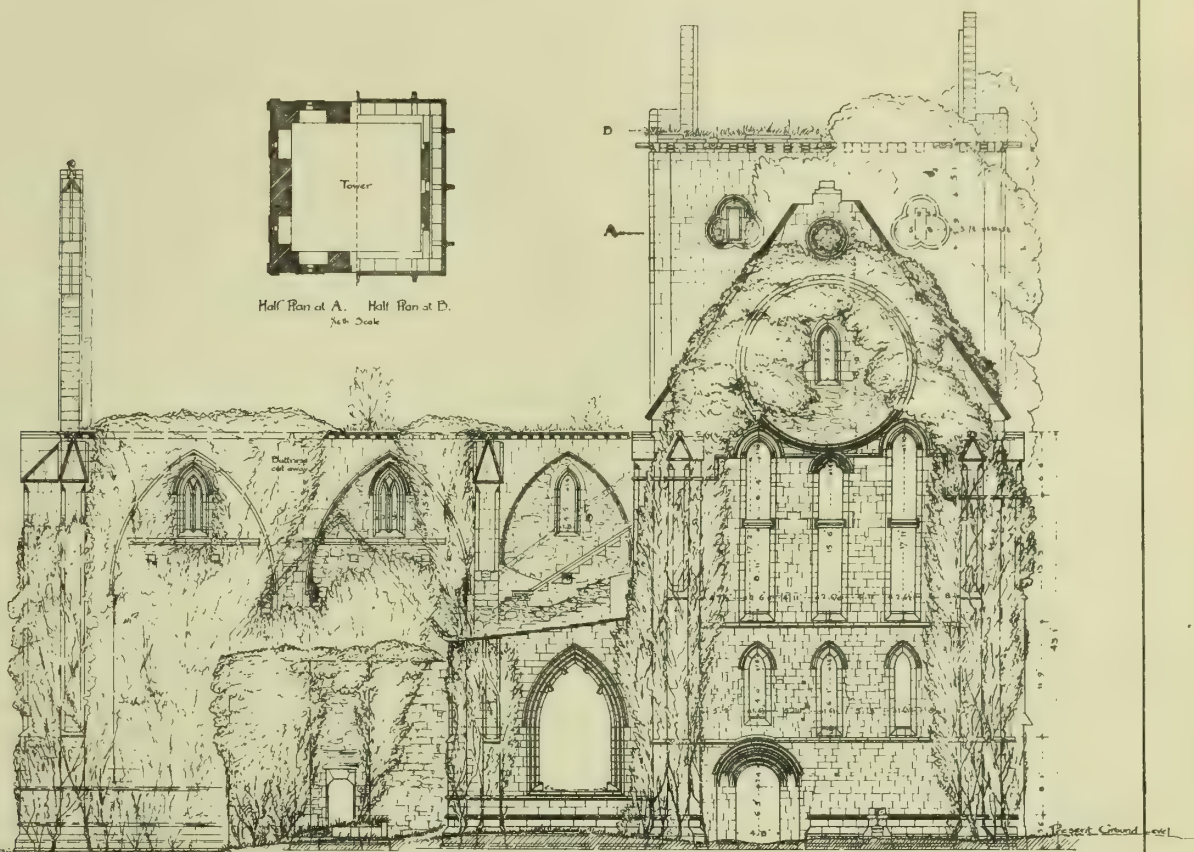


Pluscardyn Prioory:  
Elgin-shire: No.1.





APRIL 4, 1890.



North Elevation.



East Elevation.

Scale of Feet.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1840.

FRIDAY, APRIL 11, 1890.

## WHAT ARCHITECTS WANT.

LIKE other professional men, an architect wants many things that are attainable, others that are not. He looks for a good practice and the means of keeping it. He wants clients who prefer rather to build than to buy; others that have no crotchets of their own, and are willing to take the advice of their professional advisers. Certain obstacles to practice he requires removed—as, for example, those amongst his own class who undersell their services and act in an unprofessional manner; builders and agents who undertake to prepare plans. He would like to see uniformity in professional practice, in matters of contract, in charges for services, so that he may be spared the unpleasantness of others amongst his craft appearing as witnesses against him. When we look at the present condition of architectural practice it would seem to be hopeless to expect these wants all satisfied at once, or all the restrictions to prevent those from practising who are not qualified to do so. In the present indefinite and “nebulous” condition of the profession, we cannot circumscribe the duties of the architect; certainly we cannot expect that they who have not the credentials of their office will come forward and do anything to improve the position of affairs. A large number of men in practice indeed prefer the latitude which prevails: they thrive and grow fat in the present vague and undisciplined state of the public mind; they make the most of the freedom they enjoy.

To take a few instances. There are a very few people who are not satisfied with what the builder can give them. A building to them, whether a house or a church, is a commonplace thing—at least, they think so; any art, or science, or good design that may be displayed in it is a question to which they have not had their attention specially directed, because there is no standard to judge by. All kinds of good, bad, and indifferent buildings pass muster; the builder's house is often freer from faults of a structural nature than that on which an architect has been engaged, and as there is no apparent difference between the perfect and the just good enough, so it is difficult to persuade the public why they should employ an architect. Persuasion must come from an absolute conviction that the architect can give a better result, and to do so he must be able to give his employer a guarantee of his qualifications, and prove that architecture is good building and something more. A very large proportion of the buildings erected are designed by men who have either only practical knowledge of some one trade, or by men who are not architects in any sense of the term; who have a very partial knowledge, and who undertake to supply plans and carry out buildings. The provincial architect is the sufferer, for he finds it hard to convince any one that his services are worth paying for. This prevailing impression weighs heavily on him; it is the one obstacle he naturally desires to see removed, for he finds among his friends and clients a very vague and wrong idea of what an architect is, and can do. They tell him plainly that his services are superfluous. They employ builders to do their work, they buy houses ready built, and they act as if they could do without an architect. There is only one means of convincing the public of the value of professional services, namely, to place restrictions on building; for example, to compel every one who builds to observe

certain laws and regulations and to submit plans and sections to an authority. The by-laws of the urban and rural authorities and the regulations of the Metropolitan Building Act have done a good deal to make the public respect the architect, and to compel them to seek his aid. Still more would legislation, by requiring a statutory test of proficiency from every professor, induce every one who contemplated building to employ an architect or take the consequences of his own rashness. If, then, an individual bought a house from a speculator or employed an incompetent person to build one, he would have to take the consequences if it turned out inferior; but more than this, a statutory diploma or guarantee would in time remove the obstacle which now the professional man has to contend against—viz., that of every one setting up as an architect.

Another of the drawbacks to success is the want of authority which characterises the profession. Other professional men can appeal to infallible standards within their professions—solicitors can, for instance, appeal to legal precedents and the authority of the Courts; but the architect has no such tribunal that is of legal authority. Thus, for instance, in questions affecting his practice he can only adduce the custom of his profession or call witnesses, and these are often conflicting. In his endeavours to get justice to obtain the settlement of his accounts—to defend actions brought by employers for negligence and want of skill—he is at the mercy of judges and juries who know little or nothing of the real merits of the case. How to obtain redress for his wrongs, or to prove to his employers he is in the right, is a difficulty under which he smarts. A lawyer has only to refer to statutes or decisions; a medical man can appeal to the leading hospital practice; a clergyman to the canons and formularies of the Church to which he belongs; but the architect can only give his own opinion, and in questions of taste he is often hopelessly at variance with members of his own craft. We are quite aware that in questions of art it will always be so; but the younger men naturally desire, in matters of practice, to substantiate their opinion and action before their clients. The latter may be crotchety individuals, and fond of questioning or cavilling at the course taken by their adviser in some point of business, or in a matter of construction. Who can be appealed to? An arbitrator in every case that arises would be costly and unnecessary, but if the architect knew he was acting rightly, and could substantiate it, he would be contented. It is because he has not the means of doing so, and does not know how his brother professional may answer or act towards him, that he feels discontented. The remedy for this grievance also is to bind together the profession by a legal recognition. Every one in practice now feels that clients are too apt to hear with indifference the advice they receive. A tribunal for professional questions would, to a large extent, remove the grievance—a court composed of professional men ready and willing to give their opinion to their brethren, a kind of architects' “exchange.” The *Prud'homme*, or Council of Experts in Paris, is an institution having a similar mission in determining causes of dispute between employers and workmen. The magistrates are elected for a certain period, and a small number are sufficient to form a court. As most architectural questions involve technical knowledge, they should be settled by experts. The law court is expensive—more, it weakens the authority of the architect on questions of a technical kind.

The expediency of formulating and tabulating data for architects would be of great service. Schedules might be prepared of many requirements. Those for the planning and design of public buildings, such as areas

of accommodation, dimensions of fittings, lists of materials used in construction, formulæ for the strength of various structures would supply the architect with information of which he is at present deficient. For the want of specific data of this kind, much that he does is uncertain. The incompetent are the gainers. An extended study and examination of particular buildings and their requirements, such as few architects can ever hope to obtain, are necessary for a satisfactory solution. How far a speaker's voice can be heard in a public lecture hall or church in any direction; what are the best methods to prevent or remedy echo; rules for the planning of an auditorium; the best kinds of apparatus for warming and ventilating buildings, are points which can only be settled by experiments conducted in buildings of varied size and construction. The repeated failures in these matters are hindrances to the pretensions of architects. With respect to sanitary details, the public are still disinclined to trust to them. The numerous inventions and appliances before the public have only patentee claims; what is wanted is that the profession should give their sanction to those principles which have been proved to be correct. At present one architect specifies one maker's goods, another architect someone else's; and so the public are given to understand that favouritism is at the bottom of the business. The same remark applies to building materials of all kinds; to methods of heating, lighting, and ventilation, and specialities for decoration. When and how are all these questions to receive the attention they ought to have? Will it be when the profession awakes to a sense of their duty to the public after further failures have made people begin to think there can be no science in building as the doctors disagree so much, and that builders can do equally well without them? We can only look to some measure of legislation to remove these disabilities, whatever it may be called—registration or statutory examination, or something equal to it. The provincial architect looks for some authority which will enable him to hold his own, to remove the obstacles which at present impede his path, and to make his qualifications known. He does not desire to deprive the rights of others outside his own class to practise—he cannot do that if he would, even after the most rigid statutory Act has been established—but he simply desires that these individuals should not so easily interpose themselves between his clients and himself, that the public should at least acknowledge him as a competent practitioner.

## CHARGES FOR TIME.

THE action tried before Lord Justice Fry the other day, brought by a London architect, Mr. Haward, against a gentleman at Darlington to recover a sum in respect of railway fares and time, adds another to the list of cases in which the Courts have decided adversely to the architect's claims for time. The dispute was as to the plaintiff's right to charge for time in superintending buildings at Darlington in addition to his commission, which was at the rate of 5 per cent. There was no special contract between the plaintiff and defendant as to charging for time, and this was the weakness of the plaintiff's claim. It seems difficult to convince the architect that unless there is a special agreement entered into between himself and client, the plea of the custom of the profession will prove of very little use in Courts of law, where the architect's business is regarded with not much higher respect than that of an ordinary tradesman. We have before now shown the uselessness of these sort of claims, as when an architect defends an action brought by his client for the giving up of the plans on the



ground that it is a custom in the profession to retain them. A special contract is in all such cases necessary, as it is unavailing to allege custom in the present unsettled and unrecognised position of the architect. Still, we find a hard fight made for principles and customary practices, despite repeated defeats; architects cannot see the justice of being dealt with differently to other professional men—lawyers, for example—who can charge a fee for the smallest service. They cannot see the fairness of their time being accounted of no value, simply because they have not combined years ago in establishing the right, or of their advice being taken without remuneration, though it be quite as well worth paying for as a design. Why should it be so? Why, for example, should a client come to an architect day after day and waste his time in answering professional questions, detaining him from other work, to obtain information and advice without paying for it? Yet this happens every day. An architect cannot claim a fee unless he has been instructed to do something. He can only charge for a report or a written opinion, or for any services rendered in a business form; but not for conversations and answering questions of a professional kind, however protracted they may be, or however valuable to the individual and worth paying for. It is useless to inquire why this should be. Custom has not established any rule, and the Courts of law have set their face against any claims for services that cannot be shown to be matters of contract.

The claim made for time engaged in travelling to Darlington was proved to be a customary one. The rules of the Institute of British Architects were put in evidence to show that if an architect was required to go a long distance the percentage did not cover the charge for time. The schedule of the Institute says, besides all travelling and incidental expenses incurred, the architect "may charge for time occupied in travelling if the work be executed at a considerable or inconvenient distance, or if more than ordinary personal attendance is required." Another clause states that the charge per day depends upon the architect's professional position, "the minimum charge being three guineas per day." Upon these clauses the plaintiff rested his claim. He had been engaged in carrying out alterations to Bransome Hall, and for designs for stabling; he had gone down to Darlington seventeen times, and stayed there a few days on each occasion, for which he charged only £1 11s. 6d. per day for his time. The evidence given by the secretary of the Institute and Mr. Charles Barry both affirmed the custom of architects, which was to the effect that an architect could charge three guineas a day for time occupied in travelling to and fro, but not for time in superintending the work, this duty being part of that covered by the commission. The defendant, on his part, said that the plaintiff worked for him as a builder, and not as an architect, and two architects—witnesses—stated that it was not their practice to charge anything for time in respect of work executed at a distance, except by special agreement. We cannot wonder at the ruling of the Judge when such a difference of opinion was found to exist among members of the same profession. He thought the defendant had paid enough into Court, and gave judgment for defendant, the plaintiff to have costs down to, and the defendant costs subsequent to, the payment into Court. The defendant paid into Court £72 2s. on account of the claim of £160 19s. for railway fares and charges for time.

The decision establishes the ruling that has before prevailed: that the architect can charge for time only under exceptional circumstances, and, further, that

no rules accepted by the members of the profession, although generally followed by them, are binding on employers. It should be generally known that the schedule of any institute or incorporated society is not admissible as evidence except under special agreement by the parties that the schedule should be evidence. The members of the Institute or any body of the profession might agree to be bound by rules of their own making, but they would not be binding on a layman who had not agreed to the stipulations. It is extraordinary with what pertinacity members of a profession cling to rules and adduce them as evidence, when, as a matter of fact, the Courts of law regard all such evidence as only one-sided, and as merely establishing a custom which has no power in law except when it is thought reasonable. The question of charges, whether for time or for services, or that of the custody and ownership of plans, will therefore always be subjected to the independent ruling of a Judge or a jury, whatever evidence of custom may be brought; hence the importance of a special agreement between parties in which the question of charging for time, as for long journeys, is arranged. The profession are at present ruled out of court by circumstances; they have no legal authority to substantiate their customary charges, their own profession include many men who take commissions below the regular percentage, who are willing to work for 4, 3, and even 2 per cent., and who never think of charging for time. So long as these irregularities remain it is perfectly useless to expect a Court of law to follow any other rule than that which it generally adopts. If an architect has to take long journeys which consume his time, he ought certainly to be paid for it; but this decision shows him he must not expect the law to give him more than his client expected to pay, or what is regarded as a reasonable sum by the Court; therefore, his only alternative is in agreeing to a certain charge per day with his client. It is impossible to make one rate for long and short journeys, and for this reason a special charge for superintending works beyond a certain distance ought to be stipulated for.

#### ARCHITECTURAL BRICKWORK.— XXXII.

##### ORNAMENTAL ARCHES.

**G**AUGED and rubbed brick arches are employed now in a great variety of ways, both for construction and ornament. For plain buildings in which strength is the main consideration, the arch is generally built in separate rings of two or more concentric half-brick arches. Each of these is, as we have said, an independent arch, though sometimes, to secure bond, lacing-courses are introduced at intervals. Col. Pasley says this arrangement has been used in the fortifications at Chatham; but it does not strike him that any very great advantage can result from it. The result of the lacing-courses is to prevent the entire weight being carried by any one of the rings—the former, in fact, tend to distribute the pressure and to bind the arch together.

##### SMALL ARCHES.

For arches of small span the necessity of building in separate rings is obviously to prevent the great divergence of the joints that would arise if the bricks were carried from the intrados to the extrados. To quote the above authority: "If we suppose the span of a semi-circular arch to be only 3ft., and that it is built in four concentric portions of 4in. arches, the radius at the intrados of the lowest of those small arches will therefore be 18in., whilst the radius of the extrados of the same small arch will be 22in., and the lengths of the two curves will, of course, be in the

same proportion; and those numbers being to each other as one to one-and-a-quarter nearly, there will be open spaces at the upper part of the curve of one-quarter of a brick in width between the several arch bricks, which will touch each other at bottom. Hence no joint between two bricks will anywhere exceed about  $\frac{1}{4}$ in., this being the one-fourth part of the width of a brick. In the upper portions the joints between the bricks will evidently diminish as each successive course is added." If the same span of arch were built "with bricks laid as headers, which would form a couple of 9in. arches, and if the radiating joints were continued from the intrados outwards, then as the radius at the intrados is 18in. and at the extrados 36in., which numbers are in the proportion of one to two, there will, of course, be open spaces at the upper part of curve equal in width to the bricks themselves." The mortar joints would thus form a source of weakness. In gauged arches the joints could be reduced, though not sufficiently, in a small-spanned arch to make up for this divergence. It will be seen, therefore, that for arches over windows of small radius it is desirable to employ half-brick rings. A brick tapered too much is unsatisfactory in appearance, and this is why for arches of small span it is sometimes desirable to increase the radius to make the arch—in fact, a segment instead of a semi-circle.

##### BOND IN ARCHES.

In large plain arches, where an ornamental effect is desired, and there are no mouldings, the joints are generally made to radiate throughout the whole thickness, but are broken by transverse joints. Thus, for an arch of two bricks in thickness, every other course would show two headers, one at the extrados and one at the intrados, and a whole brick between. The effect is that of English bond in the section of a wall of two bricks. Sometimes two closers are introduced in every other course as being more ornamental, but it is not so strong as the former arrangement. In gauged and rubbed work the transverse joints are often imitated, especially when the arches are flat; but the plan is objectionable, as the real joints show through. Fareham rubbers make the best red gauged arches, as they are of good texture, and take a fine arris.

##### GOTHIC WORK.

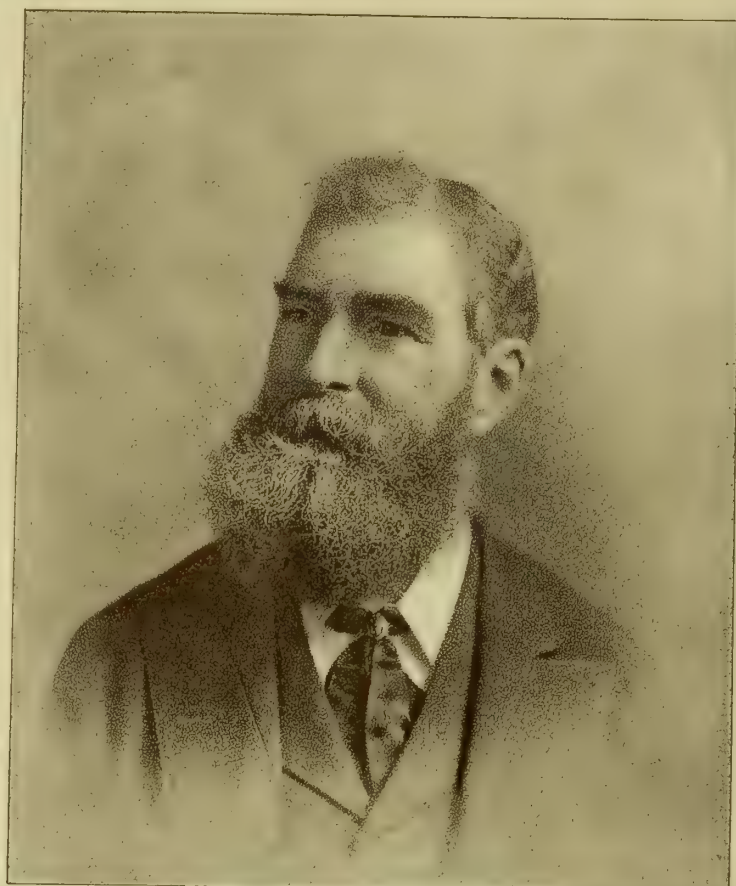
In sketch 1 we show a three-light window under an inclosing arch for a gable. The face of the lights is set back half a brick or 9in. The side piers are 9in., and have a header and closer at the reveal, as in the angle of recess. The main inclosing arch joints radiate to one centre, to avoid the wedge-shaped key; the plan is suitable for a relieving arch of this description, though it is not so strong as radiating the joints to the true centres. The same plan is shown in the pointed arches over the windows. The tympanum of arch may be filled with ornamental bricks or squares, though the pattern shown is probably as effective as any other for a gable window. The arches could be executed either in "gauged" or "axed" work. To avoid the straight joint over mullions at the springing of the smaller arches, a stone or terracotta skewback block may be introduced. Many examples of windows of this description are to be seen, but of very different degrees of excellence. The grouped window of this kind offers a good opportunity for the bricksetter.

In sketch 2 we give an example of an archivolt for a church arcade. Some very effective combinations of moulded bricks can be employed for arches of this description, though often the simplest are the best, such as those with two re-entering angles over the impost, the centre member being simply moulded or notched. We will show a few





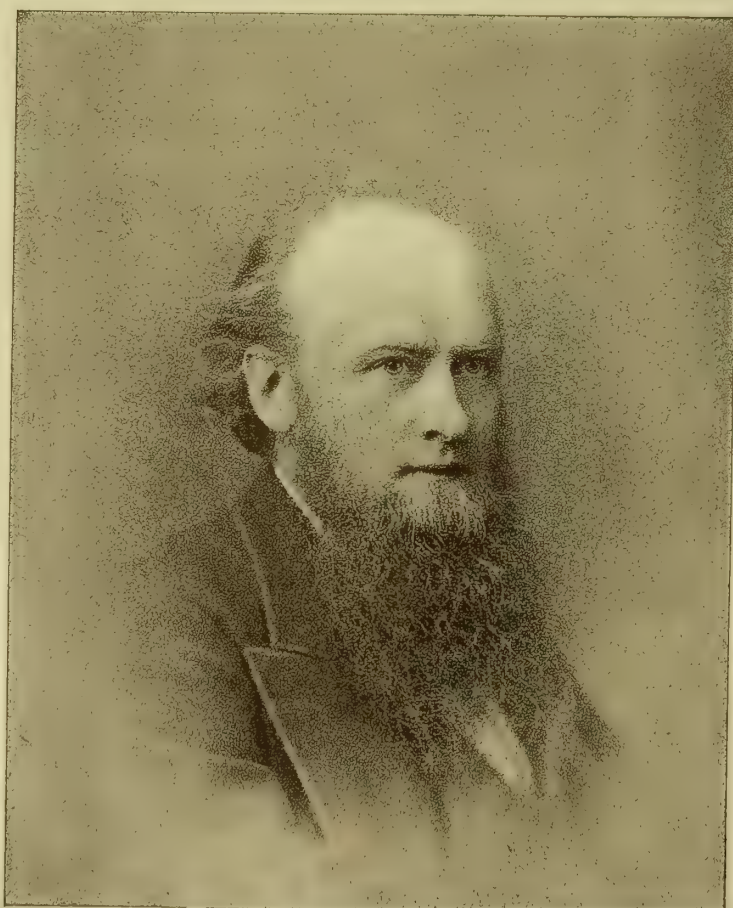




*W. Brindley*  
MR. W. BRINDLEY (FARMER & BRINDLEY, LONDON)



MR. ROBERT DE...



*Metford Warner*  
MR. METFORD WARNER (MESSRS JEFFREY & CO, ISLINGTON)



MR. JOHN JACKSON



APRIL 11, 1890.



*Robert Dennett*

MESSRS DENNETT & CO WHITEHALL



*Henry Doulton*

SIR HENRY DOULTON (MESSRS DOULTON & CO LAMBETH)



*John Jackson*

MESSRS GEO JACKSON & SONS LONDON



*J. C. Edwards*

MR J. C. EDWARDS (RUABON)

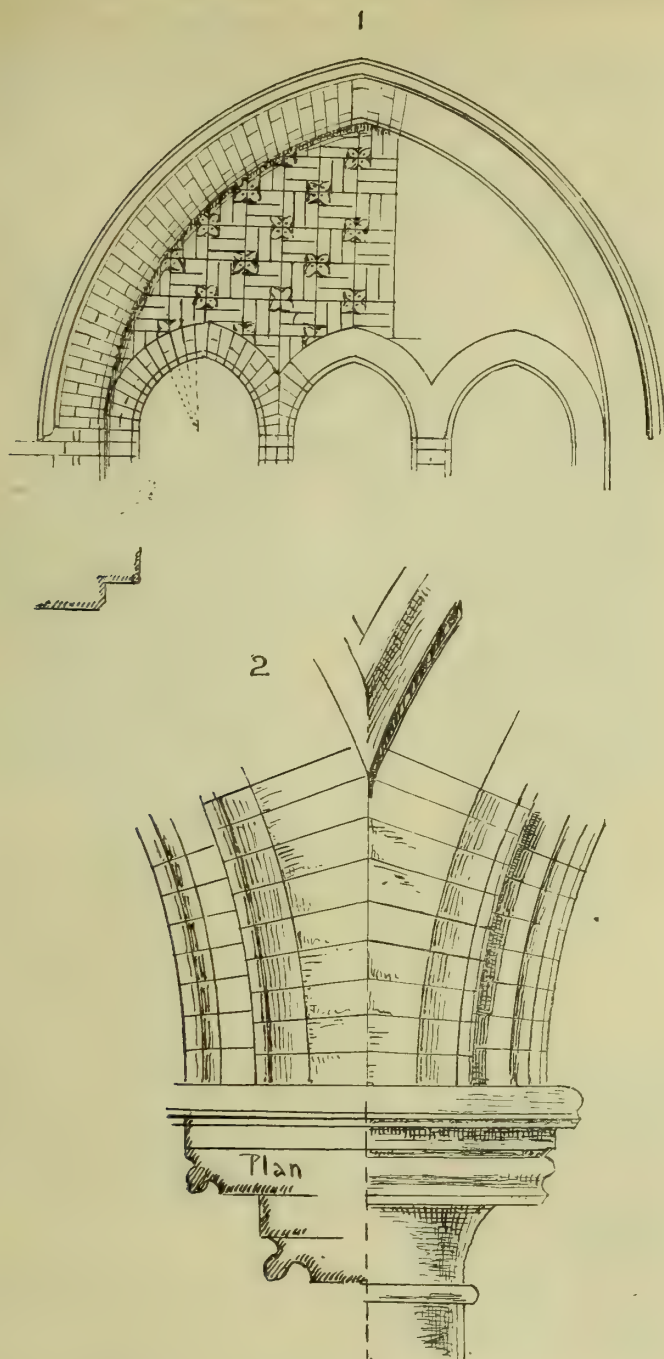
"PHOTO-TINT", by James Akerman, 6, Queen Square, London, W.C.

PHOTOGRAPHERS AND ART-WORKERS.









other examples of executed work. The chief object to be kept in view in designing brick arches of this kind is to make them at the impost level agree as far as possible with the plan of the abacus of capital. Sometimes a springing block of stone or terracotta is placed directly over the capital, cut to the required radiation to start the arches from, and we think this plan is desirable.

#### THE AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.

THE thirtieth annual report of this society has just been issued from the general offices at Manchester. In his opening address, Mr. F. Chandler, the general secretary, remarks on the substantial progress made by the society during 1889, adding:—

"Our members have begun to experience the beneficial effect of improved trade, whilst the signs of activity prevailing, both in house and ship building, encourages the belief that the great depression which we have had to contend with for several years has for a time happily disappeared; and, conjointly with this, the non-unionists in our trade have displayed a greater desire to avail themselves of the advantages offered by our organisation, enabling us to record that our society is numerically stronger than it has been in any previous year."

During the year 15 new branches have been opened and four were closed, leaving a gain of 11 branches, and a total of 471, situated as follows:—In England, 348; Ireland, 20; Scotland, 21; United States, 33; Canada, 8; New Zealand, 6; Australia, 32; and 3 in South Africa. 3,902 candidates have been admitted into the society, which, after allowing for deaths and exclusions, leaves a net gain of 1,422; this increase being greater than in any previous year since 1884, the total number of members in December, 1889, being 26,472. The income for the year amounted to £75,068 17s. 0½d., which, compared with 1888, shows a decrease of £1,399 17s. 5d., owing to the fact that in 1888 special levies amounting to 13s. 6d. per member were required, against 7s. in 1889. All other sources of income having improved, £15,244 7s. 8d. has been added to the cash balance, this also being the largest amount ever accumulated in one year, leaving a balance, including the offices and other property of the society, of £58,922 14s. 7d., or £2 4s. 6d. per member. In assistance to members temporarily thrown out of employment, there was expended £18,805 12s. 7d., or 14s. 2½d. per member, a reduction of £21,947, or 18s. 5½d. per member less than 1886, from which period the liabilities under this heading have steadily decreased. Sick benefit absorbed £15,822 17s. 2d., or 11s. 11½d. per member, £1,073 less than the previous year; and funerals cost £2,901 6s.,

or 2s. 2½d. per member, the loss of members through death being 48 less than the previous year, and the lowest record since 1884. In replacing tools lost by fire, water, and theft there was expended £1,466 4s. 9½d., or 1s. 1½d. per member, and in accident benefit to members partially or totally disabled, £1,320, or 11½d. per member, was spent, and in superannuation payments £5,026 14s. 9d. This branch of expenditure continues to increase, and is not subject to the fluctuation which other items undergo. In trade privileges was expended £2,999 10s. 10d., in trade management expenses £602 1s. 6d., making a total of £3,601 12s. 4d., or 2s. 8½d. per member; while in grants to other organised bodies, and for the relief of distressed members, and the widows and children of deceased members, they expended £894 10s., or 8d. per member. At the triennial meeting of the general council, held in June, numerous suggestions for alterations in the rules, with the object of minimising the necessity for general levies, were considered; but the proposals agreed to by the general council have been submitted to the votes of the members, with the result that the four proposals, making changes in the benefits of the society and the modes of distribution, were rejected. Among those adopted by the members, the formation of a trade section was one of the most important, as it aimed at perfecting the organisation for trade purposes. As the contributions are small, and the maximum age of candidates for admission fixed at 55 years, the general secretary believes it will draw into the ranks a vast number of competent joiners whom they have hitherto been unable to reach. To insure against the possibility of the expenditure on this section affecting in any way the financial stability of the society, it has been determined that it shall be entirely self-supporting. Members are advised to be more active in municipal affairs, helping, so far as they can, to swell the number of those towns which have elected to their school boards and other corporate bodies working-class representatives pledged to see that every contractor who undertakes to execute public work shall guarantee that he pays to his employés the acknowledged standard wages of the district. In the case of contracts accepted from the Government, much good might be accomplished if the co-operation of local M.P.'s were secured, who should be asked to support the labour members in urging upon Ministers of State the necessity of observing these conditions. Managing committees throughout the country can testify to the great scandal that in innumerable instances, in what is known as Government work, members cannot accept employment because of the low remuneration offered. Mr. Chandler says he cannot advise the establishment of a recognised working-day of eight hours upon those trades who believe it would endanger their particular industry. Time should be allowed to enable them to adjust these adverse circumstances with which they are surrounded. In the colonies of Australia the eight-hour working-day has by general consent been established; and in order to prevent the possibility of reverting to longer hours, Bills to legalise the same have been introduced into the Parliaments of South Australia, Tasmania, and New South Wales; in the latter case it was rejected by the small majority of six, whilst in America the agitation for the eight-hour day bids fair to be attended with success. Mr. Chandler adds: As a general advance of wages has taken place on all hands, members engaged in the house-building trade very naturally consider themselves entitled to some consideration; but this branch of industry is always the last to feel the good effects of improved trade. We may look forward to numerous movements in this direction during the ensuing year, and if the demands are reasonable, and negotiations persisted in and conducted in a friendly manner, the employers cannot resist the just claim of members for increased remuneration.

#### UNDERPINNING BUILDINGS.

THE difficulty often attending the underpinning of buildings by the ordinary means has frequently prevented any remedial measures being applied to structures that have partially settled. Many unsightly cracks and fissures are still visible in buildings which could have been stopped if proper means had been taken at the outset. A special branch of engineering practice has of late years been developed in this direction,

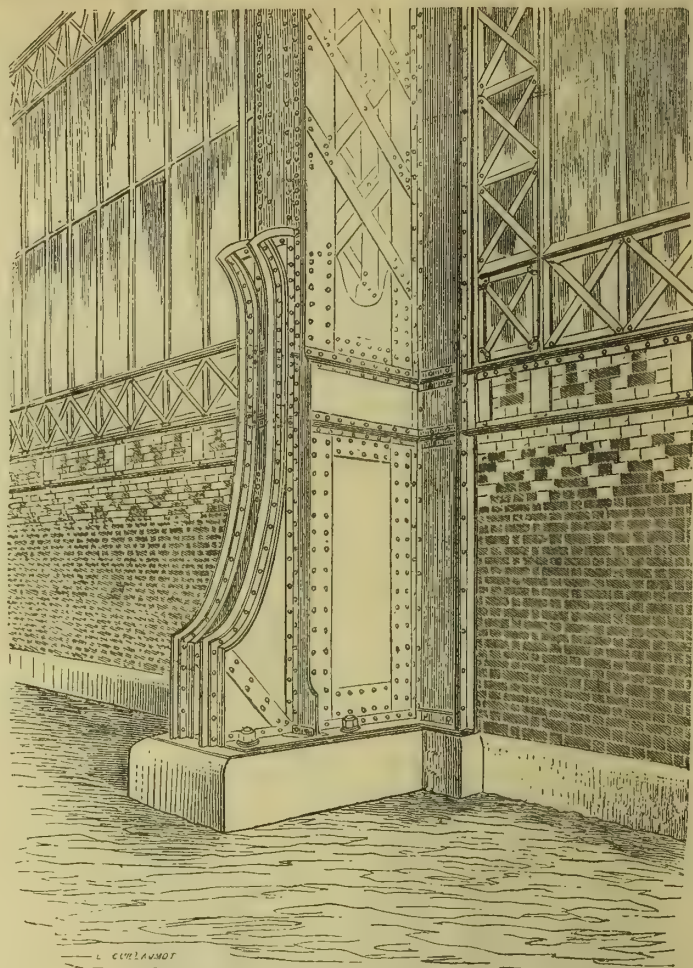


and engineers are now found who undertake to underpin buildings which have bad foundations, and if necessary to raise the walls to their original position. The restoration of not a few of the great central towers of our cathedrals has been entrusted in this way to the ingenuity and skill of the engineer; the failure of the tower and spire of Chichester Cathedral necessitated the adoption of methods for rebuilding and strengthening the structure, and the late Sir Gilbert Scott undertook the work with the aid of a skilled engineer. Mr. H. P. Seddon successfully carried out a restoration of a tower and spire at Grosmont church, the piers and arches of which were seriously crushed and twisted. St. Mary's Church, Stafford, was another edifice where the tower was bound together with iron ties by the aid of screws, the arches were blocked or supported by centres and the piers shored up, and a bed of concrete inserted round the tower, upon which new foundations were made to rest. Under Sir G. G. Scott Mr. Chapple carried out an important work in connection with the tower of St. Alban's Abbey in 1871, to check the gradual subsidence of the tower towards the north-east angle. One of the most interesting operations of the kind has recently been undertaken at Great Yarmouth. As some of our readers may know, indications of the subsidence of the west front and other portions of the new town hall occurred soon after the completion of the building, and steps were taken to underpin the foundations, and insert concrete blocks. This was abandoned because it was thought probable that in removing the water from the trenches cut for the purpose, further subsidence might take place. Wrought iron needling was proposed to widen the foundations, but was also abandoned. A scheme was ultimately adopted by the town council, prepared by Mr. Frederick Eliot Duckham, M.Inst.C.E., and Mr. James E. Teasdel, Assoc.M.Inst.C.E., which has happily been successful. The plans submitted proposed a new foundation for the western or river front of the building, and the raising of the settled portions which had sunk over 12in. at the ends. The cast-iron screw piles, 23ft. long, and 2ft. 6in. diameter to 3ft., were driven at intervals of 9ft. along the inside and outside of the main walls. They were 1½in. thick, and filled with concrete after being cleared of clay and ooze. Upon these, double lines of rolled girders were placed parallel to the walls. Suspended from these by 2in. bolts, wrought iron needles, 16in. by 6in., were passed through under the old concrete foundations at intervals of about 3ft. On to these needles and screw piles the entire weight of the building was transferred. By tightening the bolts suspending the needles from the longitudinal girders resting on the piles, the sunken portions of walls were raised, and a good foundation obtained. Thus the tower weighing 700 tons, 20ft. square, and the whole of the sunken walls are carried on a kind of grid of wrought iron joists, suspended from girders resting on piles. The gradual screwing up of the suspending bolts has restored the level lines, and the verticality of the tower, for which five special cylinders, two in front and three behind, were sunk to the gravel. The east and west walls of tower rest on four lattice girders, one on each side, upon which needles are suspended by similar bolts—four 2in. bolts at each end, the needles piercing these walls. After screwing up, the ground under the old foundation was excavated to a depth of 2ft., and the space filled with cement concrete covering the tops of piles, girders, and bolts. To show the accuracy of the operation and its success, we may mention that the ornamental ceiling of the assembly room was not injured. The total cost is said to be within £8,250. The details of the operation are given in the *Proceedings* of the Institute of Civil Engineers. Sufficient has been said to show that the plan is applicable to any building the foundations and walls of which have partially settled.

#### CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—III.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

THE arches to the façades of the hall are formed of a plate girder cut to the form and connected by two angle-irons 3½in. by 3½in. by 36in., and a plate 11½ by 3. The top and bottom plates are connected by uprights on which rest the zinc crowning member of the façade held

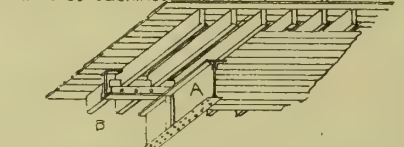


— Base des contreforts des pignons. — No 10

in position by plate corbels and angle-irons. In this arch it may be mentioned that where a purlin is fixed to an upright, the upright is formed of four angle-irons, inclosing the web of the purlin, which has two angle-irons on its outer face. In the vertical glazed surfaces to the building throughout, the vertical and horizontal bars are T-iron, and the lattice-work is flat iron. (See No. 10, from *Le Génie Civil*). Each side of the great trusses is divided into five divisions by the purlins; the four uppermost parts are glazed; the fifth division, near the gutter, is covered with zinc, and it is only in these unglazed parts that wood has been used.

Bois des Machines

No 11



Sketch showing rafters, purlins & boarding to Main Roof

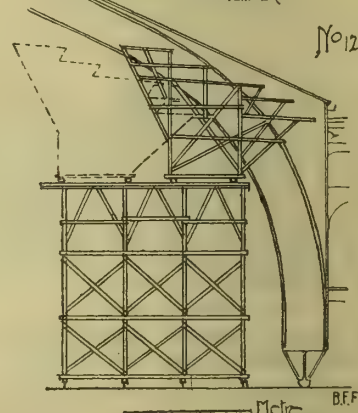
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The figure (No. 11) shows one of the three rafters A, which come between the main trusses, and are framed into the purlins, and indeed help to bind them together. On this rafter in the lower bay of the roof, and in the whole of the end bays, where no glass is used and it is all covered with zinc, rest in each bay five small purlins B, on the lower flange of which are bolted the wood plates on which the wooden rafters rest (13in. from centre to centre). These rafters are boarded underneath, as shown in the sketch, with grooved and tongued boarding 1in. thick, and on these are glued and nailed the painted canvases and "staff" decorations, with which this lower part of the roof is appropriately ornamented. The rafters are boarded above, and have rolls fixed over every alternate rafter (or 2ft. 2in.

apart), on which the zinc is laid. This zinc roofing, 52.6 wide, and about 1,300ft. long, not counting the two end bays, and having to be framed at a minimum height from the ground of 80ft., a movable scaffold was designed, consisting of a framework in two parts, the lower part of which was moved along on wheels parallel to

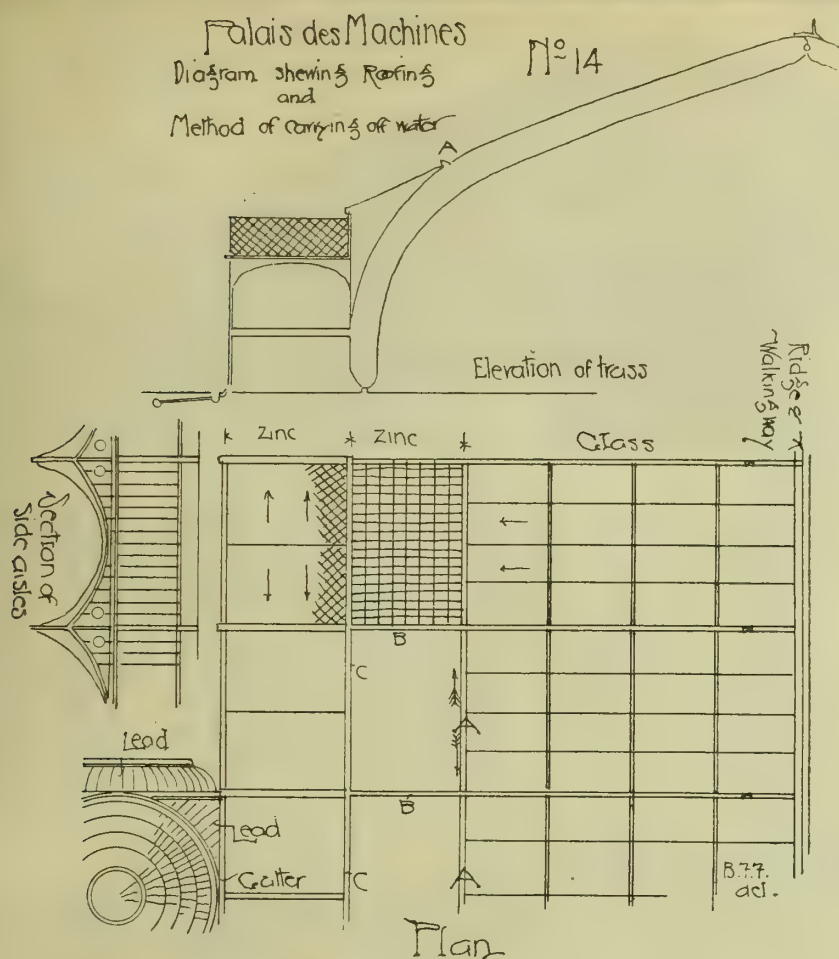
Diagram showing scaffolding to main roof

No 12



the main axis of the hall; on this lower framework, but running transversely to the main axis of the building, was placed the second framework, which enabled it to be moved towards the centre of the building to clear the trusses when the scaffolding was being moved to a fresh bay, when one bay had been finished. Ladders were fixed to both of these for the service. There were two of these scaffolds, one for each side of the nave. The method adopted was the following:—The scaffolding started from the centre and worked towards the gables, the workmen fixing the rafters, the boarding, and the zinc as they went along; when the gable was reached,

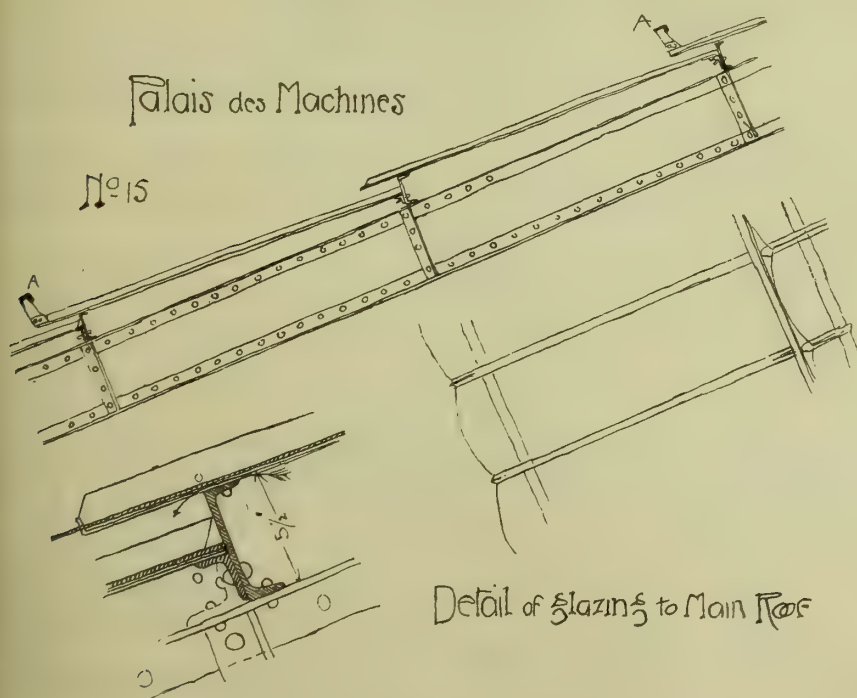




the scaffolding returned on the same rails, and the workmen nailed to the underside of the rafters the soffit boarding, on which the painted canvas was then placed before removing to the next bay. When the scaffolding had returned to its starting point, the central bay, it was broken up. I give an outline sketch

the great purlins, and held up in the centre by cords fixed to the iron rafters; upon these was placed a staging upon which the men worked.

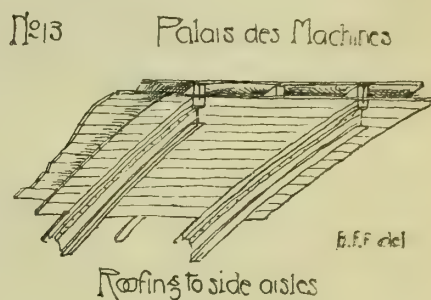
*The Roofing to the Aisles.*—The roofing to the aisles is segmental in form (No. 13), and runs into the semicircular arches which flank the nave, separating the great trusses. It consists of



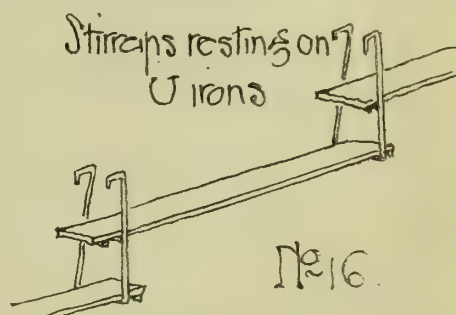
(No. 12) of the scaffolding, which is very ingenious. The width of the scaffolding enabled the workmen to complete one bay at a time. The end bays, which are completely covered with zinc up to the ridge, necessitated the scaffolding to be raised to this height; this was accomplished by long deals passing between the trellis-work of

grooved and tongued boarding nailed to a wooden plate which is fixed to the top flange of the segmental iron rafter by means of square-headed screws. Above this boarding are placed the small curved rafters which are nailed through to the plate, the intermediate rafters resting on a flat iron bar; to these are nailed the outer

boarding and the zinc covering. No. 14 is a sketch diagram showing two bays of the hall and half the central bay, and the method of carrying off the water down the side aisles. I propose to commence with the method of carrying the glass-work throughout, commencing with the covering and then proceeding to vertical planes. The sheets of glass for the covering are about  $\frac{1}{2}$  in., or 5 millimètres, thick, about 1ft. 8in. wide, and 6ft. 6in. long. The test employed on these sheets is interesting, and was as follows: Samples 1ft. 8in. by 1ft. 8in., inclosed between indiarubber sheets, were subjected to the falling of leaden balls from different heights. It was found that all the sheets of glass sustained without breaking

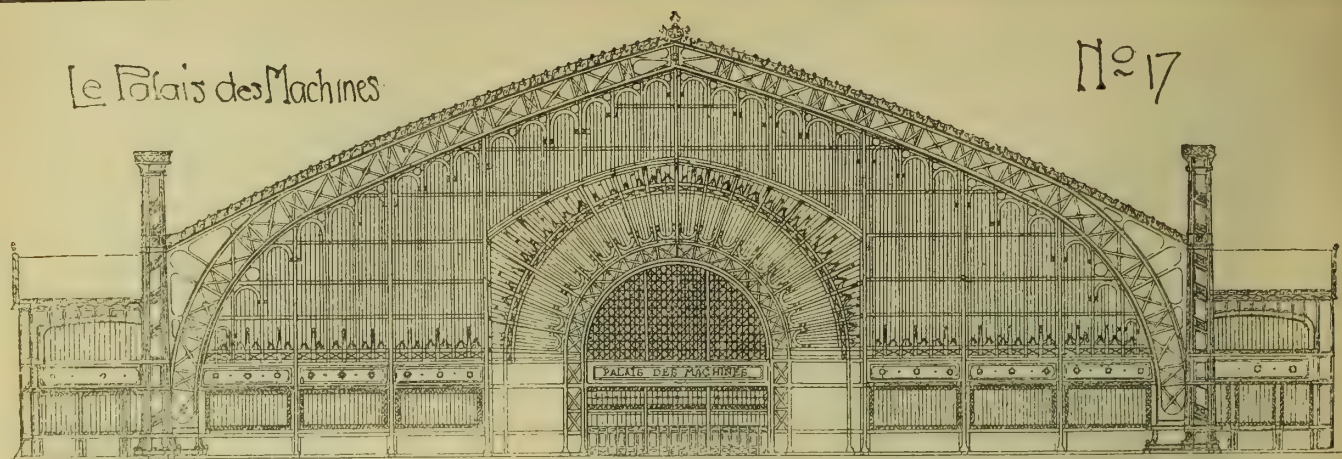


a leaden ball 77 grains Troy falling from a height of 22ft. About half broke with a weight of 108 grains Troy falling from the same height. These sheets are painted inside, as no blinds are used, with a mixture of milk and Meudon white; it is said that this mixture does not become yellow, like ordinary white paint, on exposure to the sun. The painting was performed on scaffoldings fixed between the purlins, and of the length between two purlins, and was moved along by means of pulleys. I give below a drawing (No. 15) made from *L'Architecture*, of the method adopted for fixing these glass sheets, from which it will be seen that they rest on T-irons on a bed of putty, and are held in position by the same material. These T-irons, 1ft. 7in., rest in their turn on U-iron purlins, the lower part of which are bolted to the back of the iron rafters. The T-irons carrying the glass at their upper extremity rest on an angle iron, bolted to the back of the U-iron, as shown; it will be seen, therefore, that each sheet is perfectly independent of the ones immediately above and below it. Above the U-iron and the under side of the glass there is a space formed by the thickness of the bottom flange of the T-iron and the thickness of the putty on which the glass rests; this is used for ventilation to the hall, and also allows the condensation on the inner side to pass off freely.



This is marked by an arrow on the drawing. This ventilation opening, which is at the lower ends of all the sheets of glass, along the whole length of the building represents a total aperture of 1,720sq.ft., and with the window opening below forms a perfect ventilation. The ends of every alternate row of T-irons (see sketch) supporting the glass is, by the aid of a piece of sheet-iron, fitted with an angle iron (marked A) running the whole length of the roof, which forms a rail on which ladders can be placed when repairing the roof. The fixing of all this glass in position gave rise to a very ingenious method of scaffolding. Stirrups (No. 16) were formed, which rested on the upper part of the U-irons. On these stirrups rested the planks, which had a piece of wood fixed on their under side at each side to prevent them slipping; it was on this platform that the workman was placed. There was also an exterior





platform on the rails, fixed on the ends of the T-irons supporting the glass, following the outline of the roof and giving access to its different parts. These platforms had rolls fixed on them to prevent slipping. As additional safety, nets were placed underneath the bays where the men were working to catch them if they fell. The glass was raised to this platform by means of a hand-crane. The superficial amount of glass to this covering is about 373,521sq ft., or 34,700 square metres.

**The Vertical Glazing.**—The glazing to the gable of the Avenue de Luffren is composed of stained glass belonging to an exhibitor, M. Champigneulle, and represents a military subject, "The Battle of Bovines." The stained-glass window representing "Le Char du Soleil," executed by M. Lorin, is fixed in the great central bay facing the "Ecole Militaire." But it is the entrance facing the Avenue de la Bourdonnais on which M. Dutert bestowed most of his care, as he informed me that he intended this to be the main entrance when the exhibition was closed. The main disposition of the façade is seen in the woodcut given (from *Engineering*). It is entirely in stained glass, resting on an iron framework. The principal feature is a great circular-headed doorway, with a stained-glass band round it containing the shields of the principal countries exhibiting, composed of a light yellow ground with circular bands of a deeper yellow. The crescents and shafts are in light blue, and the circular and lozenge-shaped pieces at the end of these are in deep red. The escutcheons, executed by M. Neret, are in stained glass. Having examined the method of fixing the glass work and the distribution, we will now glance at the zinc covering, and at the method of forming gutters, &c. Zinc is the covering which has been used where glass is not used, and considering the size even of the parts of the roof covered with zinc, it is interesting to note that zinc is the material adopted. The gauges in which it is used we shall come to presently. Commencing at the top, we find that the roadway used for examination is covered with 14-gauge zinc, with drips and rolls, and one side is a handrail in galvanised iron. This is reached by 6 galvanised iron ladders on the extrados of the large trusses fixed above the gutter described later on. The zinc covering to the grand nave, which includes the whole of the two end bays and the lower part of all the rest of the roof is of 12-gauge zinc in sheets 2ft. 7in. by 6ft. 6in. Each sheet is held at its upper extremity by two zinc clasps, and upon each of the turn-ups at the side by two clasps passing under the rolls and turned back over the turn-up of the zinc sheet. The lap joints are fixed by zinc clips, allowing free play to the sheets, which have a good lap. There are 18 service hooks to each bay for ladders, &c., in galvanised iron. The covering to the side angles is in zinc squares, No. 10 gauge. They are 24 x 24, with the top and side clips.

#### THE HOME ARTS AND INDUSTRIES ASSOCIATION.

**THIS** useful society, whose yearly exhibitions are always very interesting and furnish practical illustrations of really honest, good work, has this week published its annual report. From this we learn that a steady increase in the work and success of the association has been

made during the past year, and until the time when every village has its workshop and guild of hand-workers, there remains a wide sphere of usefulness open to all who are willing to help this society. One great point to be notified is this: that the council, instead of exercising their powers in producing stirring appeals for money help, have continued steadfast in their faithful endeavours to do the practical work in hand, acting on the principle that it is a truer policy to use every effort to make the actual work a reality. However, more money is evidently needed, seeing that the average expenditure in excess of the annual receipts for the years 1887, 1888, and 1889 has been £170 10s. Experience has proved that the classes which succeed best in the end are those started by voluntary teachers, who are willing to give time and patience to the working out of methods for themselves. "Classes which begin with professional teaching are apt to depend on it completely, and never to stand on a firm and self-reliant basis." The great increase in the number of the classes during the past year has greatly taxed the resources of the available stock of designs and models. "There is a great need of designs and working drawings of domestic furniture, such as village lads could not only carve, but also construct and find a use for in their own homes." During the past year, besides the Kensington Exhibition, which we noted at the time, there have been local ones at Sydenham, Macclesfield, Mansfield, and several other places. This year the annual exhibition is to be held at Birmingham, in response to an invitation given by the Kyrle Society in that town. Mr. Walter Crane lectured on "Design," and Mr. Bliss Sanders gave a paper on "Wood Carving," illustrated by limelight photographic slides, last April. The classes in London do not increase in number with the same rapidity as they do in the country. Town boys are more volatile than their provincial cousins, and, besides, the counter-attractions in London are so numerous. The reports from Ireland are encouraging, and show a decided improvement in the work. In Scotland there is also evidence on a corresponding scale of vigorous life. In the Isle of Harris, for example, about 1,000 women and girls work at home daily in spinning, dyeing, weaving, and knitting. There are four paid teachers here working under the manager's instructions, besides one voluntary instructor. Most of the branches have contributed reports of their work, and these come from all parts, often the most outlandish districts of the United Kingdom; but some 35 classes have not furnished any account of their proceedings. The specimens printed are so numerous and so good as to furnish ample evidence of the solid work which has been undertaken, and which so heartily deserves aid in view of further development.

#### THE ROYAL ACADEMY SCHOOLS.

THE NEW RULES FOR THE ADMISSION OF ARCHITECTURAL STUDENTS.

1. **N**O one is eligible for admission to the schools of the Royal Academy who is more than twenty-three years of age on the date fixed for the delivery at the academy of works for probationership (see Rule 3).
2. All instruction in the academy is gratuitous, the students providing their own materials.

3. Applicants for admission must obtain from the registrar, through the written request of any member of the academy, or other artist or person of known respectability, a printed form, to be filled up and delivered at the Royal Academy, together with a certificate of birth and the required specimens of ability, on or before January 1st or July 1st. Architects must also send a certificate from an architect member of the Royal Academy, of the Royal Institute of British Architects, or any other public institution for teaching art and science, certifying that the applicant has followed up the study of architecture and architectural drawing, and has acquired a fair degree of proficiency in the same.

4. The specimens required are:—

**Architects:** (1) A geometric elevation of some part of an existing building (which may be copied from published drawings or prints), in which some part of the ornament or other features shall be drawn in freehand; (2) geometric elevations of the Doric, Ionic, and Corinthian orders, with their entablatures complete, to  $\frac{1}{2}$  in. scale, the columns to be 2ft. high; (3) an original perspective sketch in pencil of an existing building, or part of a building, on a quarter-sheet of imperial paper; (4) and a drawing of a piece of architectural ornament from a cast, shaded in pencil or chalk, or tinted, and of the size of the original.

All the drawings required must be on paper, and unmounted.

5. The above required specimens of the applicant's ability will be submitted, within two weeks of the date of their being sent in, to the Council, who will select a certain number as probationers to compete for the vacant studentships.

6. Notice of their admission as probationers will be sent to the successful applicants, and they will be summoned to attend on a fixed day at the academy and there execute the following works:—

**Architects:** (1) A geometric drawing from memory only of one of the Orders, to  $\frac{1}{2}$  in. scale, the order and height of the order to be fixed by the Council, and no book or other aid allowed, to be done in one evening of two hours, 6 p.m. to 8 p.m.; (2) a drawing from a cast, the size of the original, to be done in seven evenings of two hours each, 6 p.m. to 8 p.m.; (3) a geometric elevation (with or without a plan) of a building, or some part of a building, in London, to be done from the probationer's own notes and measurements, taken from the building itself, in two evenings of two hours each, 6 p.m. to 8 p.m., the notes and measurements to be submitted to the Council; (4) and two studies in outline, each on a quarter imperial sheet of paper, of two of the principal casts (to be selected by the master of the school) in the architectural school, to be done in two evenings of two hours each, 6 p.m. to 8 p.m.

7. All the above works will be submitted to the Council, and the successful competitors will be admitted students of the Royal Academy for three years. At the end of the three years, subject to the fulfilment of certain conditions and the passing an examination, students will be admitted for a further period of two years.

8. The period of studentship is limited to five years, and cannot be renewed.

9. All the drawings and models submitted by





applicants for admission as probationers must be removed by them personally, or through an agent, within one month from the date of sending in. Any works not removed at the end of the month will be destroyed. The academy cannot undertake to pack and forward any works.

10. Applicants who have been unsuccessful in their first endeavours to gain admission as probationers, can renew their application at any subsequent period, by again going through the prescribed forms; but the works submitted must be different from those sent in on any previous occasion.

#### BROAD MEAD, BRISTOL.

THE small sketch of two old Bristol houses will interest some of your readers. They are fairly representative specimens of a certain

class of old Bristol domestic work, though by no means the most elaborate remaining; yet they have a peculiar character of their own, with the bay windows cutting through the pent roof *quoiqua* across the front.

WALTER F. CAVE.

#### CHIPS.

The annual soirée of the members of the Architectural Association will take place at the Westminster Town Hall, on Friday in next week, the 18th instant, commencing at 8 o'clock. There will be a vocal and instrumental concert, in two parts, and the second part will, we hear, be as usual of a light nature.

A fatal fire occurred on the premises of Mr. T. M. Brightling, builder, of Welling, near Eltham, on Friday. The house and workshops were destroyed, and Mr. Brightling's daughter lost her life.

A fine bronze cross and pair of candlesticks have been placed upon the altar of St. Paul's, Bedford. Upon the shaft of each candlestick stands an angel bearing symbolic words corresponding with others upon the cross, the latter being surrounded with small crystals, and having for a centre between four lapis lazuli, a head of Our Lord carved in ivory. The design is by Messrs. Carpenter and Ingelow, carried out by Mr. Gawthorp, of Long Acre.

An effigy of the late Duke of Albany was unveiled on Sunday, in St. George's Church, Cannes, by the Prince of Wales. The Duke is represented in a recumbent position, and the sculpture of the head is expressive and refined. He is in Highland dress, his right hand folded over his heart, and the other pointing to a passage in the book which the Prince was reading the night before he died. The feet rest on a helmet. The body is resting on a Gothic sarcophagus supported by six red marble columns, with carved capitals of white stone. The sculptor was Signor Pellegrini.



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## ILLUSTRATIONS.

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## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY MANUFACTURERS AND ART-WORKERS.

(SEE description on p. 533.)

CHURCH OF SANTA MARIA DELLA SPINA, PISA.

THIS exquisite gem of a church was erected in 1230, and enlarged in 1323. It grew out of the intense religious fervour of that period, which, as much as its warlike spirit, was the mark of the age. The building was at first a mere oratory on the quay on the left bank of the Arno. This sailors' church was erected by the Senate and the noble families Gualandi and Gattosi for the use of mariners who were wont to implore the aid of Our Lady of the Sea, as the Blessed Virgin was called, before embarking on a voyage. In 1333 a merchant brought from the Holy Land a precious relic, a thorn from the Saviour's crown, and placed it in this shrine, which Giovanni Pisano had some years before begun to beautify. His filial love led him to place a portrait of his father as one of the statues on the east front, which is rich in Gothic canopies and tabernacles of white marble. Some other niches were filled by later Pisan artists. Nino Pisano placed a Madonna on the façade, and the altar is adorned by his best work, a charming Madonna offering a flower to the infant Saviour. He, too, sculptured his father Andrea's likeness in St. Peter, a very characteristic statue on the altar. The church exhibits traces of the influence of German Gothic, which at this time began to penetrate into Italy. Vasari speaks of several Germans known as "Tedeschi" who were seeking employment in that country. Some of these worked at Orvieto, and others were engaged at Siena and Assisi. Giovanni is mentioned as having special sympathy with them. The key of the Church of the Sacred Thorn is kept at the house facing the building. Our illustration is taken from a splendid photograph procured at Florence, and it will be valued by our readers.

R.I.B.A. EXTRA MEDAL DESIGN FOR A TIMBER SPIRE.

THE Grissell Gold Medal of the Royal Institute of British Architects is a prize founded by the late Mr. Thomas Grissell for "the encouragement of the study of construction," and is open to all architects who have not been in practice for a longer period than ten years. The subject—varied each year—was: "A timber octagonal spire, covered with lead or other suitable material, the external dimensions of which are 120ft. high, rising from a stone tower 36ft. square. The spire to have angle turrets of timber at, or near,

the base, and dormers at two stages." The author's views—treating for the first time with an "Institute" competition, and guided solely by the conditions—were: That the competitor was evidently expected to meet whatever difficulty there might be in an octagonal spire springing from a square tower in the timber construction, and not by building up the corners in solid masonry to produce an octagonal base for the spire; that an elaborate exterior would receive little consideration in view of the object of the prize, and that a simple outline would be more appropriate for the covering suggested; that the timber we should be most likely to use in practice should be employed, and that the tower walls, the thickness of which was not given, should be considered from the same point of view, for it was manifest that by making the tower walls very thick the difficulties with the roof could be much reduced. The resolution (time being precious) to limit the work to one sheet of paper has resulted in a "multum in parvo." For the same reason, the result of the calculations of wind pressure was merely given in a report, from which the following is an extract:—Surface exposed to pressure of wind, 2,160sq.ft.; force of wind, 55lb. on the square foot; the centre of pressure is 36ft. above the wall plate; total force exerted by the wind to overthrow the spire = 4,276,800lb. Power of resistance—weight of timber, 121,170lb.; weight of lead, 91,280lb.; weight of iron (approximately), 4,480lb.; total weight, 216,930lb. Resistance to the force of wind in the weight of the roof alone = 3,904,740lb. As this 3,904,740lb. is but 9 tons 4½cwt. short of the weight required to counteract the force exerted by the wind, and as there is upwards of 200 tons of masonry above the cast-iron corbels to which the spire is bolted down, it is unnecessary to carry the calculations further to show that stability is amply secured.—T. FREDK. PENNINGTON.

[We shall at an early day publish the Prize Medal design for this same subject.—Ed.]

LLANDAFF YARD CHURCH.

THIS church is to hold 300. The style is 15th century, and consists of nave, organ-chamber, and vestries, with a small tower and spire at south-west angle. The upper part of the tower is of teak, and the spire of cleft oak shingles. Nave, 59ft. long by 25ft. wide—33ft. to the ridge. The choir is separated from the nave by a large arch in centre and a small arch at each side. There is also an arch between choir and sanctuary. By this plan (a broad nave) all the congregation, with the exception of about half-a-dozen, will be enabled to see the altar. The church is to be built of Newbridge stone, and dressings of Bath stone, and the roof of green Welsh slates. The interior will be wagon-boarded all over in red deal, with ribs of pitch pine forming the panels. The choir will be 15ft. in length, and the sanctuary 15ft. by 12ft. 6in. Llandaff Yard is a pretty little village within one mile of Llandaff; there is no church there at present. The architects are Messrs. Kempson and Fowler, of Llandaff.

FOUR HOUSES IN BOTANIC AVENUE, BELFAST.

THESE houses have recently been completed for Sir James Haslett in a fashionable part of this city. As may be seen by the plan, the ground is of an irregular shape, having very little depth, and also the street has a curve of some 6ft. in the length of the principal front and a fall of 3ft. The first floors have been kept on a level throughout, the difference of height being given to the ceilings of the ground-floor rooms. The walls are built of local red bricks, and the sills and heads of windows are of red stone from the Dumfries quarries. The half-timber work is filled in with cream-coloured cement, the roofs are covered with Bangor slates, except that of angle bay window, which is tiled. The houses are fitted up throughout with electric bells and all the most modern appliances. The sanitary arrangements are of the most improved type. The staircase windows are filled with leaded lights. The works have been carried out by Mr. William Gabbey, of Hope-street, from the designs and under the superintendence of Mr. Vincent Craig, architect, 5, Lombard-street, Belfast.

St. Saviour's Home for Children at Shrewsbury was opened last week by the Bishop of Lichfield. It has been built by Mr. Farmer, from plans by Mr. A. E. Lloyd Oswell, both of Shrewsbury.

## NEW BOATING PREMISES, EAST MOLESEY.

THIS building, now in the course of erection, is intended to be an addition to the extensive premises of Messrs. Tom Tagg and Son, boat and steam launch builders, and is to be finished for the forthcoming season. It is situated above Molesey Lock, close to the new Hurst Park Club racecourse, and opposite Tagg's Island. The ground floor contains a large storage for boats, the centre portion having a clear space of over 30ft., by 80ft. long, so that the longest boat can be easily moved. The floor is of asphalt, with railway metal bedded in to run the boats on. Lavatories and dressing-rooms are provided on this floor, and the grounds laid out for lawn tennis, gardens, and stables. The upper floors are arranged for club premises, ladies' dressing-room, &c., and show-rooms. Electric light will be used throughout, and when completed it will, no doubt, be the best arranged boating-house of its class upon the river Thames. The walls are formed of New Heather Co.'s bricks and rough cast, the roof tiled. The constructional ironwork was supplied by Measures Brothers, the contractor for the whole being Mr. Edward Potterton, of East Molesey, and the architect, Mr. Burnell-Burnell, of New Stone Buildings, Chancery-lane, W.C.

## HOTEL DE VILLE, CALAIS.

THIS well-known example has been seldom illustrated, but its elevation is a florid and typical piece of French Gothic of late date. The view given in Mr. Fred Oliphant's spirited sketch, reproduced to-day, is seen on entering through the town gate near the railway station, and the Hotel de Ville overlooks the Market Place. In front of the façade are busts of St. Pierre, of Francis II. (Duc de Guise), and of Cardinal de Richelieu, who built the citadel on the west of the town; above it rises a belfry containing the chimes. The high tower behind the Hotel de Ville, called La Tour du Guet, dates from 1214; it was used as a lighthouse until 1848, and now does duty as a watch-tower for fires.

## CHIPS.

Alterations have been made to the Town Hall, Cromer, embracing the ventilation, which is now carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

The Marquis of Ripon will unveil the statue of the late Right Hon. W. E. Forster, on Wednesday, the 30th inst. The statue will occupy a prominent position in the centre of the square at Bradford named after the late statesman. It was designed by Mr. Harvard Thomas, of Chelsea, and has been cast in bronze by Messrs. H. Young and Co., Pimlico. The figure is 9ft. 3in. in height. Mr. Forster, who is attired in a frock coat, is represented in a speaking attitude. His head is slightly raised, and his right hand uplifted and outstretched almost to a level with his head.

Whilst making alterations underneath a fish-monger's shop in Grantham, an apartment, 15ft. by 12ft., of the 13th century, and intended for an oratory, has been revealed. There is a slab of stone for the altar, 24in. by 18in., with a recess for the crucifix. The place is approached by steps, which are much worn. The column and arches are of native stone, apparently from Great Ponton quarries, a mile or two from the town.

Mr. W. H. Radford, civil engineer, Nottingham, has been appointed representative and consulting engineer in England for the corporation of Durban, in South Africa. He will act conjointly with the London agents in ordering and testing the materials required for the waterworks extension. The cost of the new works when finally completed will be about £120,000.

New Wesleyan Sunday-schools are in course of erection at Baddock, near Huddersfield, and will accommodate 200 scholars at a cost £1,600. Mr. J. E. Tate, of Milsbridge, is the architect. The memorial-stones were laid last week.

The quaint little mausoleum at Kilbirnie, near Dumbarton, erected in 1603 by Captain Thomas Crawford, of Jordanhill, is being restored at the cost of his descendant, Mrs. Fergusson Pollock. The contractor is Mr. William Finlayson, of Leith, and the work is superintended by Mr. Charles S. Johnston, architect, of Edinburgh, whose object is to reconstruct the sadly shaken stonework, render the roof water-tight, and slightly relieve the almost obliterated lettering of the motto, with the least possible disturbance of their weatherworn aspect.



## WAYSIDE NOTES.

THE R.I.B.A. *Journal of Proceedings* for April 3 is now before us, and all those who have access to this publication may peruse at leisure the report of the remarks made by Fellows and Associates present at Conduit-street on March 31. From its pages it may be gathered how great has been the progress made in the conversion of members of the Institute to Registrative principles. Time was, and not so very far back, when many of those who spoke favourably of the proposal to make close the profession of an architect, would have spoken in very different terms. In effect, as I said last week, and as all acknowledge, the result of the meeting on the 31st ult. was an admission on all sides of the desirability of the proposed reform. For this we should be infinitely thankful, since it is more than half the battle, and active measures will result, as a matter of course, sooner or later—sooner, if the polling of members is in favour of immediate action, and later if the “not yet” policy is to be supported, and procrastination becomes the order of the day.

While urging immediate action, even if only preparatory and prospective, it would yet be idle to pretend that the remarks of those Fellows and Associates who, though advocating delay, are yet with us on principle, are to be blindly ignored, and that we should drive ahead, looking neither to the right nor left. Such a policy may be very well where party spirit prompts; but those desirous of seeing a scheme of Registration at once complete, self-contained, and generally pleasing to all, must endeavour to benefit by hints thrown out and suggestions made, whatever may be the quarter from which they emanate. Now, out of the mass of criticism for criticism's sake, and from the array of bogies conjured up in the minds of gentlemen gifted with a wonderful fertility of imagination, who spoke at the recent meeting of the Institute, I would select two objections to Registration on lines already proposed, which, on the face of things, have some degree of weight. These are (1) the inclusion of the lowest class of “architect”—the architect-and-undertaker class; and (2) the carrying out of architectural work by engineers, and builders, and others. It will serve no honest purpose if one affects to think lightly of these matters, and to deny that they are deserving of reconsideration. At the same time their presence in past attempts at Registration is not to be made a pretext for casting ridicule at the whole question, and scorn upon the promoters of the Architects' Registration Bill. If those who discover these objections are seriously in earnest in their desire to remedy existing evils—the outcome of the present happy-go-lucky condition of the profession—they will set themselves a-thinking as to the best methods of overcoming the difficulties, and will look about for any possible loop-holes of escape through seemingly insurmountable obstacles.

This, I take it, will be the duty of the Institute Council, should the polling be found favourable to the suggestion that it should seek statutory powers. To sit down, like Mr. Micawber, and wait for something to turn up, is, to say the least, not a dignified policy; while, on the other hand, no better work could occupy a committee appointed by the Council than an endeavour to solve problems that have been attacked by others with success, which, if measured, is at least honourable. It is, after all, an easy thing to find fault and criticise; the difficulty is to improve and make perfect. But on the labours of others the Institute, with vastly greater means, could advance by strides and perfect ideas which, if immature, are not to be regarded as reflecting upon the credit of pioneers who have had enough to do to promulgate principles, without refining details.

It ill becomes any one to talk of “insuperable difficulties.” I really think I should be afraid to complain of such in full public view—fearful of bringing upon myself contempt and scorn as lacking manliness and manly courage. And apart from this, it is surely conceivable that the difficulties will be as great in, say, five years' time as now, and we all know the value of present time and the danger of delay. Are there no members of the Royal Institute of British Architects who blush to think of the faint-heartedness exhibited at the “insuperable difficulties”? Are British pluck and perseverance

denied to the architect? If so, then let us faint by the wayside; but if any spark of manliness is left, let us at least make a show of attacking these “insuperable difficulties,” and redeem days that are evil because of our own past neglect.

In the matter of the Institute examination, having regard to the moderate tone of your correspondent Mr. Edmund J. Bennett's letter, and the fact that it is difficult, if not impossible, and certainly unpleasant, to prove what after all can be only a personal impression, gained by reflections on events and facts that come under one's notice, I am by no means inclined to nail my colours to the mast on the precise wording of the sentence in “*Wayside Notes*,” to which your correspondent objects. Like Mr. Gladstone, I will, while holding my present view, leave my mind open to conviction either way. It would be very displeasing to me to say anything calculated to leave an impression on the general reader that I would write in a derogatory manner of the qualifications and ability of those who have passed the exam.; for in what I consider I have above well called the “happy-go-lucky” state of the architectural profession, “A.R.I.B.A. by examination” means more to me than anything. At the same time, be it remembered, the opinion I gave as to the Institute's desire to hastily increase its members is frequently expressed by many others who write on examination matters. It so happens that putting down last week's *Building News*, containing Mr. Bennett's letter, I picked up *A.A. Notes* for April, and chanced upon the leading article by Mr. Fred. M. Simpson, on “The A.A. and Architectural Education.” Among other things, that may well be read by those interested in this matter, the writer says, “If the Institute desires only to increase its members, and, consequently, examines only to see if men are ‘fit and proper’ persons to be admitted into its ranks, it can, of course, do as it pleases, and fix its own standard. But if, as I imagine, it aims at representing the profession, and really has the welfare of architecture at heart, and honestly desires so to frame its examinations as to pass only those who are likely to do credit to and advance our art; then I think its standard is altogether too low, and that it has been guilty of stamping with its official stamp, as thoroughly competent, candidates who may, of course, be competent, but whom it has never tested except in elementary knowledge.”

Here, an independent writer gives precisely the same opinion as myself. I quote Mr. Simpson's words as fitting to the present occasion, while at the same time I shall be heartily glad if any one can prove that he, and I, and others are labouring under a delusion.

In travelling for the purposes of the study of architecture, it is a great thing to know when and how to lay out funds. There is such a thing as false economy, and we arrive home with money in our pockets that would have been better expended in seeing this or that and giving here and there, or, at the worst, purchasing plenty of photographs. Nevertheless, one cannot but admire the tact of the economical, who go about accomplishing much and incurring little expense. I think that all will admit that Mr. Bartlett, the A.A. travelling student, managed wonderfully well, and discharged the duties he owed to the founders of the Studentship in reducing expenses to six francs or seven francs per day. Expenditure in these matters is, after all, a matter of genius. Some, it seems, cannot manage cheaply; others do as much work, and more, doubtless, on a third less money. For an architectural student, it is a great gift, I take it, to be able to economise without necessarily incurring discomfort, and thus have money to spare for incidental expenses, fees for sight-seeing, and what-not. Unless one be desperately in earnest, it may be a mistake so to cut down daily expenditure when making holiday tours; but matters take a different aspect in regard to travelling studentships, where the traveller should consider the tour a serious business affair. In so doing he will certainly best serve his own interests, and most creditably discharge obligations which, if unwritten, are, nevertheless, morally placed upon those accepting studentships of this nature.

Returning from the country, after the Easter holidays, I took up the *Times* of Tuesday, and

was interested, if not amused, by a letter on Tintern Abbey, from Mr. R. C. Poulter. The subject of the writer's communication, however, is rather beyond a joke. Mr. Poulter says he was at Tintern Abbey a few days before Easter, and found some labourers “tidying up,” in anticipation of holiday visitors. Thinking that they were only mowing the grass, sweeping the paths, &c., he took no heed of their operations, till, startled by a shout of “Look out, below!” followed by a series of dull thuds, he found that the labourers, mark, were removing loose stones and architectural fragments that might be a source of danger with the aid of long punting poles! The *Times* correspondent well says that he should have thought that every fragment of so beautiful a building ought to be carefully reset in its place. So it ought! The incident strikes me as most disgraceful sacrilege, and the sooner means of preserving the old abbey from further treatment of a like nature are adopted the better for all, as repeating the punting-pole operation every successive holiday time will soon make visible havoc at Tintern.

GOTH.

## CHIPS.

The Earl of Camperdown unveiled, in the Mowbray Park, Sunderland, a statue in memory of Jack Crawford, seaman, who nailed Admiral Duncan's colours to the mast of the *Venerable* after they had been shot away at the battle of Camperdown, October, 1797. Crawford was a native of Sunderland, and died in 1831. The statue is the work of Mr. Percy Wood, sculptor, London, and the height of the group is 20ft. 7in. Jack is supposed to have ascended the mast of the *Venerable* as far as the cap, which rests on the summit of the pedestal. The colours are thrown over his left shoulder, and in his right hand he holds a pistol, with the butt end of which he drives in the nails.

The parish church of Winsford, near Dulverton, is about to be restored. The committee have signed a contract with Mr. J. Steer, a local builder, for the carrying out of the work from the plans of Mr. J. D. Sedding, of London, diocesan architect, for £670. The work includes reseating the church with oak seats, a new roof over the north aisle, reglazing all the windows, and new tracery for those which at present have stone mullions, relaying the pavement in the central portions with Hopton stone on concrete, a new heating apparatus, resetting the present Jacobean oak pulpit, and repairs to the tower and fabric.

It is proposed to effect improvements in Glasgow Cathedral at a cost of between £800 and £900.

Judgment was given at the Hants Quarter Session on Tuesday in the case of the Southampton Corporation, v. the Assessment Committee of the Hursley Union. The corporation have recently erected new waterworks at Otterbourne, and these have been assessed on the basis of the value of the land, machinery, and buildings. Against this the corporation appealed, and the case was argued for two days. The corporation claimed that the waterworks were erected, not for profit, but to supply the people of Southampton with pure water, and that they should not be assessed like a company trading for profit. The Court decided that the rate was a good one, and found for the respondents, with costs, but granted a stay of execution in view of an appeal.

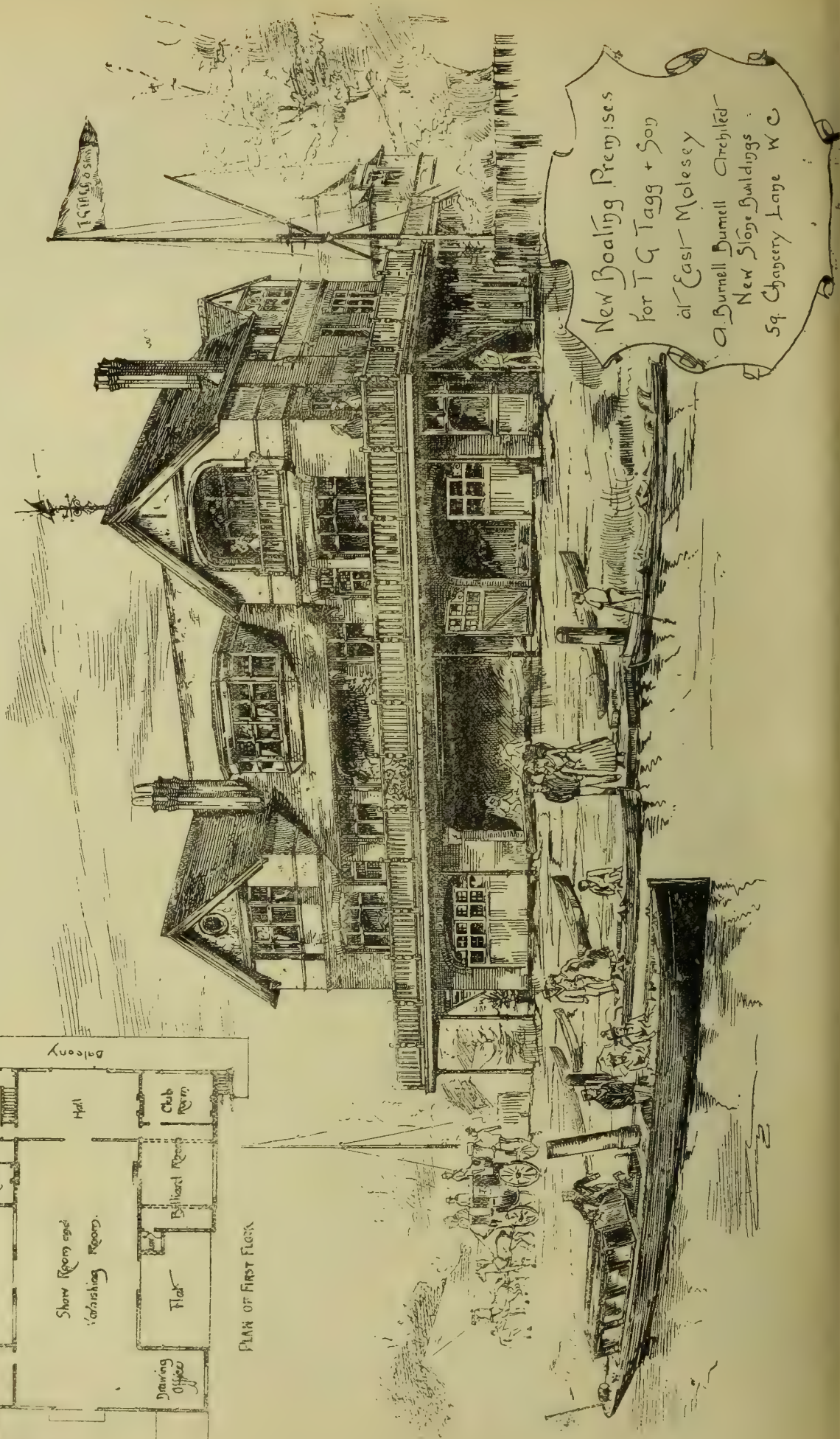
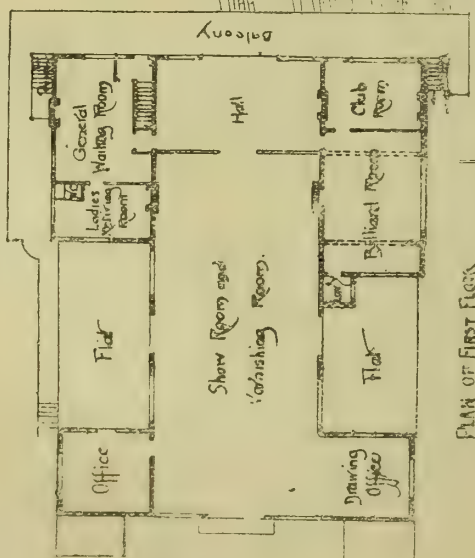
Several improvements have just been completed, at St. Matthew's Church, Stonehouse, Devonport, including the decoration of the interior of the church, carried out by Messrs. Fouracre and Watson, of Plymouth, and the addition of a lectern of carved wainscot oak, 6ft. 8in. in height, and having the desk carried by the figure of an angel. Mr. Trevenner, of Stonehouse, was the carver.

The Manchester Corporation Art Gallery will open on Monday next with a collection of water-colour drawings of the English Lake District, by Harry Goodwin, illustrating the poetry of Wordsworth.

A new council chamber has been erected for the London County Council on the site of the old Metropolitan Board of Works' offices in Spring-gardens. It was constructed under the superintendence and from designs by Mr. Thomas Blashill, architect to the Council, Messrs. John Allen and Sons being the builders, at a cost of about £8,000, exclusive of furnishing.

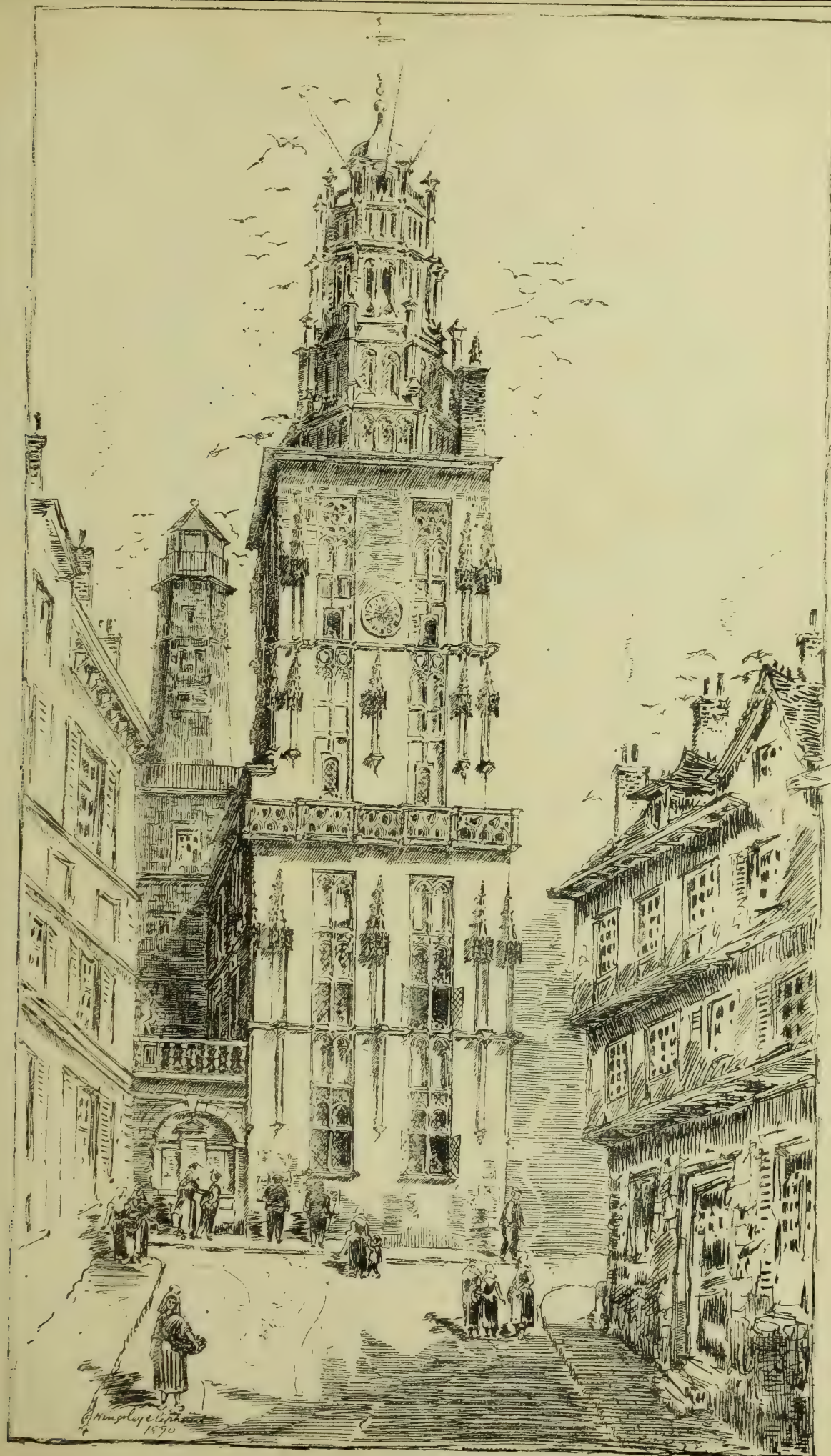
Mr. Ford Madox Brown has completed the tenth of his twelve historical paintings for the Town Hall at Manchester. The material represents John Kay, the inventor of the flying shuttle, rescued from the mob by his wife and workmen. These concealed him in a sheet of wool, and carried him out of his house by a back way while the rioters were forcing an entrance in the front of the building. The scene is represented as taking place in Kay's workshop.





New Boating Premises  
for T & G Tagg & Son  
at East Molesey  
A. Burnell Burnell Architect  
New Stone Buildings  
59 Chancery Lane W.C.





HOTEL DE VILLE. CALAIS.







CONTEMPORARY MANUFACTURERS  
AND ART-WORKERS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THE following portraits are eminently representative, and commence a short series of leading manufacturers and art-workers associated with some of the most important building operations of the age.

Mr. William Brindley, whose portrait we give first on our sheet, is proprietor of the establishment of Farmer and Brindley, London. The various important architectural works carried out by this firm, under different architects (especially the late Sir Gilbert Scott), embrace the restoration of nearly all the cathedrals in England and Wales, as concerns sculpture and carvings of the fabrics, reredoses, pulpits, stalls, and marble pavements; the carvings of the National Prince Consort Memorial, Hyde-park; also sculpture, &c., of St. John's College Chapel, Cambridge; transept portals of Westminster Abbey; St. Nicholas, Hamburg; Wellington College Chapel, and various extension works to many of the Colleges of both Oxford and Cambridge. The sculpture and carvings to the Government House and Colonial Offices, the Town-halls of Preston, Manchester, and Bradford; also Glasgow University, Albert Institute, Dundee; and the hotel and station, St. Pancras. Some of their most important works in marble are the reredos, St. Paul's Cathedral; Eaton Hall, for the Duke of Westminster; Mount Stuart, for the Marquis of Bute; and at mansions for Lords Wemyss, Windsor, and Eldon; the National Gallery extension; National Liberal Club; Oxford Examination Schools; Greek Church, Bayswater; Stock Exchange; Northumberland Avenue and Hat-chett's Hotels; also the new pedestals for the Elgin marbles, British Museum. Amongst the numerous monuments may be mentioned those of the Bishops Tait, Wilberforce, Wordsworth, Lonsdale, and Woodford, the late Dean of York, and Lord and Lady Halifax. Mr. Brindley is an authority on coloured marbles, and has himself rediscovered several important ancient Roman ones in Greece, Egypt, and Tunis, and is the concessionaire of the old Egyptian Porphyry ones. His papers on marbles, read before the R.I.B.A. and British Association, are well known. He is joint author, with Mr. W. S. Weatherley, of "Ancient Sepulchral Monuments," which is a textbook on the subject, consisting of 212 plates quarto; also "Marble Pavements from Old Examples." He has formed a unique museum of polished stones and marbles applicable to colour decoration, open free for study to artists. He is a F.G.S. and F.R.M.S.; is on the Court and one of the judges of the Turners' Company, and Treasurer of the Royal South London Ophthalmic Hospital. Mr. Brindley is assisted in his large art establishment by a very able staff, with whom he has always worked most harmoniously. His photograph was produced by Messrs. Debenham and Gould, of Bournemouth.

Mr. Robert Dennett is the head of the firm of Messrs. Dennett and Ingle, whose places of business are 5, Whitehall, London, and Station-street, Nottingham. Mr. Dennett is the only surviving brother of Messrs. Dennett, an old-established building firm in Nottingham. He still resides there, while the London business is managed by Mr. Fredk. Ingle, the only other member of the existing firm. Mr. Dennett, who is at present on a voyage to the Cape for the benefit of his health, is an Alderman of his native borough, and has recently filled the office of Sheriff of Nottingham. The London branch of the business consists of the fireproof flooring, and all kinds of special concrete work, and the designing, supplying, and erecting of constructive ironwork. This branch was established in 1866, and the first important work carried out by the firm was the fireproof floor construction of St. Thomas's Hospital, followed up during subsequent years by the Government buildings at Westminster, Her Majesty's Theatre, the National Gallery Additions, the New Royal Courts of Justice, and numerous other buildings of the first class in all parts of London and the provinces. The firm throughout its career has enjoyed the highest reputation for good and sound work, and faithful discharge of its obligations. Amongst the more important works upon which the firm are at present engaged may be named the floors, &c., of the large new Middlesex Fourth Asylum at Claybury, the New Royal Courts of Justice at Birmingham (floors, roofs, and constructive iron-

work), and the New Winter Garden in connection with the People's Palace, &c. The portrait given is from the studio of Messrs. Blanc and Son, of Paris.

Sir Henry Doulton, the head of the firm of Messrs. Doulton and Co., is the second son of the late Mr. John Doulton, who in 1815 established, in conjunction with Mr. J. Watts, a small pottery in Vauxhall. From here they removed in 1834 to High-street, Lambeth, which is still the head-quarters of the gigantic firm which then numbered some twelve persons, but now employs in Lambeth alone over 1,500, and altogether, in town, country, and abroad, over 3,200. At an early age Mr. Henry Doulton entered the factory in order to acquire a thorough knowledge of the technical processes, and was not content until he had succeeded in fashioning upon the wheel the largest vessel which had hitherto been made. This devotion to the practical side of the work has borne excellent fruit, and enables Sir Henry Doulton to always exercise the minutest supervision over the details of the constantly widening field of ceramic productions. In 1846 he commenced the manufacture of stoneware pipes and apparatus for sanitary purposes. This has developed into an enormous industry, monopolising several factories in different parts of the country, with depots in important foreign centres. About 1855 a terracotta department was added, from which have proceeded many important works of sculpture and architectural ornament. Conspicuous among the artists engaged is Mr. George Tinworth, who, since his first tentative efforts in 1866, has worked entirely for Doultons'. For the 1867 (Paris) and 1871 (South Kensington) Exhibitions a few vases and jugs of good form, but no decoration to speak of, were brought forward as an attempt to bring art into the common domestic stoneware of the day. These met with immediate encouragement and patronage, and "Doulton ware" forthwith ranked as an interesting and valuable art manufacture. Within a year or two, ladies and young girls were employed, and it was thus found possible to organise an entirely new field for female labour. Faience-painting, pâte-sur-pâte, impasto, silicon, chiné, carrara, and many other styles of decoration were subsequently introduced, until now it may be said that the range and variety of Messrs. Doulton's productions are quite unequalled by those of any other pottery in the world. The honours awarded to the firm have been numerous and noteworthy; a Grand Prix, at Paris, in 1878, and a similar distinction in 1889, being, perhaps, the foremost. The total list comprises 91 gold medals and first-class awards, with no less than 101 medals of minor importance. Valued most highly by the head of the firm (if only on account of its gracious presentation at the Lambeth Works by H.R.H. the Prince of Wales) is the "Albert Medal" of the Society of Arts, awarded in 1885 to Mr. Henry Doulton "in recognition of the impulse given by him to the production of artistic pottery in this country." Two years later Sir Henry Doulton received the honour of knighthood. He is a member of the Council of the Society of Arts, one of the Lieutenancy of the City of London, an Almoner of St. Thomas's Hospital, and a member of the Cordwainers' and Turners' Companies. He was also appointed in 1878 a Chevalier of the Legion of Honour. His photograph is by Mr. Downey, of Ebury-street, S.W.

Mr. Metford Warner, representing Messrs. Jeffrey and Co., of Islington, whose art wall-papers are so famous, forms the next subject among our portraits to-day. The firm of Messrs. Jeffrey and Co. has been located at 64, Essex-road, Islington, for twenty-six years. It had previously been established for many years at Kent-and-Essex yard, Whitechapel. When removed to Islington, the business was amalgamated with that of Messrs. Holmes and Aubert, paper-stainers, who had long sustained a reputation for making the highest class of wall-papers. It was at this time that Mr. Metford Warner joined them, and in a few years after, owing to the death of his partners, the entire control of the business came under his care, and has remained so up to the present time. He has always made it a chief object to have English art of the present day introduced into his manufactures, and we therefore find that almost all eminent artists, who have been willing to design for wallpapers are on his roll of designers, including the late William Burges, A.R.A., E. W. Godwin, Bruce Talbot, and Owen Jones; Miss Kate Faulkner,

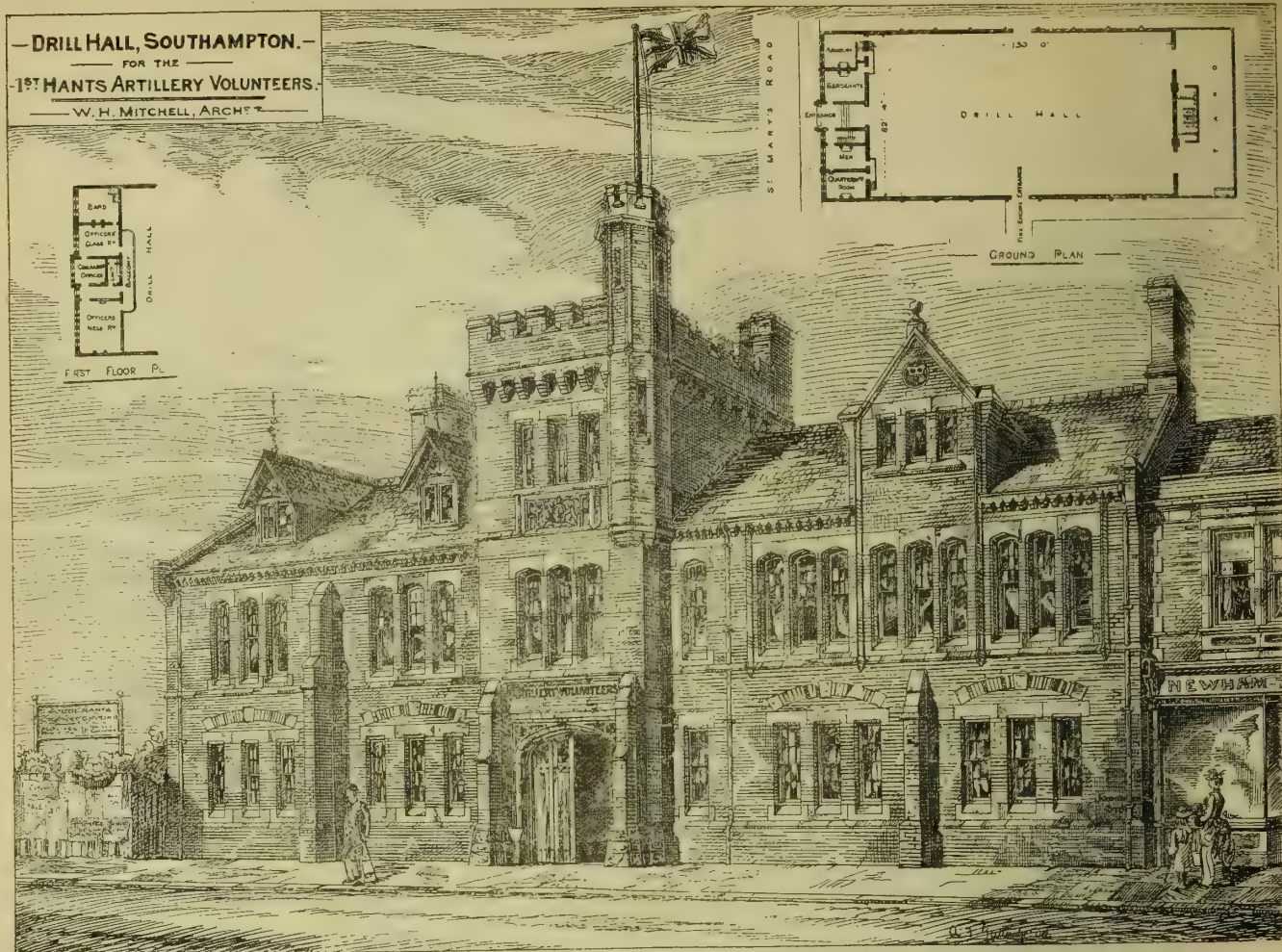
Messrs. C. L. Eastlake, J. D. Sedding, W. J. Muckley, Walter Crane, and Lewis F. Day. With such assistance it is not surprising that English papers should more than hold their own against those of French manufacture, which were at one time so much more in vogue. An ample proof of this was given at the Paris Exhibition, where Messrs. Jeffrey and Co. made such a grand display of all classes of their productions.

The firm of Messrs. Geo. Jackson and Sons was founded by the great-grandfather of the present partners, who, originally a builder in Bedford, left that town and became clerk of works to one of the Brothers Adam, the celebrated architects, who were at that time building houses in Portland-place. Some Italians employed there ornamenting the ceilings and woodwork used a composition hitherto unknown in this country, the secret of which they jealously guarded. By close observation and experimenting Mr. Jackson was enabled to discover this, and began the manufacture of chimney-pieces, which for some years had a large sale. The demand for these falling off, his son began to copy picture-frames in the same composition. The father of the present generation very much enlarged the manufacture, adapting it to interior decorations, and, amongst other works, put up the decorations in Westminster Abbey for the Coronation of Queen Victoria, decorated the great gallery at Apsley House and Stafford House. This firm also introduced into England from France the manufacture of Carton Pierre, the material so much used in Paris for internal work. The present partners purchased of the late Mr. Owen Jones the patent for fibrous plaster, and have developed it to so large an extent that it has caused almost a revolution in the mode of carrying out plain and ornamental plaster work. The firm were one of the original guarantors for the 1851 Exhibition, and one of the firm was a juror there, and also in that of 1862. In these exhibitions they were awarded first-class medals. They also obtained a silver medal in Paris in 1855 and a gold medal in 1878, while last year the only gold medal given for plaster decorations to any nation was awarded to them. These last honours are particularly gratifying as a success in a special department of art in which the French are supposed to be *facile princeps*. Mr. Jackson's portrait is the work of Mr. J. Thomson, of Grosvenor-street.

Mr. J. C. Edwards is the proprietor of extensive brick, tile, and terracotta works at Ruabon, N. Wales. He was the first to open up the valuable clays of the district and turn them to account. He may be looked upon as one of the pioneers of the terracotta trade, and it is due to his energy and enterprise that a flourishing trade has sprung up in a hitherto distressed neighbourhood. When 20 years ago he acquired the now well-known bed of red clay at Pen-y-bont the works consisted of one small shed only, in which half-a-dozen men were employed making bricks for local purposes. They now cover many acres, and a large manufactory has sprung up there, employing from 400 to 600 men, according to the state of trade, and sending goods to all parts of the United Kingdom, and, indeed, all over the world. In addition to these works, Mr. Edwards has made sanitary goods for some 40 years at the Trefynant Works, and some few years ago started a new manufactory at Rhos for glazed and enamelled bricks, and others for tessellated, encaustic, and artistic tiles. He finds employment altogether for about 1,000 hands. Some of our best-known terracotta buildings are products of his works, such as the Constitutional Club, Northumberland-avenue; the Royal Infirmary, Liverpool; the new Royal Law Courts, Birmingham; new pavilion at Lord's Cricket Ground; new wing at Cliefden and other works for the Duke of Westminster; Hove Town Hall, Brighton; Clerkenwell Free Library; houses in Pont-street, Chelsea; Peabody Buildings, Pimlico; Kensington Baths, Notting Hill. Mr. Edwards is a County Magistrate, and a member of the County Council of Denbighshire. The photograph is by Mr. Mayall, of Brighton.

The Fleetwood Industrial Co-operative Society have just erected a clock in their new building, which strikes the hours and quarters, and shows the time upon one illuminated dial. It has been erected by Messrs. J. B. Joyce and Co., of Whitchurch.





## BOOKS RECEIVED.

*School Hygiene*, by W. JENKINSON ABEL, B.A., &c., Clerk to the Nottingham School Board (London: Longmans, Green, and Co.), is a useful manual for teachers and school authorities, and will be found to contain practical notes on the hygiene of schools. Thus the remarks on ventilation and temperature are concise, and embody the results of authorities. Tobin's tubes or wall ventilators are recommended; these should be kept open and not closed as we often find them. The remarks on disinfection and the best disinfectants are of service, not only in schools but in houses. An excellent antiseptic family ointment is vaseline mixed with about 2 per cent. or 3 per cent. of pure carbolic acid. Suggestions for the preservation of eyesight; the symptoms attending infectious diseases, such as smallpox, scarlet fever, measles, diphtheria, whooping cough, ringworm, &c.; hints and directions to facilitate first aid in accidents are to be found. The book may be usefully placed in the hands of parents, teachers, and, in short, anybody who has the care of children.—*Electrical Influence Machines*, by JOHN GRAY, B.Sc., Assoc. of the Royal School of Mines, &c. (London: Whitaker and Co., White Hart-street, Paternoster-square; George Bell and Sons, Covent Garden.)—This is an elementary little book giving, in a condensed form, all that a general student would require to know about static electricity and influence machines. In the earlier chapters the phenomena and principles of static electricity are given, illustrated by diagrams. The hypothesis of the electric field is clearly explained, after which the principles of the electrometer in its various forms are discussed. Of influence machines, a brief sketch of their history prepares the reader for a description of various types of machine, including Varley's, Toepler's Holtz machine, and the powerful machines invented by Wimshurst, which give off sparks of 14 in. in length. Sir William Thomson's inventions are also described, and details are given of other leading forms of apparatus. The work is full of well-executed wood engravings, and the instructions for making machines of this description add to the value of the book to the amateur.

## DRILL-HALL, SOUTHAMPTON.

THIS building, the foundation stone of which was laid last August, was opened on March 21 by the Secretary for War. The cost has been nearly £4,000. It has a frontage of 85ft. 6in. by a depth of 200ft., and, with the exception of 24ft. in the rear, will be entirely built over. The building may be divided into two portions—the administrative block and the drill-hall. The latter is 150ft. long by 82ft. 4in. wide, and will, when erected, be the largest hall in the town. The floor will be perfectly free and unobstructed by any columns. The walls will be of brick, and the roof-trusses, standards, and lattice girders originally formed part of the Liverpool Exhibition buildings. The interior will be faced with fair red brickwork relieved with bands and devices of black bricks. The administrative block occupies the entire frontage, and is subdivided in elevation into three parts, the central being a three-story building finished as a tower, and standing slightly in advance of the two-story wing on either side. The main entrance, which is in the centre of the building, leads into the vestibule or hall, giving access, 12ft. 6in. wide, by four easy steps to the various rooms, &c. These consist of sergeants' room, 20ft. by 17ft.; armoury, 20ft. by 17ft.; men's room, 20ft. by 14ft.; and quartermaster's room, 20ft. by 14ft. On the ground floor each of these rooms has direct communication with the drill-hall. A staircase on the right of the entrance leads to the first floor, containing commanding officer's room, 15ft. by 13ft.; officers' mess-room, 28ft. by 20ft.; officers' class-room, 20ft. by 17ft.; and band-practice room, 20ft. by 17ft., the latter having a separate staircase for independent access from the hall. A projecting balcony at the level of this floor gives separate communication to the several rooms, and also to the officers' lavatory. On the upper floor, and partly in the roof, living-rooms, two bedrooms, and offices have been provided for the caretaker; also mess kitchen and store. The front, which is of red brick, with Doulting-stone dressings, is designed in the Tudor style. The name of the corps and the Royal arms will surmount the entrance, and at the south-west corner of the tower there will be a small octagonal stair-

case turret to give access to flat and support the flag-pole. The contract for the work was taken by Mr. Jonas Nichols. Mr. W. H. Mitchell, of 9, Portland-street, Southampton, is the architect.

## BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E. Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

BRICK-MOULDING MACHINES FOR THE SEMI-PLASTIC PROCESS.—(Continued.)

VERY considerable progress appears to have been effected of late in making bricks from weak, inferior clay, containing in many cases a large percentage of lime, which is, under ordinary treatment, extremely detrimental to the production of sound bricks. Mr. Johnson, of Leeds, has published the results of some of his experiments in this connection, part of which we reproduce. "The character of the clay is invariably of a soft and plastic nature, and in some cases contains from 20 to 30 per cent. of lime. This clay cannot be worked successfully by the ordinary plastic process; but, if it be crushed very fine, mixed with water, thoroughly tempered, and the bricks subjected to great heat, the lime becomes silicated, and forms a flux, making a hard, strong brick of a vitrified character. It was found, however, that this process was too costly to be a commercial success. In carrying out his improved process, Mr. Johnson dries the clay before reducing it to powder. For this purpose a revolving cylinder 20ft. long by 5ft. in diameter is used. This is filled with an intense heat of from 1,000° to 2,000° by means of a Thwaite Twin Gas Producer. The clay is brought up from the clay-hole in the ordinary way by hoisting, tipped into a hopper, in which rotates a winged valve, forming a series of pockets, which, as they come into position, are filled with clay, and each in turn discharges its load into the revolving cylinder, and the clay thus begins its traverse through the whole length of the cylinder, taking about 30 minutes to accomplish the journey. During this time the clay is being subjected to the intense heat therein, and the



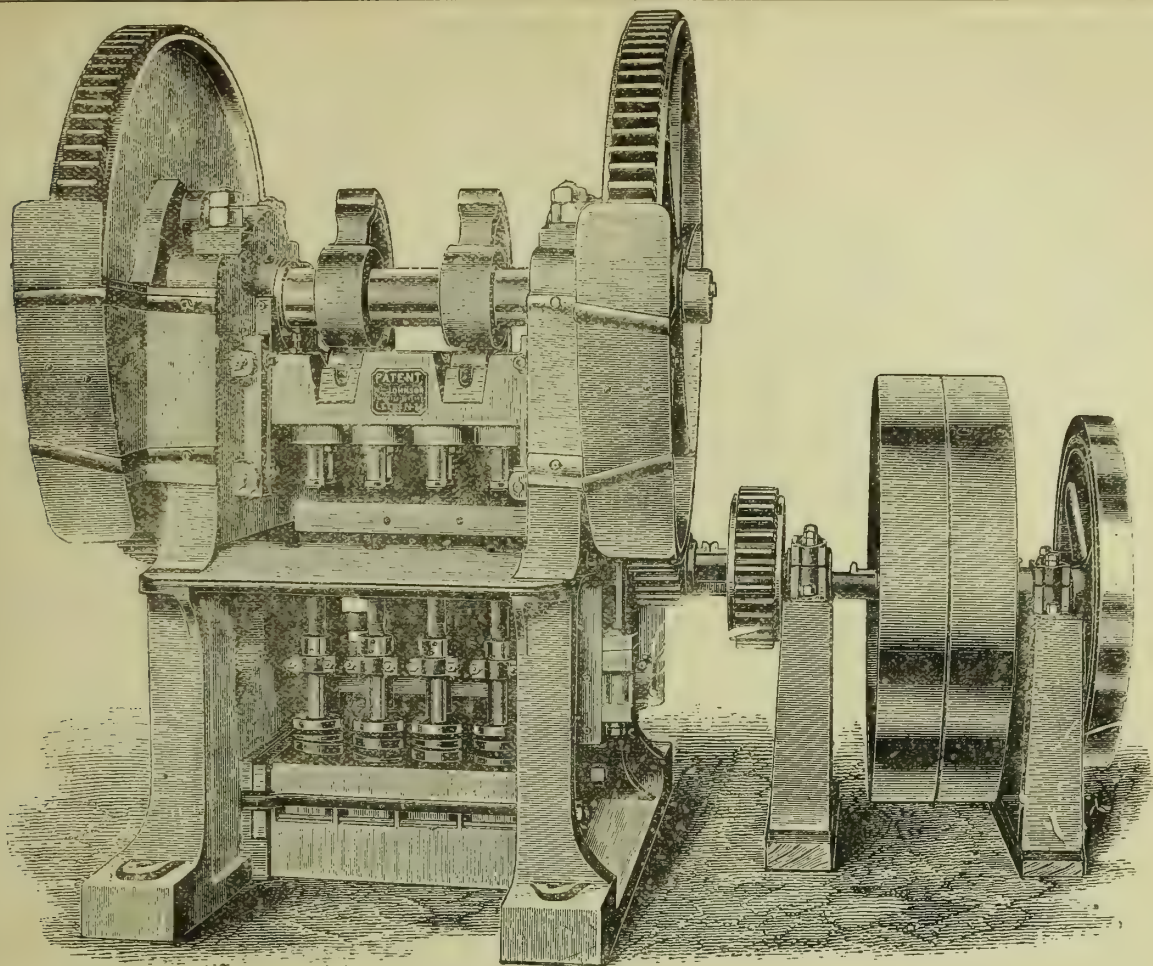


FIG. 16.

moisture is expelled from it. The thoroughly dry clay is then delivered from the lower end of the cylinder by a shoot into a perforated edge-runner grinding mill, from which it is elevated into a revolving sieve. The fine powder drops through the sieve into a hopper, and the coarse is returned again to the grinding mill to be re-crushed. The powdered clay then runs in a constant stream into a double-shafted and differential mixer, where the necessary water is added, then into a brickmaking machine, and afterwards the brick is finally finished in a power lever press. The bricks are taken direct to the kiln without any intermediate drying. The traverse of the clay towards the mould is continuous, and as soon as the latter is sufficiently charged, and while another mould is coming into position, the stream of surplus clay is discharged back into the hopper of the machine, thus avoiding overstraining.

We conclude our notices of semi-dry brick-making machines by illustrating one from the designs of Mr. Wm. Johnson, Castleton Foundry, Leeds. This machine possesses several fresh features in its arrangement, and it is claimed for it that the ground clay can be fed to it in a damper state than in other machines for the same process. Its method of working is as follows:—The ground clay or material to be formed into bricks is fed into a hopper at the base of which, working in a slide on the face of the table, is a bottomless box or charger which receives the clay from the hopper, and sliding over the face of the moulds formed in the table fills them. To insure a certain and dense feed a pressing head drops with its own weight upon the material while the charger is still over the moulds; the pressing head is then raised to allow the charger to return again under the hopper to be re-filled, and in its passage it strikes off the loose material level with the face of the moulds. The pressing head drops a second time upon the material in the moulds, and during the time it remains there two additional distinct and powerful pressures are given. The presser then leaves the moulds, and the bricks are raised for delivery, which is performed by the charger returning again to fill the empty moulds, and to deliver the finished bricks at the same time. Each brick receives four distinct pressures, whereby the air contained

in it is thoroughly expelled. As will be seen from the sketch, the machine is powerfully geared, and of massive construction generally, to overcome, as far as may be, the great working strain put upon it. It is claimed by the maker that it is particularly adapted for working difficult and refractory materials, such as marl, shale, slate, *débris*, fireclay, nickel oxide, purple ore, &c.

#### NEW SANITARY SPECIALITIES.

**B**OROUGH engineers, surveyors, and architects, will do well to consult Messrs. Adams and Co.'s new catalogue of sanitary improvements. The catalogue recently published by this firm, whose London offices are 10, Little Queen-street, Westminster, in addition to their York, Manchester, and Glasgow branches, comprise various arrangements of Mr. Adams' patent automatic flush latrine. Each closet is distinct, an advantage over the open-trough form for public buildings, factories, &c. The lavatories are especially worthy of attention. We particularly call the notice of architects to Adams's lavatory range (McMath's and Adams's patent) where there is no tap, no waste-plug to get lost, and always filled with clean water for immediate use. This lavatory can be fixed singly or in rows. The action is simply a continuous supply of water from bottom of basin striking the front, which is directed upwards, flowing over an outlet weir at the back of basin; thus the dirty water is continually escaping, giving place to clean. A tap below regulates the supply. The basins are of various shapes, with fronts either semicircular or flat, made of brown glazed ware or cream colour and white ware. The decorated basins are quite ornamental adjuncts to the wall. They can be built into wall, having a cast-iron standard, or can be built on glazed brick piers. Adams's Special Disconnecting Chamber is an improved make of this very necessary provision for house-drainage. The stock size made is 2ft. 8in. by 1ft. 8in., with 6in. centre invert, and 4in. branches; but any other size can be made. There is an outlet siphon trap, glazed inside, the chamber and invert being of glazed ware, and fitted with an airtight cover with hinge or sand joint. The price complete, with outlet-trap, is £5 10s. for

the brown glazed ware. The parts are readily jointed and fixed. All well-drained houses and buildings should have a disconnecting chamber of this description; it would then be impossible for sewer-gas to pass through the house-drains, and the junction of the branches could be always under inspection. Many good types of closets are shown with Adams's flushing cisterns. The Adams hopper pattern is a very useful kind for servants and general use, and has the Adams patent flushing arm.

A new patent urinal, suitable for railway stations, &c., is one of this firm's specialities. Each urinal has a curved back of glazed ware—brown, cream, or white—connected by galvanized cast-iron piers, with glazed ware, marble, slate, or iron tops and screens. Flushing pipes scour the backs from an automatic tank. The dishes at the bottom of each stall are of glazed ware, and the patent floor tile, made of opaque glass and ribbed with channels, is a marked improvement upon the dirty and offensive-looking floors sometimes seen. These tiles always afford a clean, dry standing-place, and can be used for any other kind of stall.

Among other improvements particularly calling for the attention of engineers and borough surveyors is Adams's patent "Revolving Disc Penstock," where the action is simple and direct. The faces of the penstock are turned ground water-tight, and the revolving door, or valve, is raised or lowered by a chain passing round its grooved edge. The lift is easy, and the door can be held up at any height by grip attached to penstock frame. We think this plan of shutting off sewage in towns subjected to tidal waters in the sewers a decided improvement. The penstock, if reversed, can be used for drawing off top waters from tanks or reservoirs. The "automatic flushing door" is also an improved arrangement, having a ball and lever, by which it opens and closes automatically—a very important contrivance for sewers which have to be flushed at intervals. The flushing door is made oval, circular, or square, and from 12in. upwards. Many other sanitary specialities are to be found in Adams and Co.'s new list, including their well-known Automatic Sewer Flushing Siphon in cast-iron. Adams's was the first siphon made to start with the drop-by-drop supply, and is the original



"Deep-trap" siphon; there are now upwards of one thousand in use, and the whole of these are in as perfect working order as when supplied, each one sold being guaranteed in actual work. The manhole covers the tide flaps; the back-pressure valves are improved forms. We recommend Adams and Co.'s catalogue to all sanitary engineers and officials.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.**—The monthly meeting of this society was held at the Montgomery Hall on Tuesday evening. Mr. Thomas M. Rickman, architect and surveyor, of London, read an exhaustive paper on "The Present State of Questions relating to Quantities." The object of the paper, he remarked, was to enable the society to discuss the position which the quantities now take in estimates and contracts. Precise definition was desirable to avoid misunderstandings as to materials, designs, and mode of measurement. The variety of terms in use throughout the country, and their derivations, the changes in design and style of architecture, and in the present purposes of buildings, had all complicated the subject. The custom for architects to prepare quantities for their own works implied that the preparation of quantities was part of an architect's education. The position of the Royal Institute of British Architects as regards this practice had somewhat changed of late. The lecturer described the different duties required of an architect, and enlarged on the value of a surveyor's services as regarding the more important class of work. The appointment of the measuring surveyor, once usually made by the builder, was now commonly made by the architect for his client. The appointment of a surveyor who, from his position could insist on justice for both parties, which in some instances the architect was unable to obtain, was of great importance. The growing practice of making the quantities part of the contract was considered, and the arguments on both sides of the question. The present position of the builders' institutions and of those of architects and surveyors with reference to the appointment of quantity takers were explained, and the extent of responsibility resting with the supplier of quantities considered. The report of the committee appointed by the Conference of Architects held in London in 1871 was given in detail. The position of architects supplying quantities for their own works was gone into by the lecturer, who pointed out the special difficulties which they must encounter in the settlement of accounts, which had led the committee before mentioned to recommend that quantities so supplied should form part of the contract. The complications arising from a course occasionally taken of throwing on the builder the onus of testing the quantities so furnished, and the consequences to the employer from the insertion of such a clause, were obvious. In conclusion, Mr. Rickman recommended a uniform system of measurement, and the diffusion amongst employers and their solicitors of a larger amount of knowledge as to the bearings of all these questions upon their own interests.

We are informed by a relative that Mr. E. C. Ayton-Lee was article to Mr. R. W. Edis, and did not work in the office of Mr. W. Burges, as we stated last week.

The twelfth annual dinner in connection with the Builders' Clerks' Benevolent Institution took place on Monday week at the Holborn Restaurant, under the chairmanship of Mr. H. H. Bartlett, president. During the evening subscriptions and donations were announced to the amount of nearly £300, including the president's gift of twenty guineas.

The Town Council of Birkenhead have elected Mr. J. D. Lewis, from the offices of Messrs. John Whalley and Sons, surveyors, Chester and Birkenhead, to the post of assistant road surveyor at a salary of £150 per annum. The applications were very numerous, and the following gentlemen were selected to appear before the Road and Improvement Committee: Mr. C. Watkins, surveyor's office, Widnes; Mr. J. T. Briscoe, engineer's office, L. and N.W. and G.W. Joint Railways, Birkenhead; Mr. J. G. Anderson, road surveyor, Wallasey; Mr. F. H. Taylor, borough surveyor's office, Southport; Mr. J. D. Lewis, Birkenhead; and G. H. Newton, surveyor's office, Ashton-under-Lyne.

#### Building Intelligence.

**JOHANNESBURG.**—The Werdmuller Buildings, having a frontage of 150ft., are about to be erected facing the Market Square, adjoining the Bank of Natal. The edifice will be three stories high, and the expenditure will be about £15,500. On the ground floor are six shops and a corner bar. The upper floors consist of offices, and on the first floor are a large billiard room, two show-rooms, and ten offices. On the second floor will be seventeen offices, averaging in size about 14 by 14. The staircases to the offices will be of iron. A large cupola will be constructed on the roof for ventilation, and to light the staircase and landings. The building will be of brick, with moulded brick cornices, strings, &c., and terracotta finishings. The entrances to the shops and the entrance corridor to the offices will be tiled with tessellated tiles from the Campbell Tile Company, Stoke-on-Trent. The tender of Messrs. Lawrie and Sibthorp has been accepted. Mr. Harry Taylor is the architect.

**PERTH.**—St. Ninian's Episcopal Cathedral, which has for many months past been undergoing extension in accordance with the original designs, was reopened for worship on Friday. Founded in 1849, only the choir, transepts, and one bay of the nave were then built, and thus it has remained until some time ago the work of extending the edifice was taken in hand by the present provost. Subscriptions amounting to about £7,000 were secured, and plans having been obtained from Mr. William Butterfield, the original architect, work went on apace until the choir, transepts, five bays of nave, and baptistery with minor transepts had been finished off in due cathedral form. The building is now 200ft. long and 70ft. high, but the external aspect suffers from the want of relief and ornamentation, the more so as the excessive plainness of the structure is emphasised by the character of the stone used, and aggravated by the further fact that, owing to want of money, the tower has had to be left in a stunted condition. The east window is filled with stained glass, in memory of the late preceptor of the cathedral; the west window and the south transept window are also to be similarly treated.

**PETERBOROUGH.**—A meeting of the executive of the Cathedral Restoration Committee was held in the Knights' Chamber on March 25th. Mr. John Thompson's offer to remove the stonework of the old organ screen and to have the stone for the cost of removing was accepted. Mr. J. L. Pearson, R.A., architect to the committee, was instructed to prepare a plan for making use of the woodwork of the choir in providing vestries at the west end of the cathedral; for flooring the canons' vestries; and for placing the nave pulpit. The sub-committee was directed to confer with Mr. Pearson and arrange for a better exit at the south-west door. Mr. Pearson was asked to provide a plan for placing the Communion-table in its ancient position in the chancel of the apse.

#### CHIPS.

The workhouse infirmary at Rotherhithe, belonging to the St. Olave's board of guardians, is to be enlarged by 270 beds. Messrs. Newman and Newman, of Tooley-street, S.E., are the architects, and the tender of Mr. J. O. Richardson, of Peckham, has been accepted at £30,857 for the execution of the work.

Jacob Coat, a stonemason, was committed for trial at the Highgate Police-court, London, on Tuesday, on the charge of causing grievous bodily harm to Charles Strong, builder, of Hornsey, his employer, by knocking him down and kicking one of his eyes out during a dispute about money matters.

At St. Michael's church, Bristol, on Easter Sunday, a new altar-table was placed in position. It is of oak, richly carved, and was designed by Mr. Vincent W. Voisey, and carved by Mr. George Houghton, both of Bristol.

An Industrial and Art Exhibition was opened at Bournemouth on Monday, and will remain on view for a fortnight. The judges in the arts and crafts were Mr. Harry Furniss, the artist of *Punch*; Mr. Harry Hems, of Exeter; and Mr. J. Gerrard, of Lyndhurst.

The Corporation of Oldham are making a collection of the works of the late Thomas Oldham Barlow, R.A., the engraver (who was a native of the town), for their Art Gallery.

#### Engineering Notes.

**THE CLIFF RAILWAY AT LYNTON.**—The steep-gradient railway from the Esplanade at Lyntonmouth to the town of Lynton, nearly 450ft. above, was inaugurated on Monday. The incline, formed partly by blasting and partly building up in masonry, is claimed to be the steepest yet worked, having a uniform angle of 29°30'; the length is 900ft., and the width 13ft., a broader passing place being provided halfway up the railway. The line has two cars fixed equi-distant from each other to an endless wire rope, which passes round large grooved wheels laid at the bottom and top of the track, and the top car is loaded with water from a neighbouring stream. The work has been carried out by the patentee, Mr. B. Jones, Mr. G. Croydon Marks being the consulting engineer.

**PORTKNOCKIE.**—The Portknockie harbour works, on the Banffshire coast, are on the eve of completion, and have cost between £9,000 and £10,000. They are built on a deep, natural basin, and at the lowest state of the tide there will be about 10ft. of water in the harbour, while at high water there is a depth of 22ft., a depth which no neighbouring harbour approaches. The area of water is 3½ acres. The engineers were Messrs. D. and J. Stevenson, Edinburgh, and the contractors, Messrs. Morrison and Son, of the same city. The natural bow-shaped creek which served as a shelter to the local fleet of boats was formerly inclosed on three sides by a high rocky ledge, but a substantial roadway has been cleft through the high rocks as an access, a north breakwater, 400ft. in length 25ft. broad, built out, and a turn of 90ft. to the south put on at its extremity. On the seaward side of the breakwater a parapet, 10ft. high, has been constructed. The whole is built of solid concrete, and on the outside a large number of 25 ton blocks of solid concrete have been laid, and these will most effectually break up the rollers and minimise their force. £1,000 is being spent in running out a south jetty, in a northerly direction, for a distance of some 230ft., with 25ft. of quay way. The engineers of the undertaking have been represented by Mr. John Ross, and the contractors by Mr. Kinnear.

#### COMPETITIONS.

**SOUTH SHIELDS.**—For the proposed new police buildings the town council have received 35 sets of competitive plans, which have been arranged for exhibition in the examination-room at the Mercantile Marine Offices. Mr. G. Gordon Hoskins, F.R.I.B.A., of Darlington, President of the Northern Architectural Association, has been appointed the assessor.

**WEST BROMWICH.**—The first premium in the competition for County Court and Police Offices has been awarded to Messrs. Wood and Kendrick, who have been appointed architects for the buildings. The premises will be erected in Lombard-street. On the ground floor will be the pay and plaint offices; the registrar's office will be placed in the front of the buildings, and the high and under bailiffs' offices will be situated together. The front part of the first floor will be occupied by the county court and judge's room, and the latter will be used for magisterial business. The registrar's court will abut on the county court, with a communicating doorway which will afford ready access for the public to either court. Accommodation will be provided for solicitors and witnesses, and the cells are planned on the ground floor. The estimated cost is about £4,500.

The first section of the restoration of the parish church of West Teignmouth having been completed, the edifice was reopened yesterday (Thursday), when the Bishop of Exeter preached. The work now done included the reseating and heating of the building; and Mr. W. Elsworth, of Teignmouth, was the contractor.

Receiving orders in bankruptcy have been issued in the cases of John Joseph Woodman, of Chorlton-cum-Hardy, late of Manchester, architect; of George James Baker, Robertson-street, Battersea, Maryland-road, and Ashmore-road, Paddington, and Chesterton-road, North Kensington, and some time of Northcote-road, Walthamstow, and at Enfield, builder; and of William Bulcock, Tuebrook, near Liverpool, builder.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## ADVERTISEMENT CHARGES.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. S. and P.—J. E. and Son.—F. W. G.—B. of N.

GEO. C. MASON, JUN., Phila.—(Not open to foreigners. You can buy the Transactions. The secretary may reply to you if you address him at 9, Conduit-street, W.)

## "BUILDING NEWS" DESIGNING CLUB.

"PIPPIT."—(Your drawing comes a week after date, and since our award was made. It would not have been placed either first, second, or third. Rules, in fairness to others, must be observed.)

## Correspondence.

## REGISTRATION OF ARCHITECTS.

To the Editor of the BUILDING NEWS.

SIR,—The objection to Registration on the ground that it would give to incompetent men a standing which they do not now possess, might perhaps be removed in this way:

Suppose a board of examiners provided. Let it be enacted that the architectural members and associates of the Royal Academy, the members of the Institute, and possibly of some other societies, should at once be entitled to Registration; let those also be entitled to it who should pass the Institute examination; and those, too, who, having been in independent practice for three years or more, should be able to satisfy the examiners of their competence by a reference to their executed buildings. At this point let the right of being registered terminate; but let it also be enacted that no one should be liable to prosecution under the provisions of the Act provided he had been in *bond fide* practice as an architect for three years before the passing of it. In this way a definite line might, perhaps, be drawn at the outset between the fairly competent and the grossly incompetent, and yet the latter would escape the hardship of being shut out from a profession on which their living might depend.—I am, &c., C.

## THE R.I.B.A. AND REGISTRATION.

SIR,—As a provincial member of the R.I.B.A., I have carefully read the account of the special

meeting held last week at the Institute to consider the desirability of the compulsory registration of architects, and also the Institute's objections, which are issued to all members in the *Journal of Proceedings*. It is evident that London architects do not feel the pressing need of such a measure so acutely as provincial architects, owing, no doubt, to the fact that unqualified and illiterate men have not the same opportunities to practise architecture in London as they have in the provinces; hence, the name of architect in London is not so defiled, or of so mixed a character, as elsewhere.

The Institute's two main objections are—1st, the inclusion of present unqualified men in the first starting of the Registration. This is a very superficial objection, as, although it would be a necessary evil, yet it is only an evil which already exists, and would in a very short time improve.

The second and main objection is that the proposed Act of Registration would not prevent surveyors, builders, agents, and others from practising architecture as before. That is so; but it would tend to lessen that existing evil by inspiring the confidence of the public in a class of men who had given proof of their training, and who would be better qualified to serve their purposes than formerly.

But, however, I think that, with the strenuous aid of the Institute and the profession at large, a measure might be carried in which it should be necessary that all buildings were to be erected under qualified supervision other than that provided by the Building Acts, and especially if such a measure were put before the public as a means to prevent unsanitary and jerry-built houses.

Auctioneers have an immense exclusive privilege in their annual license of £10, so preventing the public from selling their own goods—but for which hundreds of farmers and others would preside at their own auctions. I mean this not as a parallel of position or character of work, but as regards the contraction of public liberty.

Unless the Institute are moved from outside and from provincial members, it will probably take them twenty years to mature activeness in this measure. The Institute has been in the past, and is now to a large extent, merely a Metropolitan society, and who, of course, do not suffer so much from the present loose system. Indeed, many of the town members have long ago obtained a comfortable position, whereby they are blinded to the general condition of affairs.—I am, &c.,

Exeter, April 8. P. S. A., A.R.I.B.A.

## Intercommunication.

## QUESTIONS.

[10265.]—**Sound-proof Fire-proof Floor.**—Will some of your readers kindly inform me of some efficient means to prevent sound through a concrete and iron fire-proof floor. I propose to cover with deal floor on deal joists, and batten down under for lath-and-plaster ceiling. Would it be effectual to fill in under wood floor with sawdust, or lime and hair pugging, and should space under floor be filled in also? It is known that fire-proof floor of description given is very noisy when much traffic is carried on upon same.—H. R.

[10266.]—**Workhouses.**—Where may recently-built workhouses be seen, accommodating 200 to 300 paupers?—CAW.

[10267.]—**Movable Partitions.**—In dividing a village reading-room into two parts, what kind of movable partition would be most effectual in preventing penetration of sound, and the neatest in appearance when open?—EMBRYONIC.

## REPLIES.

[10249.]—**Beam.**—"G. H. G." is quite in error in stating that "by removing the two columns" from a continuous beam "the bending moment will be three times greater than before." In point of fact it would be nine times greater when the columns were removed. The bending moment for distributed load on any one of the three openings is approximately  $\frac{wl^2}{8}$ . When the columns are removed, the span and amount of load are each trebled, and the moment becomes  $\frac{3w \times 3l^2}{8} = \frac{9wl^2}{8}$ —i.e., nine times greater than before.—G. H. WARD.

A Bill has been introduced by Sir Edward Birkbeck to confer further powers on rural sanitary authorities with respect to labourers' cottages. The objects of the Bill are to secure sufficient bedroom accommodation and proper drainage and ventilation in all new cottages for the labouring classes, and to enable rural sanitary authorities to take care that such cottages have adequate gardens.

## LEGAL INTELLIGENCE.

A BUILDING BY-LAWS APPEAL CASE.—At Birmingham Assizes, before Mr. Baron Huddleston, on Saturday week, was heard the case of "Shaw v. the Solihull Rural Sanitary Authority." It was an action of trespass brought against the sanitary authority for the demolition of buildings erected by the plaintiff, and the question involved was whether the defendants had exercised duly the powers given to them by the Public Health Act and their own by-laws. By one of these last it was provided that the board surveyor might call upon the builder of any new structure to make good defective work. The aggrieved party might within 14 days appeal to the authority, who should then invite him by a seven days' notice to appear before them and show good grounds against the order. The authority, if they dismissed the appeal, were to communicate the result in writing to the appellant, and then, if he did not comply with the surveyor's requirements, the authority might carry out the work themselves. The plaintiff was engaged in building some cottages, and in the opinion of the surveyor to the rural authority used mortar of an improper kind. He was served with notice to pull them down. In answer he said he was prepared to defend his buildings before the authority, and accordingly attended two days later. His version of the proceedings was that he produced some specimens of the mortar used by him, but that the members present declined to look at them, saying that they were not practical men, and must be guided by the opinion of their surveyor. An adjournment in order to produce evidence was refused, and he subsequently received a notice in writing that his appeal was dismissed. According to the evidence on the other side, his specimens of mortar were passed round and examined; plaintiff was allowed to say what he liked; the surveyor was also heard; and, after deliberation, the authority supported the decision of the surveyor. The plaintiff not having complied with what was required of him, the buildings were pulled down by the direction of the authority. This was the trespass complained of. For the plaintiff two points were made. It was said, in the first place, that he had no notice in writing seven days before the meeting in accordance with the by-laws, and in the second that there had been no genuine hearing of the appeal or independent exercise of the judgment of the authority. As to the first point, Mr. Baron Huddleston held that it was competent to the plaintiff to waive the notice, and that he had done so. As to the second, if the plaintiff's story was true there had been no hearing of the appeal in the proper sense of the term. On this point, however, he believed the evidence of the defendants, and thought that there had been an honest exercise of the discretion intrusted to them. Whether they were right or wrong was immaterial, provided they had heard and determined the appeal. He therefore decided in favour of the defendants.

## CHIPS.

The Edinburgh Town Council, at their meeting on Monday, discussed on the minutes the question of petitioning against the granting of a supplementary charter to the Royal Scottish Academy, and on a division reversed their decision of three weeks ago by 18 votes to 17. The petition against the charter will therefore be adhered to.

On Easter Sunday four two-light windows in the north and south transepts of St. John's Church, Blackpool, were unveiled. They have been filled with stained glass by Messrs. Giddings and Dacre, of Manchester.

On Saturday the Duke of Westminster unveiled a new west window in the ancient Church of St. John the Baptist, Chester. The new window, which has cost over £1,000, contains 12 illustrations of the history of the church and of the city of Chester.

The carpenters at Chicago, to the number of 5,000, have struck for an eight hours' working day and payment at the rate of 40 cents per hour. Stimulated by the example of the Chicago carpenters, 4,500 men employed in that trade in 37 towns of Massachusetts made on Monday a united demand for reduced hours, and have announced their intention to strike on the 1st May should the employers not accede thereto.

The foundation-stone of a new Roman Catholic school-chapel for Seaforth and Litherland was laid last week by Bishop O'Reilly, of Liverpool. The new building will be of two stories, holding 250 persons each, and the cost, exclusive of furnishing, will be nearly £2,200. The upper portion will be used as a chapel, and the lower portion as a day-school. The building is from designs by Messrs. Sinnott and Powell, and the contractor is Mr. George Mulholland, Great Crosby.

The local board of West Broxton, Cheshire, has elected Mr. John Pigott as their surveyor, from among 24 candidates.



## WATER SUPPLY AND SANITARY MATTERS.

**MANCHESTER MAIN DRAINAGE SCHEME.**—The Rivers Committee of the Manchester Corporation have now made a start with their sewage scheme, and have let the first four contracts. Nos. 1 and 2 have been let to Messrs. Davies Brothers and Knight, of Wrexham. Their contract commences at Davyhulme, near to the site of the outfall works, which is about 700 yards west of Croft's Bank-road. The sewer at this point is 10ft. internal diameter, and is continued of the same size to the westerly side of the Bridgewater Canal, near to the Water Meetings at Stretford, where it joins the storm overflow chamber. At this point a storm overflow sewer will be constructed through Trafford Park for the purpose of discharging the flood water below the Mode Wheel locks. Messrs. Davies's contract embraces about 4,200 yards of 10ft. sewer, and about 1,500 yards of 9ft. sewer, about half of which will be in tunnel. This sewer will cross under two canals by means of cast-iron tubes. Contracts Nos. 3 and 4 have been let to Mr. James Nuttall, contractor, Manchester, and this section of the work commences where the last contract terminates, and passes under the Cheshire Lines Railway, Stretford, and also passing under the Midland and the Manchester South Junction and Altrincham Railways, along Stretford-road, to the city boundary at Erskine-street, the entire length being about 3,000 yards. The size of the sewer, 14ft. by 10ft. 6in., nearly the whole of which will be in tunnel, averages from 25ft. to 43ft. in depth. On the four contracts nearly 400 men are employed, and the work will be pushed forward as rapidly as possible. The four contracts let amount to over £120,000. The Rivers Committee have also received tenders for the extension of the Stretford-road sewer, a section of the work intended to intercept the sewage at present passing into the river Medlock. The quantities for the next contract are also being prepared. This section of the work will commence at Erskine-street, passing along Deansgate and Collyhurst-road, and terminating at the city boundary at Harpurhey. The works are being carried out by Mr. Allison, the city surveyor, and Mr. W. T. Olive is the resident engineer.

**THE WATER SUPPLY OF SOUTH-WEST DURHAM.**—At the last monthly meeting of the Teesdale Sanitary Board Mr. Robinson, C.E., of Darlington, was appointed engineer to survey for the new works, in the room of Mr. W. Waistell, deceased. It is understood that the reservoirs and the whole line of pipes in connection with the proposed water supply will be confined to the property of the Duke of Cleveland, and arrangements are forthwith to be made for carrying out the undertaking, a parochial committee having been appointed.

**THE THIRLMERE WATER SUPPLY FOR MANCHESTER.**—A union has been effected between the north and south workings of the tunnel which has had to be made through Moor How, a hill about two miles east of Windermere village, in connection with the Thirlmere waterworks. The length of the tunnel is 3,040 yards, with a length of "cut and cover" of between 600 and 700 yards more. The tunnel at the north end pierces the Troutbeck hillside near Thickholme, and terminates southwards at a point near Broadgate Farm, in Ings parish. Most of the length has had to be cut through solid rock, and will therefore need no facing, being as nearly watertight as possible; in parts, however, a lining of concrete will be necessary. The work has been proceeding between three and four years, and the weekly progress has varied from 12 to 18 yards.

## STATUES, MEMORIALS, &c.

**MEMORIAL TO THE LATE ARCHBISHOP ULLATHORNE AT BIRMINGHAM.**—At St. Chad's Cathedral last week the Archbishop's memorial was unveiled. The effigy is in the form of a recumbent figure vested in alb, stole, cope, pectoral cross, and mitre, resting on a moulded slab, supported by three massive stone brackets. The inscription is carved on the three sides of the slab. The sculpture was designed by Mr. John Powell, and executed by Mr. Boulton, of Cheltenham.

It was stated at the last meeting of the Staffordshire County Council yesterday, that the salary of the chief surveyor has been fixed at £800 a year, and five assistant surveyors will each receive £175. The expenditure necessary on the main roads of the county is estimated at £50,000.

The work of enlarging and improving Holy Trinity Church schoolrooms in Wetmore-road, Burton-on-Trent, has now been completed. The chief addition has been the erection of an infants' classroom, 25ft. by 16ft., with a gallery for 50 children. New outbuildings and lavatories have also been erected. The cost has been about £500, and the work has been carried out by Mr. G. Hodges, under the supervision of the architect, Mr. R. E. Carpenter.

## Our Office Table.

By a curious coincidence the councils and committee of the three Metropolitan architectural bodies this year recommend the re-election of their respective presidents, Mr. Alfred Waterhouse, R.A., being nominated again to occupy the chair at the R.I.B.A., Mr. Robert Walker, of Cork, at the Society of Architects, and Mr. Leonard Stokes at the Architectural Association. In each case the honours are well deserved, and the members are to be heartily congratulated on the prospect of further service from these gentlemen.

IN our brief and rapid review of the pictures at the Royal Institute of Painters in Water-Colours in Piccadilly, we omitted to mention the grand landscape by H. G. Hine, the vice-president, "Fittleworth Common, Sussex," in the Central Gallery. The undulating pastures under a hazy sunset sky are rendered with all the masterly power of this veteran artist, and as a landscape it may be regarded as one of the few masterpieces in the gallery. Another of the pictures for which we had no space to refer was Arthur Severn's "Breaking Waves," one of the most successful of his drawings. "La Salute, Venice," in the same gallery, is one other of his works deserving notice.

The value of line in engraving was the subject of an interesting lecture by Mr. W. J. Linton at the Society of Arts the other day. Mr. Linton, who is a master in the art of engraving, pointed to the contrast between the old and new styles of the art. In the old engraving the line was chosen to express the form, light, and shadow; in the new style the line shows an indifference to values and form. Referring to the engravings in *Harper's* and the *Century*, Mr. Linton said that there was little art in them, though they were pleasing and well-designed pictures. The cleverness in them is mechanical; there is no art in them—no taste or judgment in the use of lines. Colours may be kept, but form is lost. The distinctions of linear treatment are neglected: sky may be wall, and water, folds of drapery, and the lines are laid with disregard to the objects represented. Thus, horizontal lines of the sky are crossed; foreground and distance are cut with the same unvarying fineness. In good art the line ought to convey the meaning, form, texture, and atmosphere.

ACTING on the urgent representations of Captain Shaw as to the necessity of providing better for the protection of the Metropolis against fire, the London County Council have sanctioned some important changes in connection with the Metropolitan Fire Brigade. The number of districts into which the Metropolis is divided for fire-brigade purposes has been increased from four to five, the D division, which included the entire area south of the Thames, having been subdivided, with a new district head-quarters to be provided at New Cross. It has also been decided to create a new class of officers in the Brigade, to be stationed at superintendents' stations, and to be termed foremen. The additions which have been made to the strength of the brigade comprise, besides these new officers, three stations, 50 fire-escapes, 25 hose carts, 200 fire-alarm points, and 117 men. The additions have created one superintendent (Mr. Philcox, previously of Kennington district head-quarters), six foremen, nine engineers, 30 first-class firemen, and 50 second-class firemen. Captain Shaw remains in charge of the Brigade, and is assisted by Mr. Sexton Simonds as second officer. The places selected for the new stations are Temple Bar, New Cross, and East Dulwich. In the case of the two latter the sites are already selected, and building will be immediately commenced. In the case of Temple Bar there is a difficulty in finding a site. The addition of 200 fire-alarm points will raise the number from 364 to 564. Of the 50 fire-escapes, 17 are being placed at stations which were not previously supplied with one; and of the remaining 33, one has been allotted to head-quarters, and the others have been distributed in the various districts.

FROM the replies received by the Horse Accident Prevention Society from nearly 2,000 London omnibus drivers and cabmen, it appears that among these men 750 declare wood the best for driving over, 219 macadam, 197 granite cubes, and 51 asphalt. As to the "worst paving," 122 drivers say it is wood, and 1,046

pronounce asphalt to be the worst and most dangerous paving material used. The society are now sending circulars to the various local authorities in the Metropolis, saying that whenever asphalt needs renewal it should be replaced by some less dangerous paving material. It is curious to note the division of opinion as to wood, but with this exception the weight of testimony agrees with our own experience, and bears out indeed the views we have repeatedly advocated in our leading columns.

A CASE which it would have been interesting to see tested in the law courts, has just been settled in Hartford, Conn., by a compromise. It involved the question whether the promoters of a competition, having rejected all the designs sent in as unsuitable, can be made to pay compensation to the author of a plan from which the architect eventually employed has cribbed suggestions. In the case in question, Mr. George Keller, architect, of Hartford, recently sued the New York, New Haven, and Hartford Railroad Company for £500 as compensation for plans furnished in competition for the new station in Hartford. The competition for the station resulted in the rejection of all the designs as unsuitable; but Messrs. Shepley, Rutan, and Coolidge were subsequently commissioned to carry out the work. According to Mr. Keller, the plan as executed is substantially the same as his competitive design, and he thought he ought to be paid for it. It would have been curious to see what a jury would have said on the case, which would have rested mainly on the internal evidence furnished by the plans themselves, and also to have a judge's opinion on the point; but the case was compromised by the payment to Mr. Keller of 500 dollars, the railroad officials claiming that they were in the right, but that it was cheaper to pay that amount than to contest the action.

PRELIMINARY excavations on the site of the old Priory Church are being made at Kenilworth, under the supervision of Mr. W. C. Fretton, of Coventry, and already the results have amply justified the expectations of the promoters of the scheme. A start was made at the foot of the block of masonry standing in the newly-acquired portion of the graveyard, and in a few hours the western entrance door of the Priory Church was laid bare, revealing a splendid tiled floor. Test borings in the immediate vicinity show similar results. The floor at all the openings is in good preservation, the tiles are unbroken, and the patterns are easily traced, the colours being as bright and the glazing as perfect as though only buried yesterday. Following the line round the entrance the cloisters were soon found, showing a flight of steps leading from the church. Already about forty yards of walling have been bared. The stones removed in the progress of the work are as sharp in the arrises as when they left the hands of the workman. The columns which supported the arches of the cloisters are richly moulded, and one of the stones found evidently formed the base for a statue.

THE death is announced, in his 65th year, of Mr. Ebenezer L. Roberts, a well-known New York architect. Mr. Roberts was born in Connecticut, and was apprenticed to a carpenter; but, when twenty-five years old, he went to New York, and soon established himself as an architect, gaining an excellent reputation. He designed the Standard Oil Company's Building on Broadway, the Ninth National Bank, the Baptist Church of the Epiphany, on Madison Avenue, St. Paul's Methodist Church, on Fourth Avenue, the Phoenix Insurance Company's Building in Brooklyn, and many other important structures in the sister cities.

AN architect of Munich, Herr H. Rosenbusch, has written a pamphlet, in which he proposes the construction of streets in two stories, so that the two kinds of traffic may be kept distinct. The idea is at least ingeniously introduced, as in the form of propositions the author asks the questions: "Why should the roadway of a street lie at a higher level than the basement of the houses? Is it not more reasonable, seeing that the basement is generally used for the storage of goods, to make the access thereto as nearly as possible on a level with the roadway, so as to avoid steps and lifts in order to load and unload goods?" Hence the writer deduces the following as results of a more rational arrangement. The footwalks are proposed to be on a higher level, the carriage-way, cellars, stores on a level one story lower.



By a threefold longitudinal division of street the lighter carriage traffic may be divided from heavy goods traffic, while wheel traffic generally is separated from foot traffic. The two foot-walks are connected by bridges, and communicate with the roadways by staircases. Such an arrangement of streets is affirmed to admit of the most manifold development of architectural construction. The idea, though not original, is deserving of attention in the planning of new streets.

MANY readers desirous of preserving our own loose numbers till the time of binding, or a selection of the thousand and one circulars and catalogues that are rained remorselessly down on architects and builders, cannot do better than get one of the "Marlborough Pamphlet Cases," made by Messrs. Marlborough and Co., of 52, Old Bailey. They supply a size specially made for THE BUILDING NEWS for 2s. 9d. There are no springs or other contrivances to injure the pamphlets or loose numbers by pressure. A blank list for "contents" is attached to the inner case, together with a list showing the numerous sizes in which the cases are prepared under this patent. Upon the bookshelf these cases are in appearance similar to ordinary volumes, being rounded and cloth backed.

#### MEETINGS FOR THE ENSUING WEEK.

**MONDAY.**—Surveyors' Institution. Adjourned discussion on "Betterments," 8 p.m.  
Liverpool Architectural Society. "Ormskirk Parish Church," by W. E. Hill. 7 p.m.  
**TUESDAY.**—Society of Architects. 7.30 p.m.  
Society of Arts. "Modern Indian Art," by Caspar Purdon Clarke, C.I.E. 8 p.m.  
Institution of Civil Engineers. "Application of Electricity to Welding and Stamping," by Sir F. Bramwell. 8 p.m.  
**WEDNESDAY.**—Society of Arts. "Old and New Fashions in Typography," by Talbot B. Reed. 8 p.m.  
Civil and Mechanical Engineers' Society. "Recent Improvements in Dredging Machinery," by Ambrose A. Myall. 7 p.m.  
**FRIDAY.**—Architectural Association. Members' Soirée, Westminster Town Hall. 8 p.m.

#### CHIPS.

The Rev. Prebendary Scarth, the rector of Wrington, Somerset, the well-known ecclesiologist and antiquary, died on Easter Eve in his 76th year.

The corporation of Ashton-under-Lyne have received from the trustees of the late George Heginbottom a gift of £10,000, for building technical schools and a free library in the town.

A brass tablet, inclosed in a border of grey marble, has been placed in the north aisle of the choir in York Minster, to the memory of the late Canon Trevor.

Mr. Chamberlain will preside at the annual dinner of the Artists' Benevolent Institution, to be held at the Hôtel Métropole on May 10.

Mr. James Holroyd, manager of the Burmantoffs Faience Works, now incorporated as a branch of the Leeds Fire Clay Co., Limited, died at his residence, Holly Bank, Headingley, near Leeds, on Tuesday last, aged 51 years, as the result of a chill taken in attending his brother's funeral.

At Tuesday's meeting of the Somerset County Council it was decided to raise the salaries of the two county surveyors by £100 a year each, making Mr. Wilcox's remuneration £320, and that of Mr. Norman £300 per annum.

At a cost of £3,000 the Marchioness of Bute has just erected a chapel to the memory of her father, the late Lord Howard of Glossop, on a remote island of the Hebrides, called Canna. The chapel is for the accommodation of the natives, who number about ninety, and are all adherents of the Roman Catholic faith.

New cricket and recreation grounds, some 18 acres in extent, have been laid out on a portion of the Cardigan Estate, at Headingley, Leeds. The pavilion and other buildings have been carried out from the designs of Messrs. Smith and Tweedale, of Leeds.

Mr. John A. Patterson MacBride, sculptor, late of Liverpool, died on Friday, at Southend-on-Sea, aged 71 years.

The extensive saw-mills belonging to Messrs. Watson and Stabler, at West Hartlepool, were partially destroyed by fire on Friday. The damage amounts to about £4,000.

The Leeds town council have finally adopted notified plans by Mr. W. H. Thorp, of that town, or the alteration of the Mayor's rooms at the Town Hall.

## Trade News.

### WAGES MOVEMENTS.

**ABERDEEN JOINERS.**—The employers have granted an advance of ½d. per hour. The present rate of pay is 6d.

**ALLOA.**—All the operative joiners in Alloa came out on strike on Monday in consequence of the masters having refused to give time-and-a-half after five o'clock.

**BELFAST.**—Four hundred men, belonging to the Bricklayers' Society at Belfast, went out on strike on Saturday for an increase of 4s. a week in wages. Altogether, about 2,000 men are affected by the dispute.

**BIRMINGHAM.**—The conciliation board of members of the Birmingham Master Builders' Association and operative bricklayers have settled the matters in dispute between them, and the rate of wages is fixed for twelve months, from 1st inst., at 8½d. per hour.

**BIGGAR, N.B.**—At a meeting of operative masons held on Saturday evening, it was agreed, after considerable discussion, that unless the masters conceded the request of the men for an additional ½d. per hour, they would come out in a body on Monday. The latter step was accordingly taken.

**DUNDEE.**—The masons have made a demand for an increase of wages of ½d. per hour. The rate at present is 7½d. to builders and 7d. per hour to hewers. The men state that they will be content with the present rate if the masters bind themselves to maintain it for a year.

**MANCHESTER.**—The Builders' Labourers' Society of Manchester and Salford and District have resolved that notice be given to the master builders for an advance of wage to 6d. per hour, to commence on May 3 next.

**NORTHWICH.**—The carpenters and joiners of Northwich and district have asked for an advance of ½d. per hour, as well as a small reduction of hours. The employers have expressed the opinion that the present state of the building trade in the locality does not justify them in acceding to the request. At the same time they promise to consider any fair readjustment of the rules when circumstances permit.

**SOUTHPORT.**—The joiners of this town, at a full meeting held on Saturday (Mr. D. Richards presiding), resolved to accept an advance of wages from 7½d. to 7¾d. per hour on May 1, and to 8d. on Nov. 1.

**SOUTH SHIELDS.**—The strike of the operative bricklayers and labourers at South Shields for an advance of wages continues, and the men are determined to stand out until their demands are conceded—namely, bricklayers to 9½d. per hour, and labourers to 6½d. per hour. In the mean time, building operations at South Shields are at a standstill. On Saturday the men received their first strike money—namely, 2s. per day. Non-union men also received strike allowance.

The important works of restoration at the collegiate church of St. Michael, Coventry, have now been completed, after an expenditure of £40,000, and the reopening services will take place on Tuesday week, the 22nd inst., when the Archbishop of Canterbury will preach. The works have been carried out from plans of Mr. J. Oldrid Scott, Mr. G. R. Webster acting as clerk of works, and Mr. John Thompson, of Peterborough, being the contractor. The famous spire and tower, the highest among those of our parish churches (303ft. from ground to vane), which has been underpinned and restored, was illustrated by us from measured drawings by Mr. J. Drayton Wyatt in our issues of Oct. 31, and Nov. 14, 1884.

At the church of St. Thomas, Stockport, the new chancel and pulpit were used for the first time on Sunday. The alterations, which have been carried out from the designs of Mr. Medland Taylor, of Manchester, at a cost of £3,200, include the formation of a chancel within the church, by marking off a raised platform inclosed by a low wall and open balustrade. There are nine steps in all leading up to the Lord's Table, while a new reredos of alabaster and marble greatly enhances the effect of the pre-existing fine picture of the Ascension. Triple oaken sedilia with stone canopies north and south of the chancel, and a credence on the east wall, have been provided. The new pulpit projects from the west wall of the chancel, the projecting part being carried by two carved stone pillars, while its oak rail is supported upon wrought-iron standards. There are three rows of choristers' seats in carved oak on each side. The organ has been taken down from the west gallery, and put up in the gallery north of the chancel, after having been altered by Messrs. Young at a cost of about £300. The old three-decker has been converted into a screen, which partitions off the east end of the south aisle, making it into a choristers' vestry.

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#### TENDERS.

Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**ABERDEEN.**—For the erection of a public library on Rosemount-viaduct, for the town council:—

Masonry:—  
Gall and Walker (accepted)... £4,509 0 0  
Carpentry:—  
Leslie and Hay (accepted)... 1,371 0 0

**BANSTEAD, SURREY.**—For extension of tailor's shop at the Cottage Homes, for the Managers of the Kensington and Chelsea School District. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects. Quantities not supplied:—

Small, W. F. and W., and Co. ... £489 12 0  
Potter, J. B. ... 387 0 0  
Taylor, W. ... 369 0 0  
Barton and Son, Croydon (accepted) 336 0 0

**BLISLAND, BODMIN.**—For the erection of a new dwelling-house at Trewint, for Mrs. E. C. E. Collins, Trewintale. Mr. F. W. McCoskrie, Grampound-road, architect:—  
Tinney (Foxpark), and Buntand Son (Cardinham)... £335  
(Jointly accepted.)



**BATHEASTON.**—For extensions to the old brewery, for the English Lager Beer Brewery Co. Mr. C. Johnson, Bath-street, Bristol, architect:—

Hayes, C. A., Bristol (accepted).  
**BRISTOL.**—For the completion of St. Francis Church, exclusive of upper part of tower. Mr. J. Bevan, architect:—

Beaven, A. J. (accepted) about ... £2,600 0 0  
 (No competition.)

**BURSLAM.**—For the conversion of one of the aisles of the Shambles into a fish-market, for the town council:—

Bott, W. (accepted) ... £360 0 0

**CAMDEN TOWN.**—For new lecture, theatre, museum, &c., for the Royal Veterinary College, Camden Town. Mr. A. Vernon, 26, Great George-street, Westminster, architect:—

Holland and Hannen ... £5,653 0 0  
 Aldin Bros. and Davis ... 5,300 0 0  
 Dove Bros. ... 4,875 0 0  
 Bywaters ... 4,848 0 0

**CLACTON, NEAR COLCHESTER, ESSEX.**—For detached house on site adjoining the Valley Farm, for Dr. J. C. Burnett. Mr. A. Broad, 27, Dingwall-road, Croydon, architect. Quantities by the architect:—

Chambers ... £932 0 0  
 Smith and Bulled, Croydon ... 913 0 0  
 Diss ... 885 0 0  
 Dobson ... 879 0 0  
 Orfeur ... 815 0 0  
 Everett and Son (accepted) ... 810 0 0  
 Allen, Clacton ... 807 0 0  
 Ambrose and Co. ... 794 0 0  
 Sargeant, Clacton ... 761 0 0  
 Architect's estimate, £850.  
 Rest of Colchester.

**CLACTON, NEAR COLCHESTER, ESSEX.**—For detached cottage, Foot's Farm, for Dr. J. C. Burnett. Mr. A. Broad, 27, Dingwall-road, Croydon, architect. Quantities by the architect:—

Chambers ... £553 0 0  
 Smith and Bulled, Croydon ... 504 0 0  
 Dobson ... 475 0 0  
 Allen, Clacton ... 447 0 0  
 Diss ... 441 0 0  
 Everett and Son (accepted) ... 436 0 0  
 Orfeur ... 420 0 0  
 Ambrose and Co. ... 409 0 0  
 Sargeant, Clacton ... 366 0 0  
 Rest of Colchester.

**CROYDON.**—For detached cottage, Warrington-road. Mr. A. Broad, 27, Dingwall-road, Croydon, architect. Quantities by the architect:—

Waller ... £480 0 0  
 Goulder and Glasscock ... 449 0 0  
 Knight ... 425 0 0  
 Docking ... 425 0 0  
 Page ... 415 0 0  
 Smith and Bulled ... 414 0 0  
 Saunders, E. J.\* ... 410 0 0  
 \* Accepted subject to revision.  
 All of Croydon.

**COATHAM.**—For additions to Grammar Schools. Mr. H. Weatherill, Stockton-on-Tees, architect:—

Bradley, T., Coatham (accepted).

**DENFORD.**—For Wesleyan chapel, Denford, Northamptonshire. Mr. J. Wills, F.S.S., Derby, architect:—

Coates, W., and Son, Thrapston ... £500 0 0  
 Smith and Son, Raunds ... 455 0 0  
 Freeman & Son, Denford (accepted) ... 439 15 0

**DERBY.**—For new bakery, for the Co-operative Society, Ltd., Mark-street, Derby, with stores over, for four ovens by J. Baker and Sons, City-road, London. Messrs. Coulthurst and Booty, Derby, architects:—

Sharp ... £637 12 0  
 Vernon ... 550 0 0  
 Dickinson ... 458 0 0  
 Chattell ... 447 0 0  
 Brown, A. ... 419 0 0  
 Morley, E. ... 345 10 0  
 Wagg, G. (accepted) ... 344 13 0  
 All of Derby.

**DERBY.**—For three shops, with provision and curing rooms, Princes-street, for the Derby Co-operative Society, Ltd. Messrs. Coulthurst and Booty, Derby, architects. Quantities supplied:—

Wood, E. ... £4,641 0 0  
 Walker and Slater ... 4,570 0 0  
 Walkerdine ... 4,570 0 0  
 Durant ... 4,340 0 0  
 Pemberton ... 4,240 0 0  
 Brown (accepted) ... 4,213 0 0  
 All of Derby.

**DULWICH.**—For Congregational Church, Barry-road, East Dulwich. Mr. W. D. Church, 12, South-place, Finsbury, E.C., architect. Quantities by Messrs. C. Stanger and Son, 21, Finsbury-pavement:—

Everitt and Son, H. ... £12,298 0 0  
 Shurmer, W. ... 12,099 0 0  
 Woodward and Co. ... 11,770 0 0  
 Perry and Co. ... 11,767 0 0  
 Staines and Son ... 11,626 0 0  
 Dove Bros. ... 11,215 0 0  
 Hart Bros. ... 11,038 0 0  
 Colls and Sons ... 11,031 0 0  
 Higgs, F., and H. F. ... 10,649 0 0  
 Kilby and Gayford ... 10,500 0 0  
 Higgs and Hill ... 10,436 0 0  
 Bowyer, J., and C. ... 10,155 0 0  
 Holloway Bros. (accepted) ... 9,649 0 0

**EAST MOLESEY.**—For new boating premises, for Messrs. T. Tagg and Sons (main building only). Mr. Burnell, New Stone-buildings, Chancery-lane, architect. Quantities by Mr. Chidgley:—

Croaker, W. and T. ... £4,230 0 0  
 Nightingale, B. E. ... 3,990 0 0  
 Collinson, Teddington ... 3,920 0 0  
 Wheatley, East Molesey ... 3,840 0 0  
 Potterton, East Molesey\* ... 3,655 0 0  
 Hiscock, F., Hounslow† ... 3,499 0 0  
 \* Accepted. † Withdrawn.

**EXETER.**—For alterations and additions to Devonshire Arms, Exeter. Mr. A. H. Wills, 2, Higher Belmont-road, Exeter, architect and surveyor:—

Mitchell, G. ... £55 0 0  
 Tree and Bolley ... 49 0 0  
 Moass and Sons (accepted) ... 38 0 0  
 All of Exeter.

**EXETER.**—For painting and decorating part of Royal Public Rooms, Exeter. Mr. A. H. Wills, 2, Higher Belmont-road, Exeter, architect and surveyor:—

Kingwell and Sons, Exeter (accepted) £80 10 0

**FAIRFIELD.**—For the erection of one pair of semi-detached houses, for Mr. J. Swindells. Mr. J. H. Burton, Warrington-street, Ashton-under-Lyne, architect:—

Robinson and Co., Hyde ... £2,201 0 0  
 Fielding, H., Droylsden ... 2,121 0 0  
 Gardner, H., and Co., Ashton-under-Lyne ... 1,990 0 0  
 Williamson, J. W., Ashton-under-Lyne ... 1,920 0 0

Hurst, W., Droylsden ... 1,903 6 0  
 Gibson, J., Dukinfield ... 1,890 0 0  
 Whitell, R., Manchester ... 1,800 0 0  
 Robinson, J., Ashton-under-Lyne ... 1,786 0 0  
 Booth, R. H., Stalybridge ... 1,784 10

Holmes, A., Ashton-under-Lyne ... 1,779 14  
 Shaw, T. G., Stalybridge ... 1,770 13 0  
 Underwood Bros., Dukinfield ... 1,751 12 0  
 Jackson, E. and C., Openshaw ... 1,746 0 0  
 Wallworth, C., Gorton (accepted) ... 1,710 0 0  
 Dean, T., Ashton-under-Lyne ... 1,677 0 0

**FIGHTING COCKS.**—For caretaker's cottage, for the Middlesborough and Stockton Water Board. Mr. H. Weatherill, Stockton-on-Tees, architect:—

Craggs and Benson, Stockton-on-Tees (accepted).

**HEAVITREE.**—For alterations and additions to the Heavitree Brewery, for the Heavitree Brewery, Ltd. Mr. A. H. Wills, 2, Higher Belmont-road, architect and surveyor. Quantities by the architect:—

Facey, Taunton ... £900 0 0  
 Kensole, Heavitree ... 875 0 0  
 Setter Bros. ... 827 0 0  
 Gooding ... 765 0 0  
 Tree and Bolley ... 749 0 0  
 Westcott ... 719 0 0  
 Ham and Passmore ... 717 0 0  
 Pratt, Mary's Cyst ... 673 0 0  
 Phillips (accepted) ... 673 0 0  
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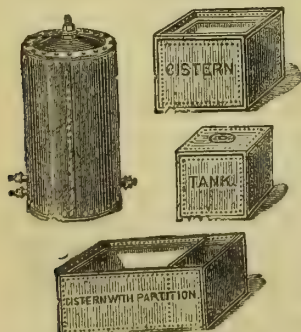
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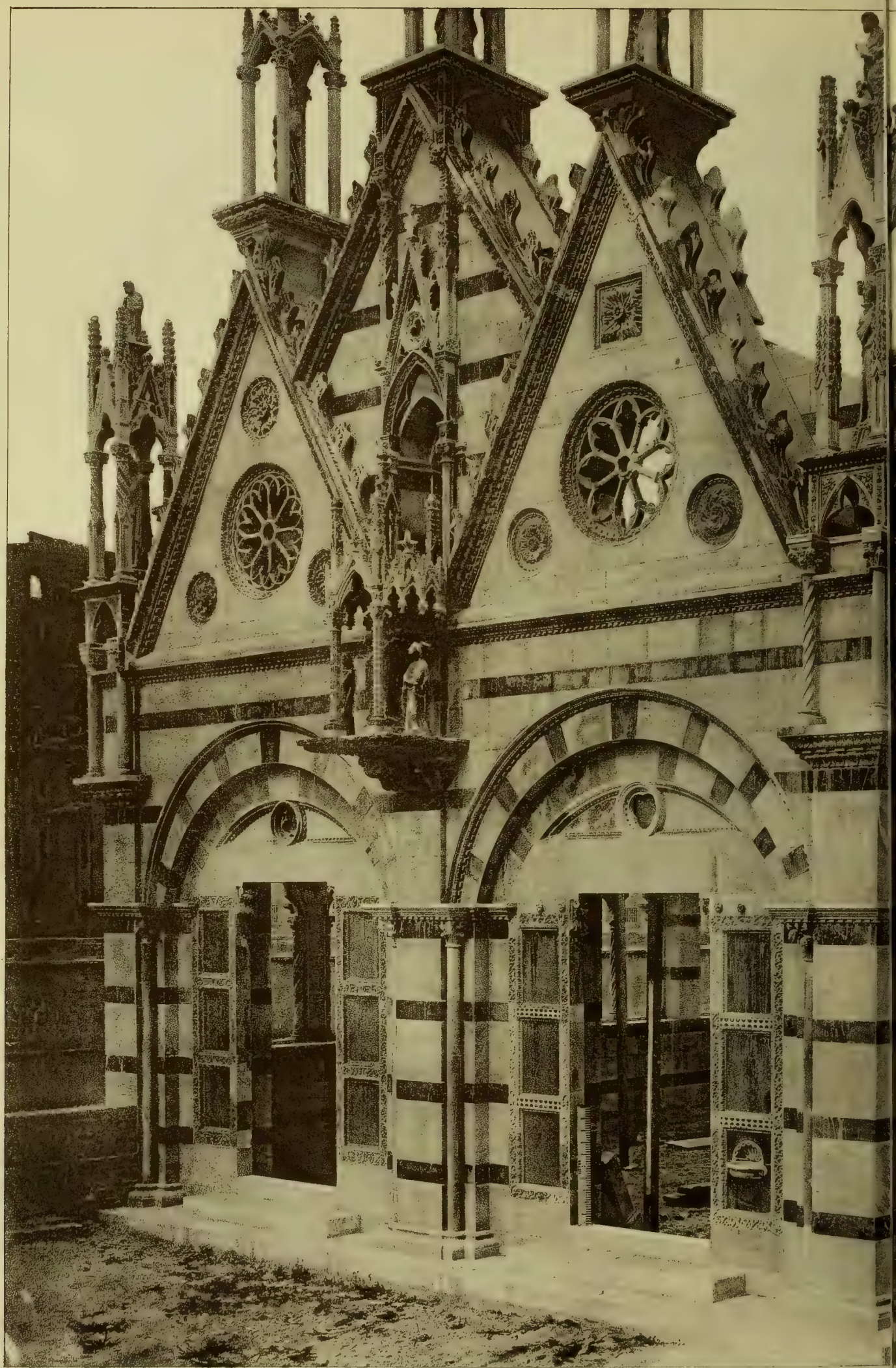
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CHURCH OF SANTA MARIA DEL





"PHOTO-TINT" by James Akerman 6, Queen Square London W.C.



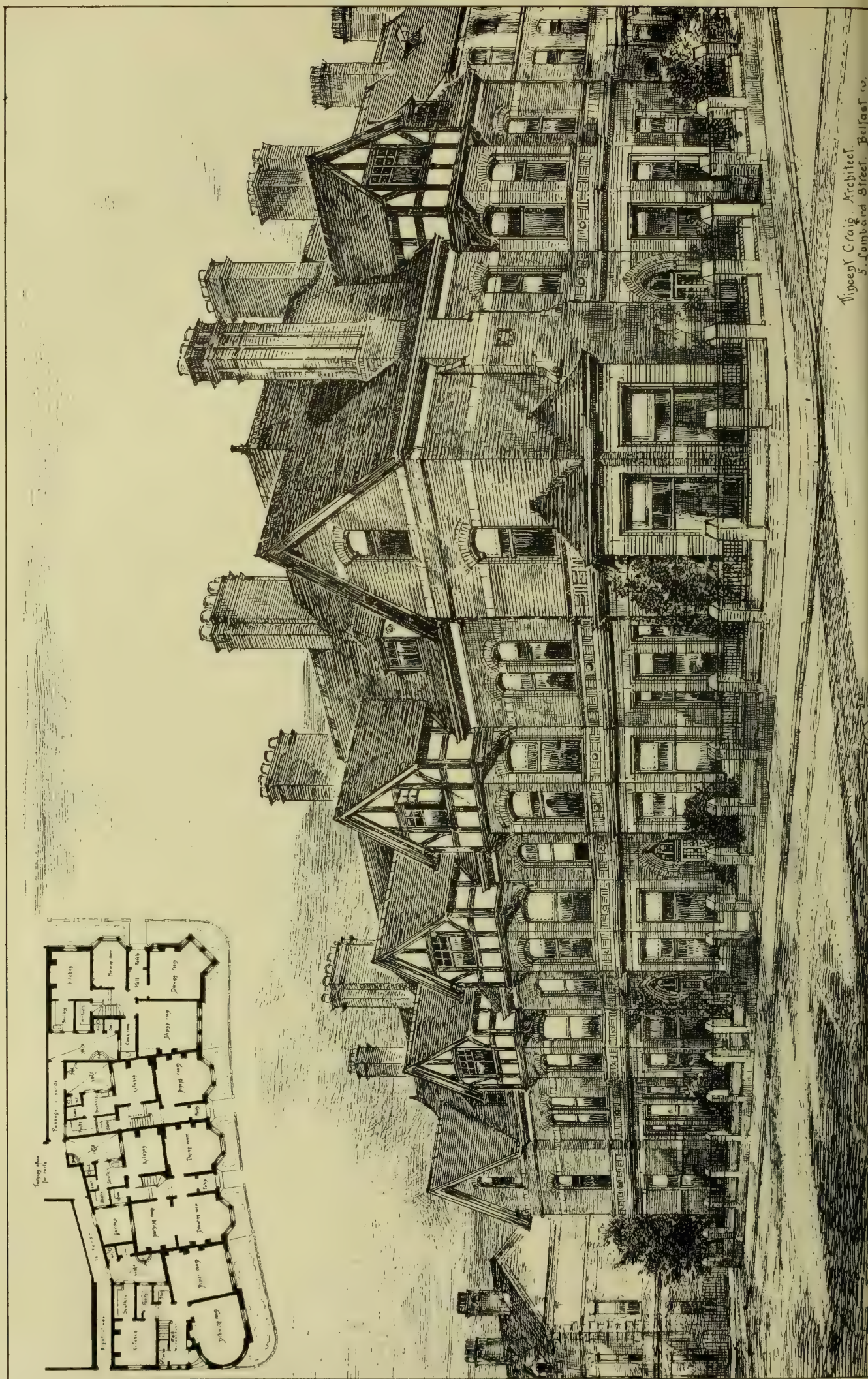






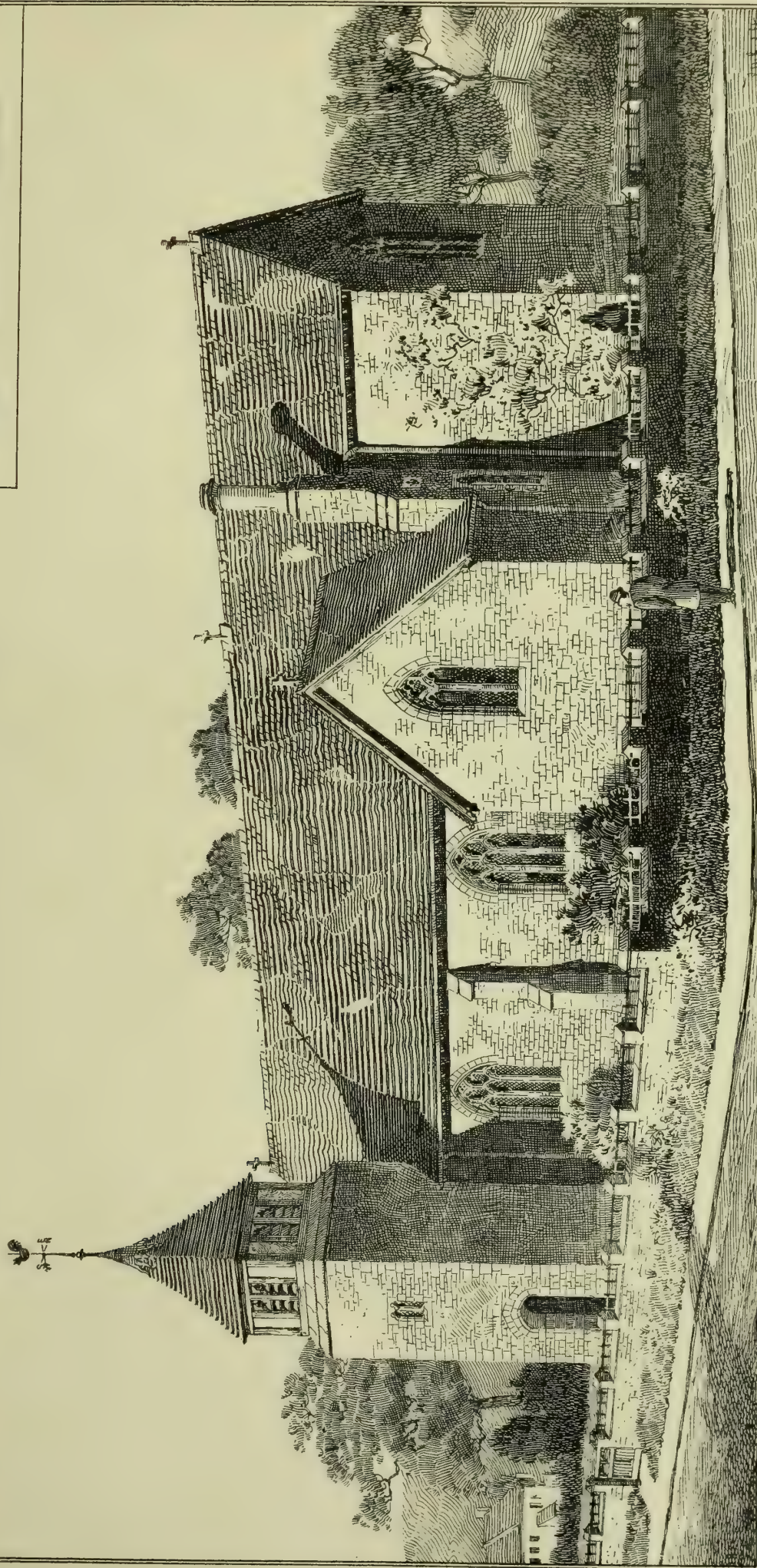


THE BUILDING REWS, APRIL 11, 1890.



Winged Craig, Architect.  
S. Lombard Street, Belfast, N.Y.

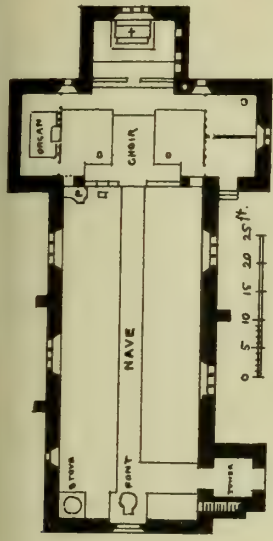




LLANDAFF · YARD · CHURCH : GLAMORGANSHIRE ·

KEMPSON & FOWLER · ARCHITECTS · LLANDAFF.

Engraved by J. G. Smith & Co. from a drawing by J. Kempson & J. Fowler.









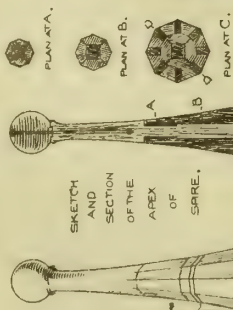




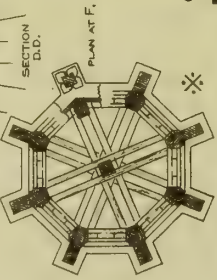
THE BUILDING NEWS, APRIL 11, 1890.

# THE CRISSELL·GOLD·MEDAL·DESIGN·FOR·A·TIMBER·OCTAGONAL·SPIRE.

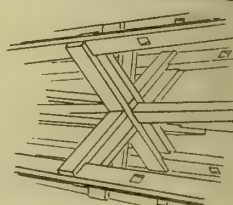
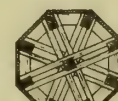
FIX TIMBER WHERE NOT OTHERWISE DESCRIBED. ALL ROOFS TO HAVE  $\frac{1}{4}$  IN. LEAD BOARDING AND ALL TO BE COVERED WITH  $\frac{1}{4}$  IN. LEAD.



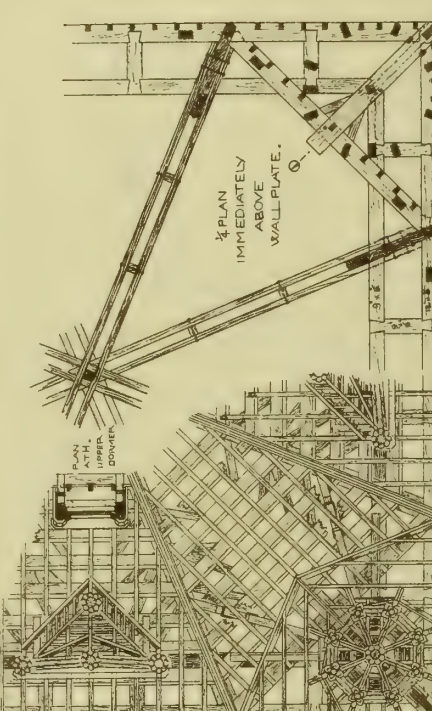
NOTE: THE CRISSELL·GOLD·MEDAL·DESIGN·FOR·A·TIMBER·OCTAGONAL·SPIRE. THE CRISSELL·GOLD·MEDAL·DESIGN·FOR·A·TIMBER·OCTAGONAL·SPIRE. THE CRISSELL·GOLD·MEDAL·DESIGN·FOR·A·TIMBER·OCTAGONAL·SPIRE.



PLAN AT EE (TURRET) LOOKING UP.



$\frac{1}{4}$  PLAN WITHOUT THE ROOF BOARDING. THE DIAGONAL BRACING BETWEEN THE PURLINS (SEE ELEVATION) IS OMITTED ON THIS PLAN TO AVOID CONFUSION BY OVERCROWDING.

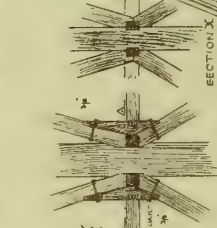


$\frac{1}{4}$  PLAN IMMEDIATELY ABOVE WALL PLATE.

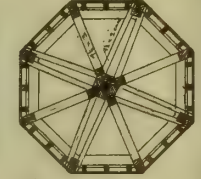
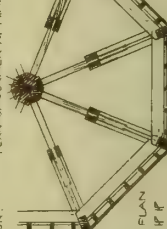
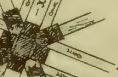


ELEVATION OF PART OF ONE BAY AS SEEN FROM THE INSIDE.

NOTE, FROM HERE, DOWN TO THE WALL PLATE THERE IS DIAGONAL BRACING IN EVERY BAY EXCEPTING WHERE THE DORMERS NECESSITATE A CHANGE IN THE FORM.



PLAN AT Δ SEE DIAGONAL SECTION.



SKETCH OF HIP RAFTERS CENTRE POST AND DIAGONAL TIES (WITH THE HIP RAFTERS).





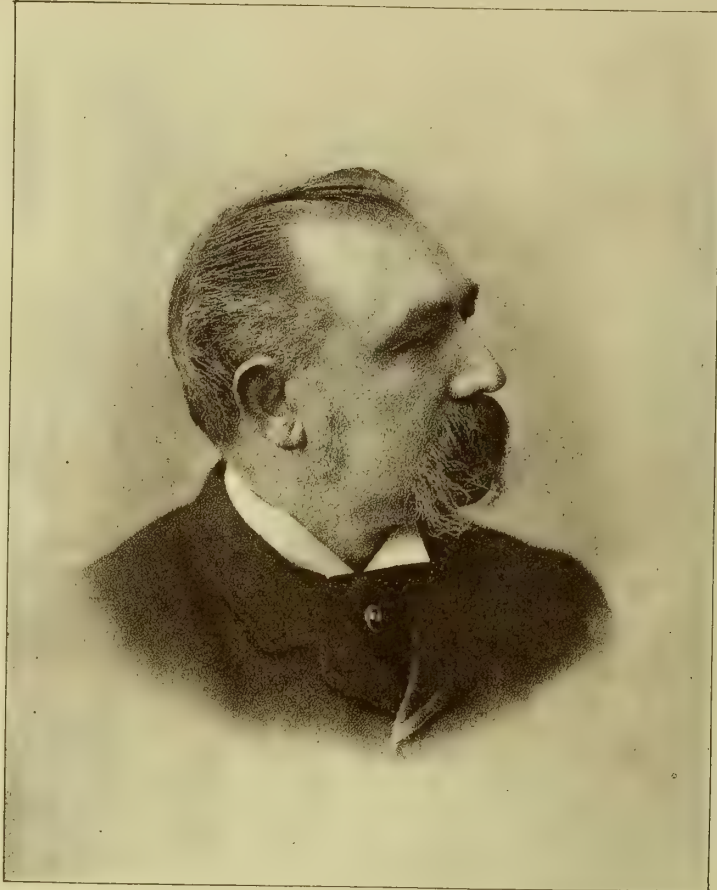












G. G. HOSKINS · F.R.I.B.A.  
ARCHITECT OF TOWN HALL & MUNICIPAL BUILDINGS · MIDDLESBROUGH

*G. G. Hoskins*

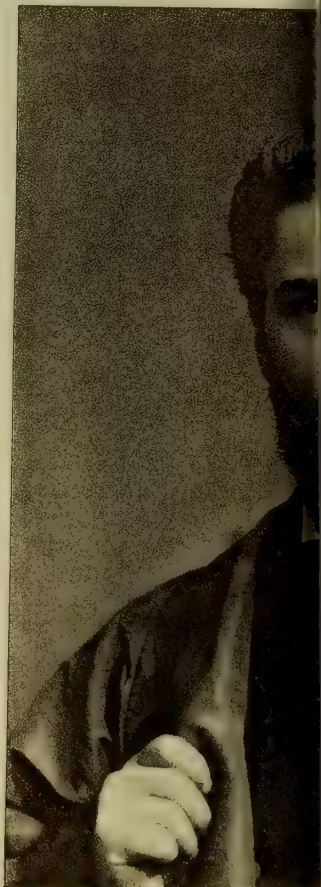


THOS. W. PHIPPS  
ARCHITECT OF MIDDLESBROUGH



C. J. PHIPPS · F.S.A.  
ARCHITECT OF THE LYRIC CLUB THEATRE · 20 ·

*C. J. Phipps*



H. H. B. PHIPPS  
ARCHITECT OF ST. PANCRAZ

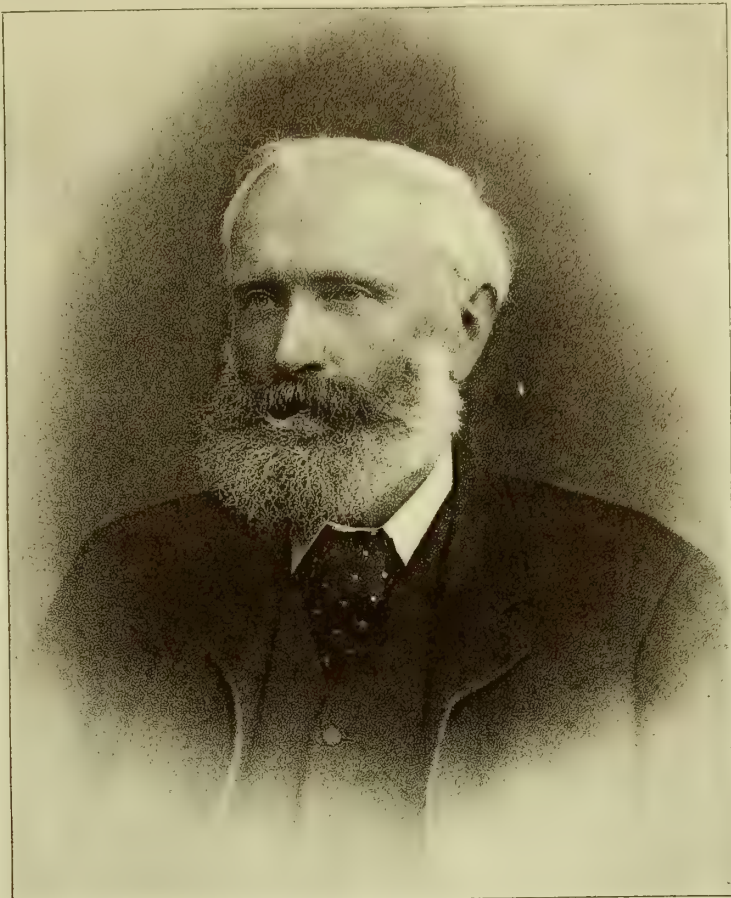


APRIL 18, 1890.



*Thos Nottingham*

N. FRIBA.  
POLICE COURTS.



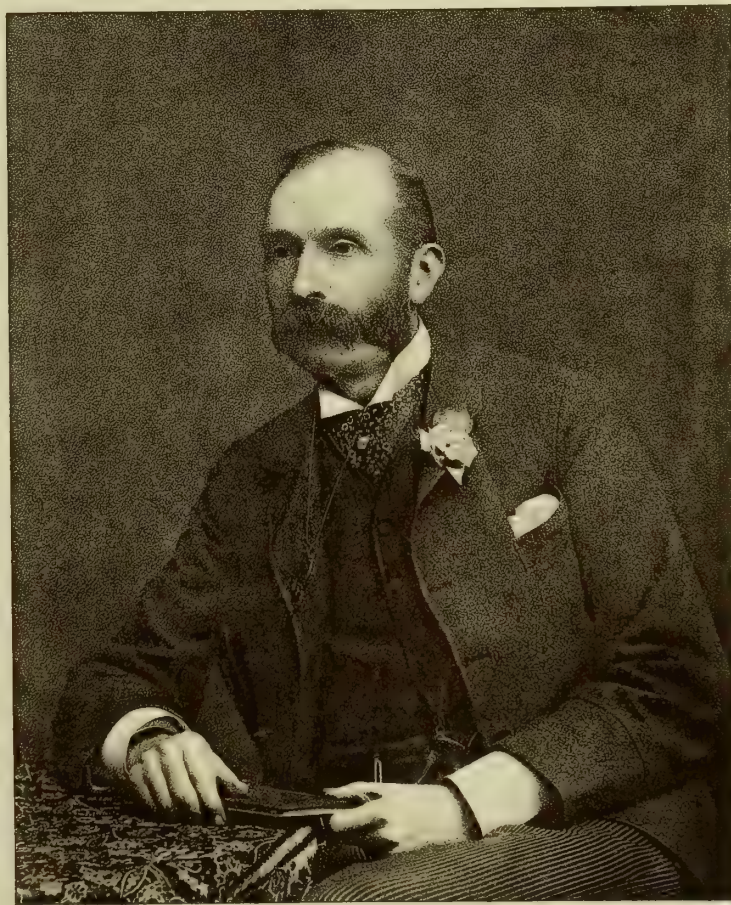
*T. Mellard Reade*

T. MELLARD READE, FRIBA.  
PRESIDENT OF THE LIVERPOOL ARCHITECTURAL SOCIETY



*H. H. Ridgman*

N. FRIBA.  
HOUSE-IMPRIARY &c.



*Archibald M. Dunn*

ARCHIBALD M. DUNN  
ARCHITECT OF STONYHURST & DOWNSIDE COLLEGES.

"PHOTO-TINT" by James Akerman, 6, Queen Square, London, W.C.











THE BUILDING PEWS, APRIL 18, 1890.

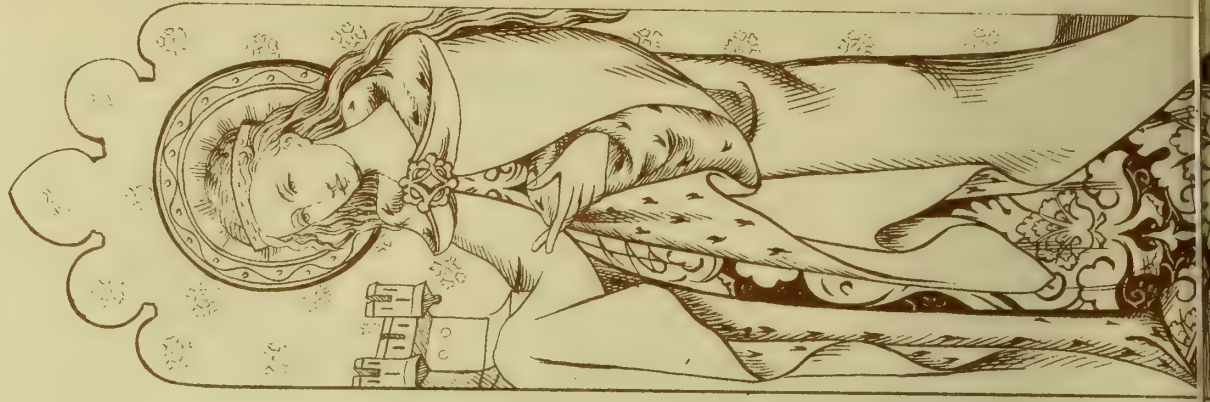
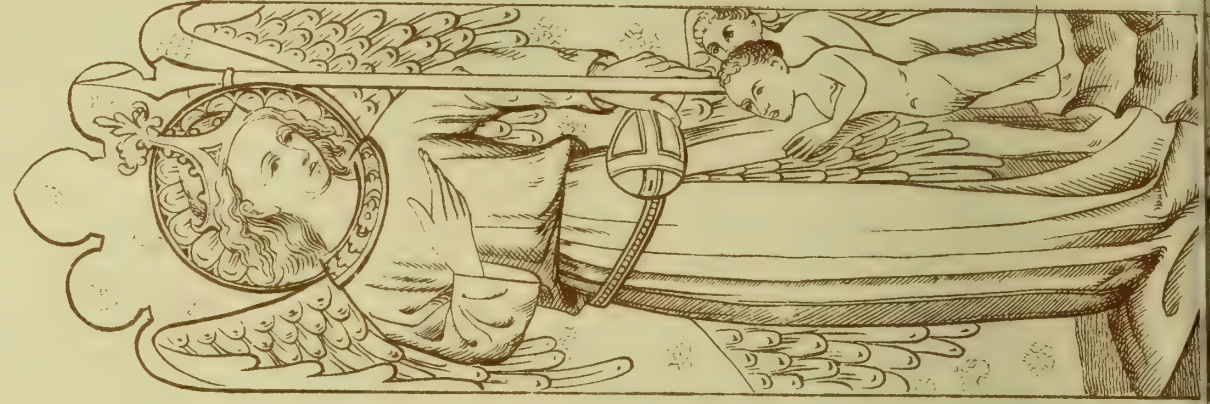
Principatus

Romi

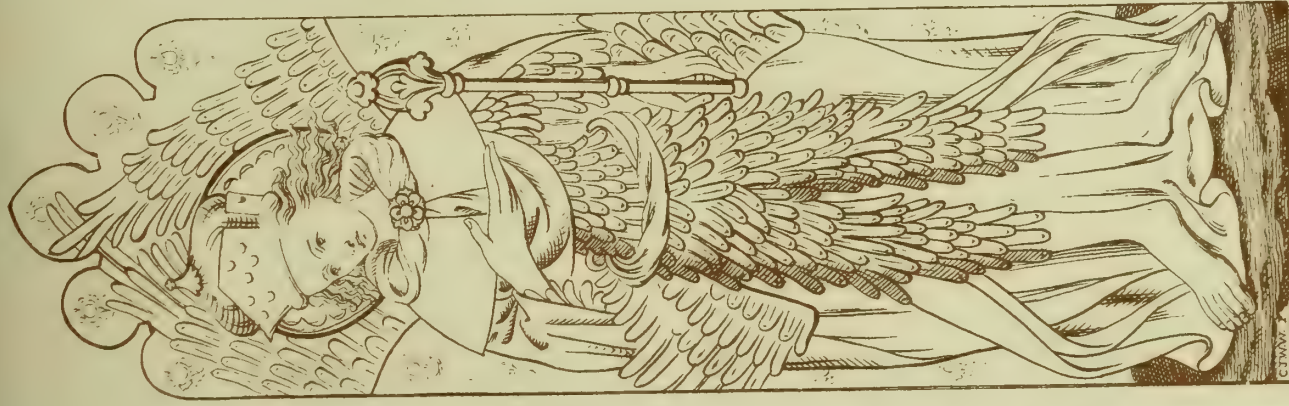
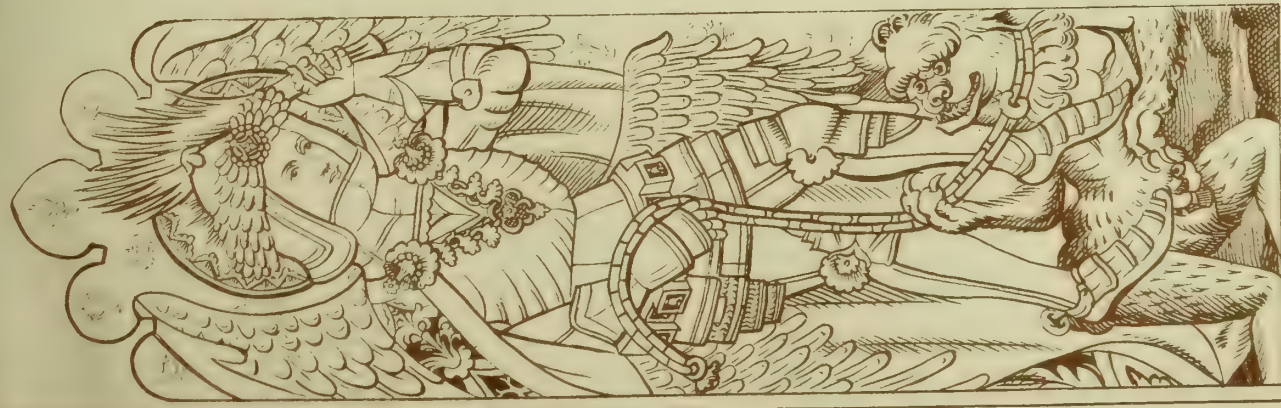
Archangeli

Angeh

Sœ: barbara







PAINTINGS FROM ROOD-SCREEN AT BARTON-TURF, NORFOLK  
DRAWN BY C. J. W. WINTER

PUBLISHED BY PERMISSION OF THE NORFOLK  
AND NORWICH ARCHEOLOGICAL SOCIETY

1. The first part of the book is a history of the city of London, from its foundation to the present time. It is written in a clear and concise style, and is well illustrated with numerous woodcuts.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1841.

FRIDAY, APRIL 18, 1890.

## ARCHITECTS AND MANUFACTURERS —DESIGNS AND PRODUCTS.

THE want of interest taken in the manufacturer's work by those whose business it is to employ materials and the industries connected with them, is one of the most disheartening and unsatisfactory conditions of the present age. Thus it is that hundreds of things in daily use, or which are employed in the structure and decoration of our houses, are looked upon with perfect indifference, simply as products purchased for so much money. The average householder does not interest himself in the production of his carpets or floor-cloths, his wall-papers, chimney-pieces, grates, or furniture, so long as they answer their purpose fairly well, or are cheap. Cost or fashion seems to be the chief question which concerns the well-to-do householder: everything else is disregarded. Well does Emerson in one of his beautiful essays speak of the ends of labour. "Cheapest," he says, "is the dearest labour. What we buy in a broom, a mat, a waggon, a knife, is some *application of good sense to a common want*." "The absolute balance of Give and Take; the doctrine that everything has its price, and if that price is not paid, not that thing, but something else, is obtained," is a doctrine that does not enter the minds of such users and consumers of our industries. Very few people trouble themselves about the application of common sense to their houses or furniture, or whether it is possible to obtain what they want at a certain price. The signs of wealth and fashion are taken for the real things, and so long as people are satisfied with the imitation and counterfeit signs of knowledge and good sense, the "stern ethics which sparkle on the chisel-edge, which are measured out by the plumb and foot-rule," will cease to have any meaning for the operative himself.

The trade circular affords us an illustration of the utter ignorance and want of appreciation of the work of the manufacturer shown by the public. The very "get-up" is intended to draw attention away from the essentials of good construction or correct taste. To take, for example, some of the catalogues or trade lists supplied by furniture dealers and ironmongers. Very little construction underlies the form and ornamentation; the latter is over-wrought and badly designed for the purpose, the idea of the designer of the patterns being to imitate the styles—to give the appearance of costliness at the least sacrifice of labour. The material is counterfeited as much as possible. Showy grates, overlaid with bad cast ornament, appear to be the main object which the ironmonger has in view, for anything like consistent treatment of material is not attempted. Unfortunately, in these manufactures the architectural designer has no direct influence: the designs are prepared by trade pattern-makers, who receive orders to render them attractive and in keeping with the taste of the day. We may see what truthful purpose and good sense can do in designs of this class if we look at the sketches prepared by the late Alfred Stevens for some of our leading manufacturers. The mistake of repeating designs made for special purposes or situations is the great evil. Many most felicitous designs by our leading architects for furniture and metal-work, including some by the late Mr. E. W. Godwin, Mr. Norman Shaw, Col. Edis, and Mr. J. D. Sedding, have been spoiled by being copied

as stock patterns by wholesale manufacturers. In the original the design was scrupulously carried out by one hand under the eye of the author, in certain materials and for a particular position; the artistic mind is seen in every joint and moulding; but the later copies show a great falling off, inasmuch as the details and meaning of the whole design have been so changed that, but for the general outline, it would be impossible to say from what source it came. The close connection between designer and workman can be seen in the earlier work, as if one mind and hand had conceived and executed; not so in the goods turned out by wholesale copyists. The connection between designer and executant is completely severed—in fact, what seemed to follow as a natural result of design is lost, and what is a source of beauty in the first is one of deformity in the copy. Thus in the original a simple mode of framing suggested an equally simple treatment of material; but in the imitation elaborate moulding or ornament has been added, which destroys the intention of the designer completely.

Ordinary building materials and manufactures reveal the same want of agreement between architects and makers. In that large class of clay manufactures in which the architect is more immediately concerned, terracotta and tilework for example, we find very little of that co-operation that would be of advantage to both the architect and manufacturer. The latter employs his own design, or is satisfied if he can turn out goods that will suit the larger number of his customers, so that if the architect requires anything of a special character, or something to be modelled after his own design, he has to pay dearly for it. Only when many replicas of the same pattern are required can he avail himself of the opportunity of securing what he wants. By a better understanding between architect and manufacturer, a higher standard of design could be maintained, and we have evidence of this in the products of leading terracotta and moulded brick firms. The stock designs of the trade are generally devoid of architectural character because of the ignorance of those engaged as modellers. Look, for instance, at the designs for balustrades, cornices, trusses, and terminals. The ornament is clumsy, the profiles inelegant or fussy; but this kind of design is appreciated by the "middleman" dealer, whose idea is to have replicas of a showy character. That a superior kind of manufacture can be turned out with a fair margin of profit can be proved by an inspection of many of Messrs. Doulton and Co.'s patterns, or those of Mr. J. C. Edwards, Ruabon. We should like to see the special-made design the rule amongst the profession, for if this kind of trade could be established, the manufacturers would soon cease multiplying their stock patterns, and would pay more attention to architect's work. These remarks refer chiefly to ornamental accessories and details. There are other goods, like moulded bricks, sanitary ware, tiles, &c., in which freshness of design is not material or necessary. In moulded work, for example, the architect can produce his own combinations for jambs, arches, and the like, as he is forced to use the same elements; to make a new model or mould would be unnecessary. But for window and door-heads, gable ornaments, balustrades, the character of the design should be adhered to, and the selection of any stock pattern is objectionable. The present weakness in the patterns turned out for work of this kind is largely to be attributed to the neglect of the architect in not making himself master of the knowledge of the class of clays adapted for terracotta, the shrinkage in burning, the sizes and thickness of blocks that ought to be used to avoid twisting, and unevenness of line in fixing. The Natural History Museum and the Constitutional Club are notable in-

stances of careful design and pattern-making. Many of the failures in the use of this material have been owing to the mistake of designing details in this material as if it was stone, and of making considerable projecting members, thereby increasing the thickness of some parts which are sure to twist when they are dried and burned.

In other departments of workmanship—joinery, for example—there is a similar want of co-operation between the architect and workman. General drawings, often to a small scale, are furnished for important fittings and details; but the execution is left entirely to the builder or his foreman. We cannot expect an improved or a very high class of joinery under these conditions. The best illustration of this is the large importation of foreign-made joinery, showing that architects and their patrons are contented with ordinary regulation work and with inferior qualities. Under the fostering care and guidance of institutions like the Carpenters' Company, the education and efficiency of the craft is improving, but these efforts do not reach the rank and file of the trade; architects, by delivering practical lectures before apprentices and craftsmen, bring the needs of the profession before the joiner; they put before him the ideas of architects, explain theories of construction, and recommend courses of instruction and examples to follow; the classes and prizes of the Company promote the skill and handicraft of the apprentice. The technical schools and courses are doing a great educational work; but they stop short of one necessary thing, that of encouraging the power of design and of putting old and good examples before the pupil. It is the seeing of good work, the best Mediæval and Renaissance joinery, that will alone give the workman ideas, which he cannot derive from following the lessons in technical joinery. Unfortunately, there is a large class of machine labour expended which gives finish and appearance of good work, but which is really not so. Doors, for example, are turned out very clean and perfect in appearance, but the quality is indifferent. We have a number of wood-block floors; some good, such as the systems of Lowe, Geary, "Acme," and the keyed plan of the Westminster Flooring Company; others imitations, the external surface, and not the foundation or mode of laying, being considered. If architects were to select their workmen as they do in France, or provide sums for special work in their contracts, we might again see artistic joinery rivalling the old.

In ironmongers' and smiths' work the temptation to make what will sell, instead of that which is substantial and artistic in design, is even more evident. Architects are willing to select their patterns from the trade catalogue, and to save themselves the time and trouble of making special designs though we are quite ready to acknowledge the increasing superiority of the patterns made and kept in stock by firms of established reputation. Comparing, for example, the patterns of ecclesiastical metal-work prepared 20 years ago with those of to-day, we can perceive a remarkable difference. The design for lecterns, standards, coronæ, pendants, and brackets were profuse in their scrolls, leafage, and other ornaments—fussy to a degree; but now they are quieter. The treatment of metal has been observed, and we have better, because more natural, designs. It is the same in builders' ironmongery and brass-work. The old Brummagem patterns have died out: in such things as stove-fenders, cast-iron rain-water fitting-verandahs, spiral stairs, and ornamental castings, improvement is evident; but more would be done were architects to design their own fittings or select them. In the important branch of metal-work applied to gas and electric-lighting there is an opening for the designer; already some manufacturers



those fittings have judiciously studied the requirements of architects and their patrons by opening furnished showrooms, in which electroliers and other fittings are fixed in position with surroundings that admit of a more critical and appreciative selection. The same conditions of judging are observed by leading firms of decorative artists. Marble mosaic work, stained glass, wall decoration, are so intimately connected with architecture, that they should be no longer considered as distinct and independent arts. The warehouse, rather than the studio or atelier, has been the accepted idea, and to the contractor has too often been committed the task of selecting artistic products. Modern architecture has at last rebelled against this isolated and commercial view, and it is for the disciples of the art to identify themselves with allied crafts and manufactures.

#### LOCAL AUTHORITIES AND BUILDERS.

URBAN and rural sanitary authorities have, in the trusts reposed in them, to steer clear between an appearance of arbitrary power and self-interested motives. The election of members to serve on the committees has been a source of weakness. They are often taunted with having private interests to serve, as being property holders, or as exercising their powers in a manner to give offence to builders who are opposed to them in politics, or who are not favourites with the board. We are constantly hearing of the arbitrary conduct of these authorities towards builders, and the reasons adduced for their action are often of an unsatisfactory character. The interpretation of the by-laws under the Public Health Act is a continual grievance, and if we are to credit all we hear, the authorities and their officers have been a long time in coming to an agreement about the meaning and intention of certain by-laws. The complainants often allege that they can show in the same district houses built in violation of those very rules, even after they have become law, which are enforced against them. Of course, such an assertion is awkward if it can be substantiated, for it shows that the officials of the board have either not comprehended the meaning of the by-laws they have put into force, or have been remiss or partial in enforcing them. The surveyor is, of course, the person upon whom the responsibility of correctly interpreting the statute falls. His opinion is, or ought to be, the ruling one. On the other hand, it is no excuse to make that his remissness or oversight in one case should be repeated, or that because buildings have been erected without proper foundations, or with walls not in compliance with the schedules, that other builders should be allowed to infringe the intention of the Act. Nevertheless, there are many builders, and architects too, who argue that what has been done should be allowed to be repeated; that errors of judgment should be a standing precedent. To attempt to put any clause into force that has been leniently dealt with in other cases is, they argue, unfair and unjust towards them. The members of the committee are blamed for their partiality. Often, indeed, some colour may be given to the accusation which makes matters ten times worse—as, for example, when it is clearly proved that the house property of certain members of the local authority is in a very defective sanitary condition, that the surveyor has not enforced the by-laws in their case. These are the sort of complaints which are made from time to time, and seriously impugn the honesty and conduct of local authorities, and builders have a strong ground for the opposition they raise in such instances. On the other hand, instances occur of builders neglecting to read by-laws. The other day the Solihull Sanitary Authority decided that the mortar used in some cottages

was of an improper kind, and dismissed the appeal of the builder. Specimens of the mortar were examined, the plaintiff and surveyor were both heard, and the authority supported the latter's decision. The question raised by the builder was as to the authority of the board in pulling down his cottages; he alleged that there had been no genuine hearing of the appeal or independent exercise of judgment of the authority, who acted in accordance with their surveyor's opinion. The action was brought in a superior court for trespass for the demolition of the buildings, the question being whether the defendants had exercised duly the powers conferred on them. The judge thought there had been an honest exercise of discretion, and decided in favour of the defendants. This case appears to have been clear enough. Other examples of the infringement of by-laws refer to party-wall thicknesses and structural defects. The builder too often assumes he is the best judge; he does not comply with the provisions because he thinks they are unnecessary, or because the by-laws have not been uniformly enforced. The by-laws themselves are obscure to practical builders; they are not studied as they should be, and local authorities have not sufficient practical knowledge to deal with them. These are the hindrances to a perfect carrying out of the statutory regulations. The only remedy for this condition of affairs is to make the by-laws so clear that no doubt can possibly arise in the minds of builders. Many of the clauses are certainly open to misapprehension; but if they could be supplemented by diagrams or sections, a considerable obstacle to their observance might be removed.

#### DUDLEY GALLERY ART SOCIETY.

ONE would have thought that the multiplication of water-colour societies would have left very little of any merit for the unostentatious but well-established gallery in the Egyptian Hall. The fact, however, is that competition spurs the artist to do his best, and we have here, amongst the 344 pictures, a few that would worthily adorn any gallery in the season, which is not, perhaps, saying very much after all, except that in the smaller galleries there is less room for inferior work, and more discrimination is exercised. For breadth of handling, in which the local washes are made to do an important part, we must acknowledge the excellent work which John Fullwood has contributed. His freshly-drawn subject, "A Beacon," has in it all the power and true feeling of landscape; the broad brush-work in "A Landmark"—a hill with its lonely cluster of trees; "By the River" (122), subtle in its softness of tone and its suggestion of atmosphere and light, and other studies of open country, are worthy of praise. Kate Macaulay (7), "A Good Catch," still displays her power of giving ripple and sunlight, and cleverly-drawn craft; others are "Herring Trawlers" (160), "Waiting for Buyers." Albert Stevens has several landscapes and studies of mountain scenery. His "Menaggio, Lake Como" (208), is a clever study of mountain and cloud. "St. Oswald's, Durham" (259), "After Rain, Derwentwater" (70), are also marked by clever handling. However expert as a painter of still life in all its minuteness, as in 215, L. Block has not impressed us with his architectural drawing of the "Interior of St. Stephen's Church, Walbrook" (40). The perspective is a little faulty, and the colouring hard. In landscape studies we must notice the feeling and breadth in Wilfrid Ball's work, "Mending the Old Boat" (43), is a delightful bit of drawing and colour. Two or three noticeable studies of "impressionism" meet us in William Estall's "Winter Afternoon" (48), in "Cow Pastures" (137), and "A Spring Morning"

(159). Discarding conventional methods, Mr. Estall notes in colour what he sees. The red opalesque hues of a winter afternoon, the fresh green and hazy light of pasture land with sheep and lambs under a spring sky, are the themes given us in these subtle and delicate studies, full of poetry and feeling. The drawing of the sheep is admirable. Lexden L. Pocock's figure-subject "The Pet," a girl feeding a lamb, is prettily conceived and well drawn; and we come to J. Bedloe Goddard's "Branksome Cliff, Bournemouth," a sunny blue sea and sandy beach; and Alfred Powell's "Common," near the same place, a clever and careful piece of handling. Full of atmosphere, and pleasing in its treatment and colour, is Rose Barton's "St. Patrick's Bridge at Sonning" (63); another lady, Maud Peel, gives a pleasing sketch of children in a field, in which the sunlight is well indicated. Of the stronger landscapists is W. Rupert Stevens; his work is always direct, natural, and healthful in tone. No. 75, "A Northern Suburb," clothed in a mantle of snow, with a row of brand-new red brick houses, is a clever sketch of a building estate. One of the chief works of Mr. Stevens is "By the River" (94) full of delicate tones and broad handling. The artist knows how to give light and atmosphere. The same soft and broad touch is seen in drawing of a cornfield (121), "Floods near Pulborough" (289), and in several sketches on the screen. A charming sense of colour and feeling is shown in a Langham sketch (301) and the "Sketch on the Stour" (325). "The Lazy Scheldt" (170), in which Mr. Stevens has selected a new field for his talent, is undoubtedly promising; the still, sleepy atmosphere of hazy light blends water and sky, broken only by the warm colour of the craft which lie motionless on the river. "Sketch for Decorative Panel," by G. Sheridan Knowles, is a graceful drawing of three children under the blossom of an almond-tree; the colouring is harmonious. Pleasant colour and broad treatment of water and sky reflection are observed in Walter Tyndale's "Evening" Dordt (89). Amongst woodland subjects, the charming and delicate colour in Celia E. Culverwell's "Sentinels of the Wood" (95), a glade of silver beeches, and the old beech-tree on the Liffey (336), with its subtle rendering of tortuous roots, and the delightful handling, deserve mention. The president, Walter Severn, has five pictures. "East Cliff, Mentone," a favourite resort of Mr. Severn, occupies a prominent place. Here we find the painter in his happiest mood; a long stretch of rocky cliff, separated by a fissure, a blue sky and sea, all under a bright sunlight, such as the president can give us—perhaps a little too placid. The other view of Mentone, the old town, is less pleasing; the drawing of the houses is somewhat tame and spiritless, but the scene is tranquil and luminous. "Crinan Canal" is full of serenity, light, and air. In the several works of Reginald Jones, his "Early Spring" (224), "In Winter Grey" (102) we find much tender colour and sweetness. These two are especially strong in their masterly drawing of woodland, and the charm and delicate colour of birch-stem and foliage. No. 224 is a large and broadly-handled study of a birch glade, the mingled tints and foreground very suggestive of spring beauty. A delightfully crisp sketch of church tower and village "Lambourne" (112) is by Yeend King, the sunlight effect being suggested by strong and decisive touch, and well selected points of colour. So we must admire R. H. Nibb's "On the Orwell, Ipswich" (129); the strength and grey tone in "April Weather," by David Green, and J. Carlisle's sketch at Blackheath (108). The former's "Sea Breezes" (147) is a masterful drawing of jetty and sea, powerful in colour; air and



mist are fairly rendered in Newton Benett's drawing of "Streatley" (190), and we must pay a tribute to the work of R. A. K. Marshall, for his sunny and well-finished sketch on the river Usk, near Abergavenny, and other Monmouthshire views on the screens. The seascape (212) by Helen O'Hara, with its crested wave and charming grey light and reflection; the quiet colour in F. Burgess's "Barges" (235); R. Werner's "Medieval (?) Gateway" (202), a Roman work more correctly; D. H. Williamson's broad sketch on grey paper (287); Nathaniel E. Green's views of Holland House (312, 318, 220). David Green's sketches at fishing ports (314), Margaret Bernard's Surrey sketch (297), are other works calling for note. Of figure and *genre* subjects little need be said. Henry Terry has a figure of a Gleaner (97) and a cottage interior with old woman engaged in darning, and a little girl who looks somewhat dejected—"A Weary Task" (265), both works exhibiting careful execution. Eleanor E. Manly's little episode is cleverly drawn in the daintily-dressed figures of little girl and boy, who are in the costume of the Cavalier period. The same lady has a nice portrait study, "Nina" (241). With these exceptions the Gallery is not particularly strong in subject studies.

#### SOCIETY OF ARCHITECTS.

AN ordinary meeting of this society was held on Tuesday evening, Mr. William Allport, Member of Council, in the chair. Four nominations for membership were read, and the following ten gentlemen were unanimously elected as members:—Herbert Archibald Ayle, Bradford-on-Avon, Wilts; J. Bartlett, 64, Tonsley-hill, Wandsworth, S.W.; Stephen Colclough, 75, Rathgar-road, Dublin; E. W. M. Corbett, Y-Fron-Pwllpant, Cardiff; F. J. Eedle, 8, Railway Approach, London Bridge, S.E.; F. J. Lewis, 64, Clifton-hill, St. John's Wood, N.W.; E. W. Monro, 63, Bedford-road, Clapham, S.W.; G. W. Plank, 163, Buckingham Palace-road, S.W.; R. Frank Vallance, Mansfield, Notts; and T. Winder, Duke of Norfolk's Estate Office, Sheffield.

#### LIFTS.

A paper on this subject, illustrated by numerous diagrams and plans, was read by Mr. C. E. Gritton, A.M.Inst.C.E., Member of Council. The author explained in his preliminary remarks that he is not in the slightest way connected with any lift company, his desire simply being to bring out the good points of some of the many varieties now in the market. The catalogue of the American Elevator Co. contains, he continued, a number of effective sketches showing crude mechanical devices of primitive man for lifting purposes, consisting chiefly in the first place of rough forms of lever of the first order with a fixed or moving balance weight at one end, and afterwards of drums and wheels. It is only during the last eighteen or twenty years that efficient mechanical lifts have come into use, and the application of hydraulic power, peculiarly adapted as it is for lifting purposes, was first extensively used by Sir W. G. Armstrong, the "pioneer" of hydraulic engineering, for cranes and other lifting machines in 1846. For lifting purposes hydraulic power is undoubtedly the best. During the last three years even in this country immense progress has been made. It is curious to observe how the use of lifts in England advances in substantially the same path as that which it followed in the United States, except that so far the progress has been less rapid here. First came the question, Was it worth while; would it pay? This was soon answered, and experience as well as statistics showed that, in office buildings, the effect of a good elevator service was to increase the rental value from 40 to 200 per cent. Directly this was proved, the movement became general. This was necessarily so, because the owners of buildings unprovided with lifts lost their tenants, and were obliged to put them in to meet the demand, and to save their property from becoming useless. Then, still later, someone thought that if one was good, two would be better; that it would be an advantage to his property to give even a more rapid service than could be provided with one

elevator, and even though there might not be any distinct economic gain, yet the fact of having two would give him an advantage in the shape of *éclat*. The result was to show that there was a real advantage, for active business men would naturally go where there was a greater certainty of a rapid service, and the minimum of delay. But the first to use two made the mistake of fixing them in different parts of the building. It has since been found better to put them close together. There are six elevators in the Mills Building ceaselessly ascending and descending. One of the most striking instances of the modern style of high office buildings in New York is that known as the Morse Building. This stands upon ground 80ft. square. It is eight stories in height, and the two elevators run side by side. To make the service as perfect as possible it was determined that there should be no signals or call bells, but that the conductors should be instructed to run their cars perpetually, one up and the other down, starting although even no passengers were waiting. It was also determined to make all floors uniform as to height of ceiling, style of finish, &c., and not, as had been the practice, to make the upper stories inferior; and, having determined upon this, it was also settled that from the first floor up there should be a uniform rental upon the theory that the upper floors would be at least as good as those below. The results have proved the soundness of the theory. The highest floors let first, and from that day to this the building has been a model investment. Although in London the laws of "ancient lights," &c., render it impossible on most sites to build houses of American altitude, there can be no valid reason why they should not be carried to the utmost height possible, on wide streets, nor why they should not, as in the States, get as good a rental for offices upon the sixth floor as upon the third. In reply to a question as to what was the rental of his offices on the 10th floor, a New York solicitor recently replied in the most matter-of-course way, "Oh, we have to pay a high rent for offices upon this floor—we pay 1,800dols.; if we would go down to the 6th, we would get as good accommodation, and save 400dols." While upon the subject of high buildings, where a serious fire may have such frightful results, it may be added that lift "wells" should be lined with brickwork, and have stout permanent doors at each floor opening, in addition to the usual sliding doors of the cage. These doors should only open from the lift side, otherwise fire frequently spreads with astonishing rapidity to all the floors of a building. The absence of such doors is one of the great objections to lifts of the "Cyclic" or "Continuous" pattern. Hydraulic lifts of good type have the following advantages:—Extreme simplicity; the minimum amount of machinery; absence of all entirely rotative parts, except the sheaves over which the ropes run, dispensing entirely with the use of steam at high pressure used in complicated machinery working at high velocities, and requiring nice adjustment and the close attention of skilled engine-drivers. Hand-power, steam, air, gas, and electricity have also been applied. With steam and gas there is some danger of overwinding; the shock of the explosions in a gas-engine also cause extra strain on the mechanism. The use of hydraulic power at once removes the risks resulting from the use of brakes, necessary with other systems. One valve controls hydraulic lifts, hence little danger of the working parts failing. When horizontal cylinders are used, constant working pressure is obtained. This has also been accomplished recently with vertical cylinders. To quote Mr. E. B. Ellington, M.Inst.C.E., an authority upon lifts and all pertaining to them, in his paper read before the Mechanical Engineers' Institution, he said: "In properly-constructed hydraulic chain lifts there is practically no element of danger beyond that incurred by the use of the chain or rope, and that on the score of safety as well as economy, even in chain lifts hydraulic power is to be preferred to any other." The hydraulic form in its simplest shape (where it is supplied directly from the mains) requires no moving machinery except the pistons, and possibly sheaves. Even in its more elaborate form, where water cannot always be obtained at a suitable pressure, no machinery is required other than a simple direct-acting pump (easy of manipulation) to raise the water into a tank, thereby obtaining the head necessary to work the piston. Hydraulic lifts are broadly divided into two

classes—viz., "Direct acting" and "Suspended." The former are those in which the cage or car is carried directly on the top end of a ram or plunger, whose length slightly exceeds the full height of lift travel. In raising the car, the ram is thrust out of a strong hydraulic cylinder, by the admission of water into the cylinder, through the "working valve," which is controlled by the hand rope passing through the car, from top to bottom of the shaft in which the lift runs. These lifts are silent and work steadily and evenly, being always rigidly supported from below. From the same cause they are inherently safer than those which depend upon the support of chains or ropes. In large lifts, balancing the dead weight of the moving parts becomes necessary, to prevent waste of water, for if this be not done, much more water is expended on useless than on useful work. This has been done in various ingenious ways, beautiful in their simplicity, by Messrs. Waygood, Ellington, and others. Other advantages of efficiently-balanced lifts of this type are that the total dead and live loads are carried directly by the foundations; no overhead beams, sheaves, ropes, chains, or hanging weights are employed, and consequently they may be fixed in a handsome staircase without causing disfigurement or appreciable obstruction of light; no cogs, belts, or shafts liable to fracture are between the applied power and the passenger car; the attachment of the ram to the underside of the cage becomes of less paramount importance; the most frequent source of accidents in suspended lifts—viz., the holding up of the car while descending by obstructions which may be accidentally placed so as to project beyond the floors at the doors of exit, arresting the car while the ropes unwind, leaving the car unsupported, and then when the temporary obstruction yields the car falls—is removed. The fearful accident in the Grand Hotel, Paris (from another cause), could not have occurred had the lift been a good hydraulic-balanced one. Some of these machines now utilise fully 85 per cent. of the water-power. The principal repairs are the renewal of the water cylinder packing, an easy and inexpensive operation. "Suspended lifts" are those supported from above by ropes or chains which pass over sheaves at the top of the lift-well, and carry the total weight of the car and its load, the car being raised by power conveyed by these ropes, preferably from an hydraulic hauling cylinder or jigger. The best forms are sustained by two, three, or four ropes, so that one rope may become stretched or broken without any serious result. Ropes of steel wire are generally preferred, as they work smoothly, and signs of weakness or actual flaws are more easily and promptly observed. Only suspended lifts can be adopted for very considerable heights, or indeed in the majority of cases; and they are the least expensive form, except when the lift travel is a very low one. In New York there are now 130 "Otis" elevators, each lifting from 100ft. to 150ft. Each rope should be of sufficient strength to bear the car and its maximum load alone; giving a wide margin for safety. The expense frequently prevents the adoption of the safest types for goods lifts. Two types are therefore called for. Where safety is of most importance, as in passenger lifts, cost should be a secondary consideration. Real safety means the avoidance of every kind of accident possible to the machinery. Attachments should be considerably stronger than the chains or ropes. A long paper might be written upon safety gear alone. Great ingenuity has been displayed, and the combination of safety devices as applied to the present Otis elevator seem to leave little to be desired. A strong proof of this is that in over 4,000 of these elevators now running no real accident has occurred. In five new buildings in New York they carry 67,000 persons per diem. Unfortunately, all "safety appliances" are not what they profess to be. The *American Architect and Building News* gave, in 1880, instances of eleven falls, in only two of which were the cages unprovided with so-called "safety catches." The important inference drawn was, that "It is impossible to be too careful" in the selection, regular and skilled inspection, and testing "of these appliances, whose action is very uncertain under the various unfavourable circumstances of actual use." All depending upon springs to bring them into play should at least be regarded with suspicion. All cars should be arranged to stop automatically at the top and bottom of their travel. The first



essential of a true safety catch is its instantaneous action at the commencement of a fall. Some are now so sensitive that the slightest inequality occurring in the tension of any of the suspending ropes throws the safety catches into action, and at once stops the descent of the cage. Conclusive proof of the increased safety of lifts is afforded by the fact that, despite the enormously greater number in use now, accidents are not only relatively but actually less frequent than they were a few years ago. Lifts are now accepted as the important aid in saving time and human power, which they were bound to become as soon as the safety of their working had become undoubted. Low water pressure, seldom exceeding 40lb. per square inch, whether from the mains or from a tank at the top of the building, involves one of two drawbacks—either the water is wasted after being used for one journey of the lift, or in the case of the tank, the exhaust, or waste water from the lift, has to be pumped up again for use. Such favoured towns as Brighton, Eastbourne, Liverpool, and Nottingham have a great water pressure, extending upwards from 40lb. to 120lb. per square inch. High water pressure is obtained by pumping and forcing the water into an "hydraulic accumulator," which is a loaded ram working in a cylinder similar to an hydraulic press, and forms a reservoir of power: the pressure generally adopted being 600lb. per square inch. The useful effect of an accumulator is from 75 to 80 per cent., and the cost of repairs almost nil, as the wear and tear is but small. The first cost is also in most cases less for high-pressure lifts than for low-pressure ones of like power. Increased working pressure reduces the size of the lift cylinders, and increases the speed of the lift. Other advantages of the high-pressure system are—the smaller cost of the lifting machinery and of working, when any considerable number of machines are worked from the same pumping plant; the less volume of water dealt with; and the more compact machinery used. Where the public hydraulic power is available, for both small and large consumers, as it now is in London, Liverpool, Hull, Sydney, and Melbourne, the cost of hydraulic machinery is no more than that of any other system, and the high-pressure supply gives the most satisfactory and economical results. The London Hydraulic Power Company claim that they can in some cases raise one ton 50 to 60ft. high for one farthing. Cost for cost the energy stored in the power supply is more than four times that of the average low-pressure service. There are very few instances in which any one company or firm requires so large an amount of power that the use of the public hydraulic pressure will not effect a considerable saving. Each house built upon the "Kensington Court" estate is fitted with one of Ellington's improved passenger ram lifts, constructed by the Hydraulic Engineering Co., Limited, of Chester, and worked by the above mentioned Power Co. The power is available day and night, all the year round, at a pressure equivalent to that which would result if large supply tanks were placed at 1,600ft. above ground level. This pressure enables small machines to perform a large amount of work with a very slight expenditure of water. During the seven years that the London Co. has been working in no single instance has the use of their power been given up in favour of any other system of lifting machinery. A distinct class of lifts is that variously termed "Cyclic," "Continuous," or "Endless." The advantages claimed for this type are: 1st, no delay in waiting for cages; 2nd, no attendant; 3rd, working expenses less than half those of any other; 4th, safety. The latter claim is, however, debatable. It must be confessed that the unprotected openings to the lift-well at each floor level appear to be dangerous. The motive power may be applied either at the top or bottom of the building. A few details respecting the most striking lifts yet constructed—viz., those at the underground stations of the Mersey Railway and those erected at the Eiffel Tower—may be interesting. The former were the first used for dealing with large railway traffic, and were constructed by Messrs. Easton and Anderson. Three of the lifts, running simultaneously, are able to raise a heavy train load of 300 persons (100 each) to the surface in about a minute (usual speed about 2ft. per second). The total cost of the six lifts with their machinery was about £20,000. V-shaped guides were adopted, so that the guide-brackets sliding over them can be readjusted after

wear by packing them out in one direction only. Great pains were taken to keep the wells for the cylinders as nearly plumb as could be, it being of the utmost importance that the upright hydraulic cylinders employed should be as truly vertical as possible. Landore-Siemens steel was used for the ram tubes, tested by Professor Kennedy to bear a load of nearly 63,000lb. per square inch before breaking. The ornamental panel-work was designed by Mr. Grayson, of Liverpool, the architect for the station buildings. As no ordinary shackle will pass through the links of short link chain, the chains were attached by long U-shaped shackles and cotters, giving a strong and reliable connection, with the additional advantage that a chain can be cut at any point, and attached. The hand-ropes are made of hemp with cores of wire rope. The large lift at the Army and Navy Stores, Westminster, is of very similar construction, but of only about one quarter the capacity and power. Leathers appear to be superior to packings for main ram-glands. The first cylinder on the Mersey Railway was lowered into place at the end of August, 1885, and the lifts were officially tested and passed for work on December 29th, 1885, by General Hutchinson, R.E. On the closing day of the late French Exhibition the author ascended the Eiffel Tower by means of the splendid lifts working there; and descended on foot part of the way by the winding stairways, in order to examine the construction and working of the different types then in use. Two "Roux" lifts to the first platform, 184ft. up, can raise together 2,400 passengers per hour; two "Otis" lifts, together, 800 per hour, from the first to the second floor; and one "Edoux" lift, from the second platform, 376ft. high, to the third platform, 863ft. high, 800 per hour. Speed: "Otis," 394; "Roux," 197; and "Edoux," 177 feet per minute. The accident which happened to one of the lifts, but which was kept very quiet by the authorities, was not to either of the "Otis" elevators. In addition to Mr. Ellington's paper, information has been obtained from "Hydraulic Lifting and Pressing Machinery," by Mr. F. Colyer, M.Inst.C.E.; Mr. C. J. Appleby's "Hoisting Machinery"; a Report of Professor F. Reuleaux, Engineer of Berlin; and a Report upon Elevators by a Board of American Engineering Experts to the United States Treasury.

A vote of thanks to Mr. Gritton was proposed by Mr. E. TIDMAN and seconded by Mr. H. D. HATFIELD, the latter remarking that the weak points about all lifts seemed to be the protection of the openings from the spread of fire, for too often the elevator-well acted as a furnace shaft on an outbreak of fire. Where overhead chain gear was used there appeared some risk of the pivot breaking and letting the wheel and chain fall on top of the cage. He had pointed this out to lift makers, but they made little of the risk, saying that the top of the cage was made of steel to withstand the shock of such a fall; he still felt doubtful, however, whether the result of the fall of the wheel and chain would not be serious if the cage were at the bottom of the well, and thought manufacturers would do well to provide safety gear against such an accident.

Mr. E. B. ELLINGTON said English makers of lifts need not play second fiddle to Americans. There were now a greater number of lifts at work in London than in New York, and for speed, capacity, and safety, the English systems were quite equal to those in use in the United States. In America many lifts were still worked by steam, whereas ours were nearly all actuated by hydraulic power.

Mr. C. G. MAJOR, from Messrs. Archibald Smith and Stevens, of Queen's-road, Battersea, said English makers of lifts could well compare with Americans. English lifts were no longer slow, but could be run to 500ft. per minute without difficulty if required, and prices were always favourable to English manufacturers. The high-pressure system was the best, and was becoming increasingly adopted in preference to the other. Fireproof doors could not be provided, as no attendant could move them as required. Experiments had shown that a closely-fitting thin steel door was a more secure protection against the spread of fire from a lift than a heavy iron one, which bulged and failed to keep in position under fire and water.

Mr. MORGAN, of Messrs. R. Waygood and Co., of Falmouth-road, Great Dover-street, said in his recent visit to America he found little was known about high-pressure lifts. The American machinery was often cumbrous, and the usual

pressure employed was 200lb. per square inch, while in New York steam was largely used to supply motive power. High pressure such as we had undoubtedly gave a great advantage over low pressure, as the pipes and machinery were much smaller. The reason English lifts were not worked at greater speed was because of the comparative lowness of the buildings. At Melbourne his firm had an express lift running a height of 76ft. without a check, and a speed of 600ft. per minute was easily maintained. He had always been in favour of direct-action balance lifts over suspended ones, as there was then no risk of anything falling on the top of the cage. Nowadays no passenger lifts were made with chains, as wire ropes, which gave warning before breaking, were employed for all but goods lifts. If our building laws, and especially those affecting light and air, were amended, English makers should show far greater progress, he believed, than American ones. The difficulty too often was that in the Metropolis lifts were required in premises put up by speculating builders, who sought after not the best but the least costly apparatus.

Mr. AITKINS, Mr. C. F. ARCHER, and others having spoken, Mr. GRITTON replied, explaining that he had given most prominence to the American systems of elevators because, when seeking information on the subject he visited and wrote to all the makers on the subject, the Americans were the most business-like and prompt in replying, and in affording him every information.

#### MR. WILLIAM MORRIS ON GOTHIC ARCHITECTURE.

MR. WILLIAM MORRIS lectured on Saturday afternoon at the Artists' Club, Liverpool, on the subject of "Gothic Architecture." The lecturer said that the word architecture was commonly understood to mean the art of ornamental building, and in that sense he should often have to use it in his lecture. Gothic architecture is, he observed, the most completely organic form of the art which the world has seen. The break in the thread of tradition could only occur there; all the former developments tended thither, and to ignore this fact and attempt to catch up the thread before that point was reached would be a mere piece of artificiality betokening not a new birth, but a corruption into mere whim of the ancient traditions. In order to illustrate this position, the lecturer sketched the historical sequence of events which led to Gothic architecture and its fall. East and West overran the world wherever men built with history behind them. In the East it mingled with the traditions of the native populations, especially those of Persia of the Sassanian period, and produced the whole body of what we erroneously call Arab art (for the Arabs never had any art), from Ispahan to Granada. In the West it settled itself in the parts of Italy that Justinian had conquered, notably Ravenna, and thence came to Venice. From Italy, or perhaps even from Byzantium itself, it was carried into Germany and pre-Norman England, touching even Ireland and Scandinavia. Rome adopted it, and sent it another route through the South of France, where it fell under the influence of provincial Roman architecture, and produced a very strong, orderly, and logical sub-style, just what one imagines the ancient Romans might have evolved if they had been able to resist the conquered Greeks that took them captive. Then it spread all over France—the first development of the architecture of the most architectural people—and, in the north of that country, fell under the influence of the Scandinavian and Teutonic tribes, and produced the last of the round-arched Gothic styles we call Norman, which those energetic warriors carried into Sicily, where it blended with the Saracenic Byzantine, and produced lovely works. But we know it best in our own country, for Duke William's intrusive monks used it everywhere, and it drove out the native English style derived from Byzantium through Germany. It was the first style since the invention of the arch that did due honour to it, and instead of concealing, decorated it in a logical manner. It had shaken off the letters of Greek superstition and aristocracy, and Roman pedantry, and though it must needs have had laws to be a style at all, it followed them of free will and unconsciously. The cant of the beauty of simplicity—viz., bareness and barrenness—did not affect it. It was not ashamed of redundancy



of material, or superabundance of ornament, any more than nature is. Material was not its master, but its servant. Marble was not necessary to its beauty. Stone would do or brick or timber. Smoothness it loves, and the utmost finish that the hand can give; but, if material skill fail, the rougher work can so be wrought that it also shall please us with its inventive suggestion. During the 12th and 13th centuries, as far back as the art of beautiful building is concerned, France and England were the architectural countries *par excellence*. The period in which Gothic architecture reached its zenith was marked by the Battle of Courtray, where the chivalry of France turned their backs in flight before the Flemish weavers. All over the intelligent world was spread this bright, glittering, joyous art, which had now reached its acme of elegance and beauty. Dante, Chaucer, Petrarch, the German hero ballad epics, the French romances, the English forest ballads, the Icelandic Sagas, Froissart, and the chroniclers represent its literature. Its painting embraces a host of names of Italy and Flanders chiefly, the two great realists, Giotto and Van Eyck, at their head. The few pieces of household goods left of its wreckage are marvels of beauty; its woven cloths and embroideries are worthy of its loveliest building. In the middle of the 14th century Europe was scourged by that mysterious terror, the Black Death, and in the years that followed it Gothic architecture began to alter its character. It began to lose its exaltation of style, and to suffer a diminution in the generous wealth of beauty which it gave us in its heyday. In England it grew more crabbed and even commonplace. In France it lost order, virility, and purity of line. At last, at the close of the 15th century, the great change became obvious. This change we have boastfully, and as regards the arts, called "The New Birth." In short, the age of commercialism was being born. There are many artists at present who do not sufficiently estimate the enormity, the portentousness of this change, and how closely it is connected with the Victorian architecture of the brick box and the slate lid, which help to make us the dullards that we are. St. Peter's in Rome, St. Paul's in London, were not built to be beautiful and convenient. They were not built to be houses of the citizens in their moments of exultation, their supreme grief or hope, but to be proper and respectable, and therefore to show the due amount of cultivation and knowledge of the only people and times that in the minds of these ignorant builders were not barbaric. From this brief historic review of the progress of the arts it results that to-day there is only one style of architecture on which it is possible to found a true living art which is free to adapt itself to the varying conditions of social life, climate, and so forth, and that style is Gothic. What we now call architecture is but an imitation of an imitation of an imitation, the result of a tradition of dull respectability or of foolish whims without root or growth in them. It is true that the world is uglier now than it was 50 years ago; but then people thought that ugliness was a desirable thing, and regarded it as a sign of civilisation, which no doubt it is. Art cannot be dead so long as we feel the lack of it. Unhappy and slavish work must come to an end. In that day we shall take Gothic architecture by the hand, and know it for what it was and what it is.

## CARPENTRY AND JOINERY.—XXIX.

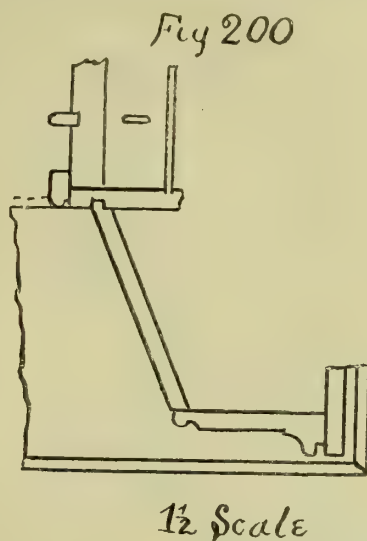
## FINISHING OF WINDOWS.

**B**EFORE dealing with framed jamb linings, splayed linings will occupy our attention for a little; and these, as their name indicates, are bevelled or inclined so as to allow more light to enter the room, or rather to allow of its rays diverging, so as to illuminate the room much better. This method of finishing gives also more space in the room.

Fig. 200 gives a plan of such a style of finishing provided with a window-board. It will be understood, for the purpose of this finishing, the wall is built level to the bottom of the sill of the frame; wood blocks are usually built in to nail the window-board to; if these blocks are not level both ways, pieces are nailed to them to make them so. The jambs are splayed in building, and bond timber is built in or other provision made for fastening the splayed linings to. It has been already treated of, the method of grounding for such finishing.

Fig. 200 shows the breadth of window-board

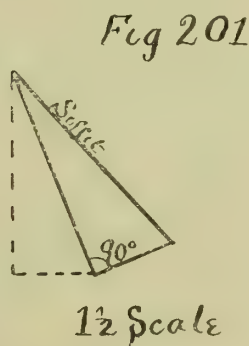
required. Of course, in practice, the rough walling will require to be lined down on the drawing board or rod, and the distance from the inner face of the frame to the inside of rough wall, which, with the addition of  $\frac{1}{2}$  in. or lin. for plaster, will give the distance measured square.



Having set this out, then, all the other can be drawn after that. It is customary, unless the window is very large, just to fit the respective parts, that is soffit board or bottom, and jambs, and then take out and nail them together and put the whole back again and fasten in its place, viz., to the casings and grounds. When the window is very large, each piece is fastened in the order of soffit, window-board and jambs. Sometimes these splayed linings are formed of sheeting in narrow widths; if so, the above arrangements would be adopted. The sheeting should be of such width as that the breadth would be equal, and if the soffit is level, narrower widths would be required in order that the V or beaded joints would correspond. The only point calling for particular notice is how to get the bevells where the jambs join the soffit.

It will be readily seen that the plan, Fig. 200, shows the inclination of the jambs. Now if the soffit has the same splay as the jambs, Fig. 201 shows how to obtain the full (real) length of the line along the top of the jamb, so that it will correspond with the inclination of the soffit.

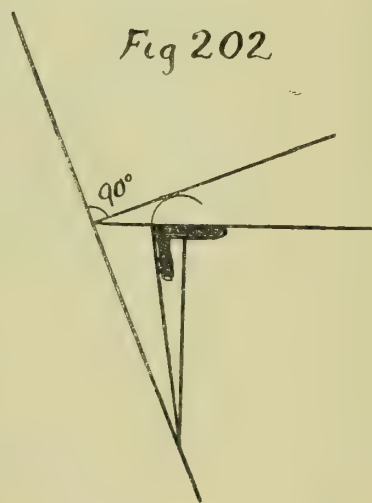
In Fig. 201 dotted lines show the distance from the face of the frame inwards and the



amount of inclination the jamb lining has to the square; in other words, the hypotenuse of the triangle of which the other two sides are shown by the dotted lines. This is the plan of the jamb-lining shown in Fig. 200. From one extremity of the hypotenuse draw a line at the angle of  $90^\circ$  with it, as shown; measure along this line the inclination of the jamb-lining from the right-angle, in other words, the amount of splay, and you have, by joining this point with the other extremity of the hypotenuse, another hypotenuse which is the length of the line which must be measured along the face of the jamb-lining at the end, which is intended to fit to the soffit. That is, the second hypotenuse is the intersection of the jamb-lining with the soffit.

Now, it will be understood that given a certain width of board (the breadth of jamb-lining as shown in plan), the length of a line across that board determines a bevel. The shortest line across a board is at right angles, and you can have almost any inclination across it after that. The other bevel, that is that on the end grain, is obtained as follows:—

In Fig. 202 the inclined line on the left is the splay of the jamb-lining, a horizontal line is drawn from a (any) point in this, and from this same point a line is drawn at right angles to the inclined line. Take any point (convenient) in the horizontal line, and for a radius that which will touch the line at right angles to the inclined one, describing an arc terminating in the horizontal line, project down the centre of the base of the cone, and join the point where this projector meets the inclined line with the point in which the arc terminates in the horizontal line, and you have the part elevation of a cone, and this is also the bevel required for the top end of the jamb-lining, so as that it will fit tight against the soffit. This method is given by Riddell in his "Carpenter and Builder" for a somewhat similar purpose to this. A ready method to get this end grain bevel is to divide the amount of inclination the jamb lining has into eight parts, and having taken three of them set the bevel to that, and it will suit. It can be readily seen that the soffit and window-board may be *trenched* for the jambs, if all is nailed together before being put in; but if not, pieces can be nailed on soffit and board so as to nail the jambs to after they have been fitted. The pieces nailed on the soffit



require to have the edge bevelled a little to correspond with the bevel on the top end of the jamb, so that the jamb may lie close against it. These bevells apply also to framed jamb linings; but a simpler method will be stated for the splay blocks where there are shutters. When the jamb-linings, window-board, and soffit are all in position, and nailed, the grounds for the architraves can be put up, which, with the architrave level on the back side as shown in Fig. 200, would fill a straight edge laid against the edges of the jamb-linings. Of course, it might be necessary, and often will be, to have the grounds of the architraves up in order to meet the plastering, in such a case, a parallel distance from the inner face of the frame will guide the workman. The architraves require to be scribed and fitted neatly to the window-board.

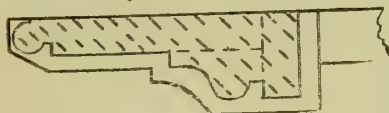
In regard to mitring the head, if the architrave has been *got out of the solid*, it must be mitred through; but if the architrave is *built*, that is, if the moulding is nailed on to the *architrave plate*, then the plate of the top architrave may be mitred as far as the bead only, similar to what was described in Fig. 194; and when this part has been fitted, the moulding is fitted and the plate taken down, and the moulding nailed permanently to it; before taking moulding and plate down, however, the moulding should be tacked to the plate or so marked as that it can be put in its right position when permanent nailing is being done. Now nail the top architrave firmly in its place to the grounds provided for it, and the best ground at the angle is one the length and breadth of the *breadth* of the architrave, this forming a good foundation at each



upper corner. If the plastering is done (which in case of good work it will be), scribe the capping to the wall and window-board and nail it to, mitring the side pieces with the head at least  $\frac{1}{2}$  in. or lin. back. If thought advisable, a small bead, say  $\frac{1}{8}$  in., may be wrought on the capping to break joint with the plaster. There may in some cases be reasons why the window-board should not occur, under which circumstances the building will require to be accommodated to the altered design—that is, the window will be recessed.

The building (brick or mason work) from the sill of the frame downwards to the floor will be plumb with the inner face of the sash frame, and the jambs will be splayed from the level of the floor to the lintel over the window-frame. The jamb linings will be continued to the floor similar

Fig 203



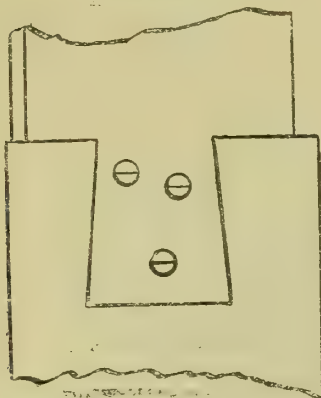
3" Scale

to what was described of the narrow square linings, only, of course, in this case they are splayed from floor to soffit, and the building under the window frame is hidden by a window back, such as is shown in Fig. 199. It will be understood that the architrave and capping continue to the floor. The skirting of the room will abut against the capping under these circumstances. Here, perhaps, it is well to mention, and it will likely be referred to again, that it is no uncommon thing for the skirting to abut against a block (base-block) attached to the bottom end of the architrave.

Fig. 203 gives a plan of a simple kind of block suitable for this purpose. The plan of the architrave has sectional lines drawn through it to allow the plan of the block to be distinct.

Fig. 204 shows the part elevation of block, and

Fig 204



3" Scale

also part of the architrave, indicating how the connection is made—viz., by a dovetail which is glued and screwed—of course, the dovetail is sunk only, say,  $\frac{2}{3}$  the thickness of the architrave. That is, one third of the thickness of the architrave, where the dovetail is formed, is taken away from the front or face side of it. The method shown in Fig. 204 is somewhat superior, as oftentimes there is no dovetail, the part let into the block being parallel both ways, and the necessary groove is taken out of the block throughout its entire length at the circular saw bench; and even lengths of blocking are grooved in this way, and cut to the necessary lengths afterwards. It is even the case that the block is scribed to the floor and fastened in its position, and then the architrave scribed down upon it without any connection at the back, merely resting upon the block. This method, of course, saves labour and material.

Whenever the method shown in Fig. 204 is adopted, the blocks are wrought and fitted and attached in the workshop, and care must be taken to pair the blocks and architraves. The height of the block varies, of course; first, according to the depth of the skirting or plinth, and, in addition, according to the style of plinth. Sometimes a small scotia, as shown in Fig. 205, is wrought upon the plinth, and this would be

Fig 205



2" Scale

worked upon the base-block, and the top of the block and the line of the top of the plinth would be continuous, the base moulding being stopped against the capping of the architrave. The window-back being fitted in between the jamb linings, sometimes a plain plinth is fixed against the back, and none along the jamb linings; but if the jamb linings are framed, the plinth is usually carried around these also.

#### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE tenth sheet of architects' portraits is given herewith to-day, commencing with Mr. George Gordon Hoskins, F.R.I.B.A., of Darlington, the architect of the new town-hall and municipal buildings, Middlesbrough, which he won in open competition in 1882. Mr. A. Waterhouse, R.A., acting as assessor. Mr. Hoskins commenced practice in Darlington in 1864. His quarter of a century's work embraces a list of buildings too numerous to refer to here; but we may mention mansions—Elm Ridge, for the late Mr. John Pease; Woodburn, for Mr. Theodore Fry, M.P.; Dryderdale, for the late Mr. Alfred Backhouse; Blackwell, for the late Mrs. Eliza Barclay; The Rookery, for Mr. Jonathan E. Backhouse; and the rebuilding of Blackwell Grange for Sir H. M. Havelock-Allan, Bart., V.C., M.P.; Banks at Sunderland, Bishop Auckland, Middlesbrough, Barnard Castle, and Thirsk; the Johnson Memorial Hospital, Spalding; the Darlington Fever Hospital, also the new infirmary and dispensary; the Queen Elizabeth Grammar School, Darlington; the Henry Smith High School, Hartlepool; Mrs. J. B. Hodgkin's Training Home for Girls, Darlington; the Gas Company's offices, Sunderland; the Edward Pease Free Library, Darlington; the Hartlepool's Exchange, West Hartlepool; cemetery chapels and lodges at Darlington and South Stockton, and many other buildings both of a public and private character throughout the north-eastern counties. Mr. Hoskins's *chef-d'œuvre* is the Middlesbrough Buildings, which were opened by their Royal Highnesses the Prince and Princess of Wales on January 23 of last year. A perspective view and notice of these buildings appeared in our issue of January 18th, 1889. Mr. Hoskins is immediate Past-President, and now one of the Vice-Presidents, of the Northern Architectural Association. Mr. Hoskins is also the author of several professional works, those best known being "Designs for Chimney-pieces" and "The Clerk of Works." His portrait is from a recent photograph by Mr. James Cooper, of Darlington.

Mr. Thomas Worthington, F.R.I.B.A., is a native of Manchester, and was articled to the late Mr. Henry Bowman, of that city. During the period of his pupilage he obtained the Gold Isis Medal of the Society of Arts, Adelphi, London, for an architectural design, and

also the Institute Silver Medal of the R.I.B.A. for an essay on the "History and Manufacture of Bricks." After completing his articles he spent about two years as an assistant to the late Sir W. Tite, residing during that period at Carlisle, in connection with the Citadel Station, and was also there engaged in the preparation of plans for a large number of stations and other buildings for several of the railways then in course of construction in the North of England and Scotland. Subsequently he spent a year in foreign travel and study, chiefly in Rome and several of the more important Italian towns. On his return to England in 1850—although some inducements were held out to him to settle in London—he decided to commence practice in Manchester, where he at once took an active part in the proceedings of the Local Committee of the Great Exhibition of 1851, to which he acted as secretary. He has made hospital architecture a special study, and has built a considerable number of hospitals. Some of his more important works in Manchester are the Memorial to the late Prince Consort, the City Police and Sessions Court-house, the Nicholls Hospital for the education of one hundred poor boys, the Churchwardens' and Overseers' Offices, several blocks of public baths and warehouses, and numerous churches, schools, and country residences in the neighbourhood. He has also carried out many works in other parts of the country; but his practice has been chiefly in the Northern and Midland Counties. Mr. Worthington, apart from his profession, has always taken a deep interest in the promotion of art education. He has served for about forty years on the Council of the Manchester School of Art, and for nearly as long a period on the Council of the Royal Manchester Institution. For many years he acted as honorary secretary to the latter institution, and was for a long period chairman of its Exhibition Committee previous to the transfer of the Institution to the Corporation of Manchester, since which time he has been one of the seven representative members on the City Art Gallery, elected by the Governors of the Royal Institution. He has twice filled the office of President of the Manchester Society of Architects and once of the Manchester Architectural Association. For many years he was a member and frequent attendant at the Council of the R.I.B.A., from which he retired a year ago, after serving for four years as one of its vice-presidents. In 1881 Mr. Worthington took into partnership his former assistant, Mr. Elgood, and among their more recent works is the Harrogate Bath Hospital, which was opened last year by H.R.H. the Prince Albert Victor of Wales. They are now engaged in preparing plans for the Manchester New College, Oxford, the works for which will commence very shortly. Mr. Worthington resides at Alderley Edge, Cheshire. His portrait is the work of Messrs. A. Brothers and Co., of Manchester.

Mr. T. Mellard Reade, F.R.I.B.A., President of the Liverpool Architectural Society, is architect to the Liverpool School Board—an office he has held for over 14 years. He has erected during that time eleven public elementary schools, of various types, of from 1,000 to 1,300 scholars each, the Truant Industrial Schools at Hightown, Day Industrial Schools in Queensland-street and Addison-street (the latter in progress), as well as many extensive additions to other schools. Among other school work he was architect to the Wallasey Grammar School, the Birkenhead Institute, the Training College for Teachers, Edge-hill; the Reckleford-street Board Schools, Yeovil, Somerset; the British School, Penmaenmawr; additions to Dr. Williams's School for Girls, Dolgelly, and various church schools. Among other of his works are the Llandudno Junction and Llanwrst Stations, private residences, Ramleh, for Sir W. B. Forwood; The Lodge, Edgewater; Ingle Lodge, Holmside, Seacroft, Uplands, The Glen, Beach Side, and other residences on the Blundellsands Estate, which was laid out by Mr. Reade for Col. Blundell. Additions to Little Crosby Hall, for Col. Blundell; Bassenfell, Westmoreland; and Holms Hey, Sefton Park, for Mr. Sam Rathbone; completion of Muncaster Hall, for Mr. R. Pennington; additions to Druid's Cross, for Col. A. H. Brown, M.P., &c., &c., also business premises and residences in various parts of the country. Mr. Reade is an Associate Member of the Institute of Civil Engineers, and has devoted much attention to



sanitary engineering, having, in conjunction with his late partner, Mr. Goodisson, carried out the sewerage of Much Woolton, Walton-on-the-Hill, Birkdale; and since that of Hightown; part of Great Crosby, Blundellsands, &c. As a practical geologist, and Fellow of the Geological Society, Mr. Reade's services are in request in cases of underground water supply, stability of sites of embankment foundations, tunnels, stone quarries, and kindred geological questions. He is the author of about 50 scientific papers, mostly on geology, which have appeared in the Proceedings of various scientific societies, and in scientific journals at home and abroad; he is a corresponding member of the New York Academy of Sciences, and author of the "Origin of Mountain Ranges," a scientific work published in 1886. The photograph of Mr. Reade is from the studio of Mr. Barraud, of Oxford-street, W.

Mr. Charles John Phipps, F.S.A., F.R.I.B.A., commenced practice in Bath in the year 1853, and removed to London in 1866. He was born in 1835, and was articled to Messrs. Wilson and Fuller, of Bath, with whom he remained till 1857. His first work was the rebuilding of Bath Theatre in 1862, after the fire. His principal works in London comprise—The Devonshire Club, St. James's-street; the Lyric Club and Prince of Wales Theatre in Coventry-street, forming externally one block of buildings; the Gaiety, Savoy, Haymarket, Shaftesbury, Lyric, and six other theatres; the Savoy Turkish Bath; The Mansions, No. 1, Portland-place (flats); Hengler's Cirque, Argyle-street; the pavilion buildings and ball-room of the Star and Garter Hotel, Richmond. Amongst 27 theatres in the provinces may be named those at Exeter, Bath, Bristol, Plymouth, Portsmouth, Brighton, Nottingham, Worcester, South Shields, Darlington, Leicester, Northampton, Leamington, Liverpool; the Royal and Lyceum Theatres, Edinburgh; the Opera House, Aberdeen; the theatres at Belfast, Cork, Londonderry, and the Gaiety, Dublin. Amongst other works—the Leinster Hall, Dublin; the barracks and stores for the Militia, Bath; schools and mortuary church at Pewsey; schools at Lea, and rebuilding of Lea Church. He holds the appointment of architect to the Company of Proprietors, Drury-lane Theatre, and for two years was a member of the Council of the Royal Institute of British Architects. His portrait is by Mr. Bassano, of Bond-street.

Mr. H. H. Bridgman, F.R.I.B.A., is a native of Torquay, Devon, and is 44 years of age. He was educated at Chudleigh Grammar School, Devon, and commenced as architect and surveyor at Torquay in 1861, and was subsequently for six or seven years engaged in assisting in laying out some estates and designing villas and terraces. In London Mr. Bridgman was with Mr. John Gibson, Westminster, and in 1869 he was elected one of the surveyors to the St. Pancras Vestry, under Mr. William Booth Scott, C.E., chief surveyor. He has been practising as an architect and surveyor on his own account since 1871. In 1875, in consequence of the death of his brother, Albert Bridgman, also an architect, he succeeded to his practice. Mr. Bridgman designed a comprehensive scheme for a central fish market for London, proposed to be erected on the Lambeth side of the Thames, and projecting over the river between Waterloo-bridge and Charing-cross railway bridge. This plan obtained the Corporation of Liverpool Prize of Fifty Guineas at the International Fisheries Exhibition, 1884. Both the essay and design were subsequently published. He also obtained first place, with a prize of £100, awarded by the Society of Arts, 1885, in the Westgarth Competition for the best essay on "Street Re-alignment and Reconstruction of Central London," to meet the future needs of the traffic of the metropolis. Mr. Bridgman is patentee of the new street-watering post adopted in the metropolis, and of the Ligno-concrete system of fireproof flooring, which obtained a silver medal at the Inventions Exhibition, 1885; also of a new combination rolled iron joist for economising girder construction. His travels have extended through the Netherlands, France, Italy, and in the Mediterranean from Spain to Egypt. Mr. Bridgman entered the Corporation in 1884, and is a representative of the Ward of Cheap in the Court of Common Council, the central ward of the City, and has been three times churchwarden of the parish of St. Mary Colechurch, Poultry; and is a member of the Wheelwrights' and Glovers' Companies. He is also a member of the

Commissioners of Sewers. Mr. Bridgman has filled the chairmanship of the Gas and Water and Law and City Courts Committees of the Corporation, and is a member of the Bridge House Estates Committee, and now of the City of London School Committee. He commenced practice at Camden Town, St. Pancras, some of his first works being the reconstruction and extensive additions to the St. Pancras Vestry Hall, obtained in open competition; also the lying-in wards, dining-rooms, kitchens, &c., at St. Pancras Workhouse for the Guardians of the Poor, at a cost of £35,000; the Canterbury Music Hall, Lambeth; reconstruction of St. Anne's Home, Streatham-hill, for the St. Pancras Guardians. Amongst other works carried out by him since are the following:—The "Mother Red Cap," Camden Town; the Camden Turkish Baths; Bushby Board Schools, obtained in competition; Steyning Union Infirmary, Sussex; 25 houses and shops, Camden Town; 13 ditto at Kentish Town; warehouses and business premises in Chancery-lane, St. Bride's-street (five warehouses), Railway-place, Fenchurch-street, Queenhithe, Buckingham-street, Strand, and Queen-street, City; private residences at Highgate (terrace of 20), Hadley, Barnet, Ilford, Tottenham, Clapton, Anerley, Brondesbury, and Willesden; Memorial Fountain and new schools, St. Stephen's Church, Westminster, for the Baroness Burdett Coutts, and stud stables at Holly Lodge, Mission Halls at Islington; Reredos, St. Thomas's Church, Blackburn; and numerous smaller matters. He was architect for laying out the Ashburnham Estate at Bedford, where about 60 detached and semi-detached villas have been erected since 1881, and expended £50,000 in the Lansdown, Linden, Dynevor-roads, and Waldeck-avenue for the Mayor of Bedford, and has also been engaged as architect to the Baroness Burdett-Coutts. Mr. Bridgman was appointed architect to the Kensington Board of Guardians in July, 1886, and was engaged on important improvements at the workhouse and infirmary buildings at a cost of £33,000. His portrait was produced by Mr. Bassano, of Bond-street.

Mr. Archibald M. Dunn, of 23, Eldon-square, Newcastle-upon-Tyne, is the senior partner in the well-known firm of Messrs. Dunn, Hansom, and Dunn. Previous to being associated with his partner, Mr. Hansom, Mr. Dunn was known in connection with many R.C. churches and other buildings in the North of England, the most notable amongst his churches being the large Romanesque one built for the Dominicans at Newcastle-on-Tyne. Many of his important works have been done in conjunction with Mr. Hansom, such as the colleges and chapels at Stonyhurst for the Jesuits, and the church and college at Downside for the Benedictines—all on a large scale; the College Chapel at Ushaw, St. Bede's College, Manchester (terracotta), and the New University College of Medicine at Newcastle, &c. Amongst the churches in various towns their most important is the new Roman Catholic Church at Cambridge, hardly yet completed, and of which we gave a view in the BUILDING NEWS for June 26, 1885, and we shall shortly give an interior of the building. Mr. Dunn appeared as an author a few years ago, publishing "The Notes and Sketches of an Architect." In the BUILDING NEWS for Feb. 28 last we published the portrait of Mr. Hansom, and gave at the same time a list of the more remarkable buildings carried out by this firm, so that a repetition here is unnecessary. Mr. Dunn's portrait is by Mr. Downey, of Ebury-street, S.W.

#### THE EDINBURGH INTERNATIONAL EXHIBITION.

RAPID progress is being made with the preparation of this exhibition for the opening ceremony by the Duke of Edinburgh, on Thursday week, 1st May. Ten days since the buildings were practically completed, and the workmen are now decorating the building and erecting the stands for the exhibits, and joiners and painters are alike kept busily employed. The members of the Edinburgh Architectural Association, to the number of upwards of a hundred, visited the Exhibition on Saturday afternoon, and were conducted over the buildings and grounds by Mr. W. Allan Carter, C.E., the architect. Starting from the east entrance, the party passed through the various courts, beginning with those set apart for the foreign exhibits, and visiting in turn the

music hall in the centre of the building, the British section, the art galleries, and the machinery department, finishing up with an inspection of the grounds. The different courts have still an empty appearance, very few of the stands being as yet erected, and none of the exhibits placed in position. The recreation ground with its track has been completed; the electric railway has been laid; the construction of the Chemin-de-fer Glissant, a water-power railway brought over from France at a cost of £2,000, is in an advanced state; the double switchback line has been finished, and is in a working condition; and good progress is being made with the building for housing the panorama of Trafalgar. At the close of Saturday's visit, Mr. W. W. Robertson, of Her Majesty's Board of Works, proposed a vote of thanks to Mr. Carter, and, in doing so, expressed the high opinion which the party had formed of the skill and taste displayed in the construction of the buildings.

#### CHIPS.

The parish church of Giggleswick is about to be restored, from plans prepared by Messrs. Paley and Austin, of Lancaster.

The local board of Alfreton have accepted the tender of Mr. E. Tempest, of Leicester, at about £6,500, for the enlargement of the reservoir at Butterby, near Ashover, in accordance with plans prepared by the engineer, Mr. V. Hill.

A circular has been issued by the vicar and churchwardens in connection with the restoration of St. Mary's Church, Barton-on-Humber, in which it is stated that a careful inspection has been made by Mr. James Fowler, F.S.A., of Louth, who estimates the total cost of the repairs to be about £1,650. This includes the reflooring and reseating the nave and aisles, additional stove, new south door, cleaning down the masonry, rebuilding three columns of the south arcade which are unsafe, restoring the masonry of the windows and reglazing them, opening out the tower arch and other work about the arch, restoring St. James's chapel, and lowering the soil on three sides of the church.

The parish church of St. Michael at Meath, near Tottington, is about to be restored, from plans by Messrs. Medley Fulford and Harvey, of The Close, Exeter.

Mr. George Palmer, formerly M.P. for Reading, has just provided a park of 49 acres at the east end of the town for the benefit of the inhabitants. He will fence in the land, plant trees, and lay it out for games and for public gardens. Mr. Palmer has already given over 20 acres in another part of the town for a public recreation ground near the Thames.

The organ in St. Giles Cathedral, Edinburgh, is being considerably enlarged. A 32ft. open diapason to pedals is to be added, also many other important stops, and the whole instrument renovated and adjusted. Mr. Eustace Ingram, of London, is carrying out the work.

The new railway-station and pontoon for Dartmouth, situate on the opposite bank of the Dart, were opened for traffic last week. They have been constructed for the Great Western Railway Company, from plans by Messrs. Margery and Elans, their engineers for the Plymouth section, and the contracts have been carried out by Mr. Jinkin, of Plymouth.

The Duke of Connaught laid at Hong-Kong last week, with great ceremony, a stone commemorative of the scheme for carrying forward the sea wall about a mile, and adding to the town an area of about 60 acres.

A mural brass has been placed in one of the panels of the north aisle of Winchester Cathedral by Messrs. Hart, Son, and Peard as a memorial of 133 officers, non-commissioned officers, and men of the Rifle Brigade, who were killed or died in the Burmese campaign from October, 1883, to March, 1888. The apex of the tablet has a cross surmounted with a crown and with the label I.H.S.; under this the regimental badge and honours in bronze, and the angles of the brass the Light Infantry horn, all in relief. A margin of laurels runs round the brass, and the lily decorates the upper part round the cross.

Mr. Richard Fawcett, C.E., has resigned his position as manager to the Hopton Wood Stone Company, which he has filled for several years past, and the appointment has been accepted by Mr. John Simpson, M.S.A., surveyor, &c., of Buxton.

The rural sanitary authority of Pocklington, Yorks, having applied to the Local Government Board for sanction to borrow £4,200 for sewage works for the parish of Pocklington, Col. Hasted, R.E., Local Government Board Inspector, held an inquiry there recently. Mr. Bohn, C.E., of Hull, explained the scheme.



## WAYSIDE NOTES.

A FITTING companion to the story of the punting-pole operation at Tintern Abbey may be found in the action of a company of English soldiers who recently amused themselves with breaking off pieces from the weather-beaten visage of the great Egyptian Sphinx. Such, at least, is the tale of "A Pittsburgh Member of the American-Egyptian Exploration Fund," who, writing to an evening contemporary, complains bitterly of this act of vandalism. On or about March 4, he says, a company of soldiers were taken to drill to the Pyramids of Gizeh, and while there essayed to climb the hoary granite head—of "comely" mien, according to the author of "Eothen"—and endeavoured to procure chips, as relics doubtless. Perhaps they didn't do a vast amount of damage, since it was stone against stone, or granite against granite, at the worst, and destruction cannot be reeked at any great rate of speed where the weapon is no harder than the material assailed. So I don't think the authorities will take the Pittsburgher's hint and dismiss the officers of the company: but the playfulness of Tommy Atkins should be restrained if it exhibits itself in the chipping of the only Sphinx, and it certainly should be the duty of officers to shield from harm the venerable monuments of remote antiquity that are to be found in the land that our soldiers are intrusted to protect.

Destruction, of malice aforethought, proceeds apace in Sicily. Mr. E. A. Freeman, in a communication recently made to the *Times*, complains of the havoc in old buildings, of historical and architectural interest, wrought at Palermo by the municipal authorities, who, in their zeal for innovation and modernising, are not only destroying material creations, but effacing memories by re-naming thoroughfares that have so long borne designations proclaiming to all their antiquity and their intimate association with classical times. Mr. Freeman wrote from Taormina, and bewails the loss of many a landmark in Sicilian history. Nor is he alone in his protests, for many known and learned Sicilians are complaining of the same destruction, a writer, under the name of "Panoritan," having contributed a lengthy article to the *Giornale di Sicilia* upon the subject of the destruction at Palermo. Most deplorable among the recent doings of the zealous municipal reformers are the destruction of the wall just north of the Porta Nuovo, and the resolution to destroy the Favara of King Roger—one of the country houses of the Norman kings. To ourselves it would appear that an ancient wall containing "drums of Greek Doric columns" would be a feature for any city of modern times to preserve with just pride. Not so the reformers of Palermo. It ruthlessly goes "by the board." So also the Favara of King Roger being an "admirable example of the style in which their (the Norman kings) Saracenic artists built for them," one would consider it a work to be carefully preserved for the general public delight; but, according to "Panoritan," its death warrant is signed and its destruction merely a matter of time. And this, says Mr. Freeman, "is the way in which men in Sicily can rage against the monuments of the age in which the Sicilian kingdom was the wonder of mankind, when Palermo had no rival save Constantinople and Cordova."

Whilst the St. Alban's scandal exists, it is impossible for any Englishman to hold up his finger and point with scorn at the action of the Palermo municipal authorities. Moreover, unlike much of the vandalism in this country, the Palermo destruction is wrought under the plea of sanitary reform, and the men responsible for the destruction of, and intention to destroy, many more interesting structures than the Porta Nuovo wall and the Favara of King Roger doubtless persuade themselves that they have easy consciences. More light and air may be required by the inhabitants of Palermo, though it is difficult to see how the alteration of the names of ancient thoroughfares will assist sanitation, and it is easy to imagine that reforms might have been carried out without necessarily pulling down historic buildings. Nevertheless, such has been done, and will continue to be done, unless the small numbers of protesting Sicilians gain in power and are able to restrain the destruction. This, however, would seem to me to be a very remote eventuality in a country like Sicily. It would

seem, indeed, that the authorities at Palermo are fired with a desire to emulate Rome, and to Romanise everything in connection with their city. And it will be remembered how, a very short time ago, complaints got abroad as to the destruction, and rumoured destruction, of ancient buildings at Rome.

The death of the discoverer of the ruins of the wondrous Temple of Diana at Ephesus has been greatly deplored on all sides, and if the loss is not outwardly apparent, it is because Mr. Wood was of too modest and retiring a disposition to keep his name before the public. If not externally a marked incident, his death is yet a matter of the deepest regret to those who knew him, and who knew his works, and have stood in wonder and astonishment before the fragments of beautiful Grecian workmanship—now resting in the galleries of the British Museum—which his laborious and indefatigable researches brought to light, and which testify to the pristine glory of a truly magnificent temple. To me, the discovery of the Temple of Diana is one of the most fascinating and romantic incidents in the history of architectural and archaeological research. It appeals strongly to the imagination, and the discoveries made supply just so much information as to enable us to gain some idea of the original structure. And with such a building it is only in our own imagination that we can conceive some sense of its former glory. Paper restorations are useless, nay, to many, they are worse than useless. To delineate a Classic temple the beauty of which was dependent on its grand scale and the perfection of its sculptures, is to vulgarise and disgust our own imagination, just as we are disgusted when we find the heroine of a romance, though winning our admiration in the description, yet represented on the cover of the book as a positive guy. Paper restorations I much dislike, and class with the fancifulness of travellers' tales, preferring, if I would get at some idea of the original structure, to become familiar with the plan and extent of the remains and then to stand before accessible fragments of detail such as those of the Temple of Diana, and give free play to my own imagination. Of course, if any one had a right to restore, on paper, this beautiful Classic fane, it was Mr. Wood; but the sculptured drums and graceful capitals, and other fragments in the possession of the trustees of the British Museum are really, as guides to the what was and has passed away, of more value than all the restorations in the world. The latter are to the material remains as the word is to the deed.

Archæological discoveries continue to be made in the course of the excavations conducted under the auspices of the British School of Archæology. The labours of this School at Negalopolis, in the Peloponnesus, have resulted in interesting finds. The site of the Greek theatre reported to have been discovered may be more or less interesting, according to the remains found. Some interesting discoveries were made in a tumulus, but they seem of an insignificant nature. It is hoped, however, that further examination of the interior of the tumulus will result in more finds. The relics already found are noteworthy as including two pieces of gold ornament similar to those discovered by Dr. Schliemann at Mycenæ and elsewhere.

Sheffield is accredited with having the most abominable atmosphere of any city or town in England, and it was fitting that a place so smoky and gloomy should have been selected by Mr. Ruskin as the site for a museum for his art treasures, since people under the influence of smoke and fog require objects of beauty to which they may turn when opportunity occurs. Mr. Ruskin's museum has now been reorganised, and should be an increasingly valuable possession to the great cutlery-making town. Hereto the museum was placed in an out-of-the-way corner of Sheffield, but now it is arranged at Meersbrook Park. Meersbrook Park is a pleasantly-situated piece of ground recently acquired by the Sheffield Corporation, who offered to Mr. Ruskin and the St. George's Guild—the trustees of which body will henceforth be associated with the management of the museum—the use of the "Hall" on condition they, the treasures, brought together by Mr. Ruskin, should remain in this spacious building for at least 20 years. It is said that the reorganised condition of the museum greatly enhances its usefulness, and as Meersbrook Park

is pleasantly situated and easily accessible, it is to be expected that the collection will be largely visited. We all know that it deserves to be highly valued by the inhabitants of Sheffield, who, in spite of the claim to consideration as dwellers in a smoky, fume-laden town, should consider themselves very favoured in having easy access to a collection of beautiful things that Mr. Ruskin has spared neither pains nor money to render complete.

It is somewhat of a relief to hear of competitions where the inaugurators take the trouble to select competitors, as this method of procedure must often save large numbers of men from throwing away their labour in vain efforts. I see that the guardians of the Grantham Union have adopted this principle in the competition they propose to hold for their new workhouse. It may be said that this system shuts out many young architects well qualified to compete, yet lacking credentials sufficient to warrant their being invited to compete. On the other hand, it certainly is a labour-saving device, and as such is to be welcomed in the competition world; for the great evil in the competition system is the waste of time, money, and patience it occasions to members of the profession. Perhaps it is too much to hope for a day when the public requiring the benefits—or evils?—of a competition will be expected to pay exes. out of pocket of competitors. If there is ever going to be any solidification and binding together in true brotherhood of the architectural profession, the idea may not be so Utopian as, at first sight, one may think. Meanwhile, however, we should welcome anything that tends to minimise the waste of labour.

The A.A. *soirée* to-night; pipes, baccy, and general good-fellowship, as heretofore on these pleasant evenings; and perhaps I may add an old hat that will be batter-proof, and whose style of architecture and manner of construction shall defy the clamorous rush for coats, &c., that, from past experience, one anticipates on these occasions.

Just another instance of the estimation in which "an architect" is held by the world in general, and will be till we get Registration. The *Times* this week, chronicling the death of Mr. Matthew Harris, late Nationalist M.P. for East Galway, who was evidently a man of mettle in many respects, and a good fellow, I have no doubt, says:—"He was originally a working bricklayer, but subsequently became a road contractor and architect, builder and contractor." If Mr. Harris's advancement in life came in the order recorded, it is apparent that his preparation for the discharge of his architectural duties was a little irregular; but the public knew little of that, and doubtless congratulated him when in due time he attained the higher dignities of builder and contractor. GOTH.

The Town Council of Luton have appointed Mr. Lovegrove, of Croydon, as Borough Surveyor.

A large clock and chimes have been erected this Easter at Portishead parish church, Somerset, by John Smith and Sons, Midland Clock Works, Derby. It shows the time on three skeleton dials, each 5ft. 6in. across, fixed in the upper part of the tower; the Cambridge quarter-chimes are played upon four bells, and the hours are struck upon the largest bell. The clock is fitted with all modern improvements to insure perfect accuracy of time-keeping. It has a double three-legged gravity escapement, and a very heavy pendulum, which is compensated so that changes in the temperature will not affect the timekeeping; there is also apparatus to continue the action of the clock during the time of winding, and a small dial on the frame by which all the various sets of hands may be regulated and set to time simultaneously. All the wheels throughout the clock and dial works have machine-cut teeth, so as to be perfectly accurate. The main frame of the clock is of one solid iron casting planed smooth, and all the wheels, levers, and other working parts are arranged upon it in such a manner that any separate part may be removed without interfering with the remainder; this is a great advantage in large turret clocks. Steel wire ropes of the best quality are used to carry the weights which work in one corner of the tower. The addition of this clock to the church will be of very great use to the town, where they have been short of a standard time-keeper. Messrs. Smith and Sons have recently fixed similar clocks at East Teignmouth Church, Thorncombe Church, and others in the West of England.

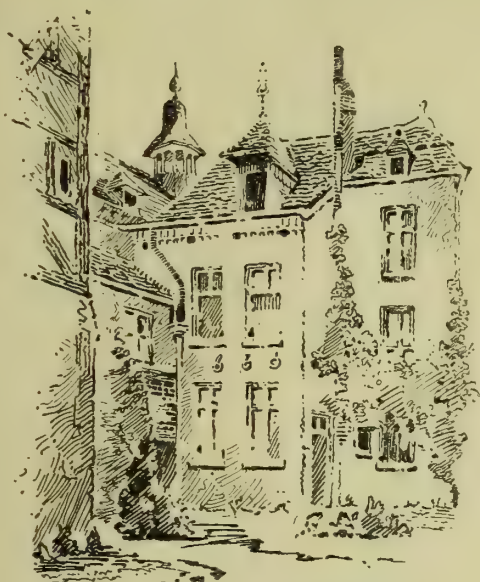




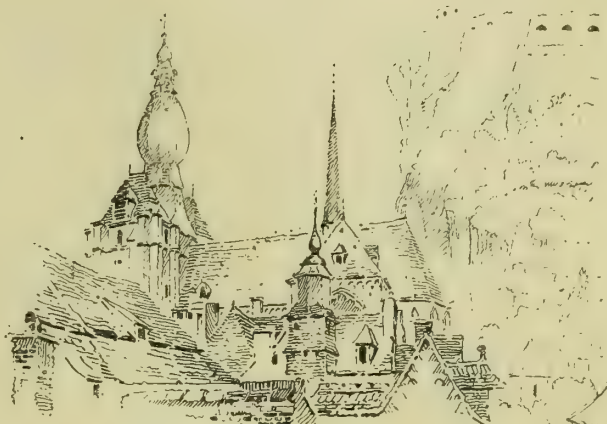




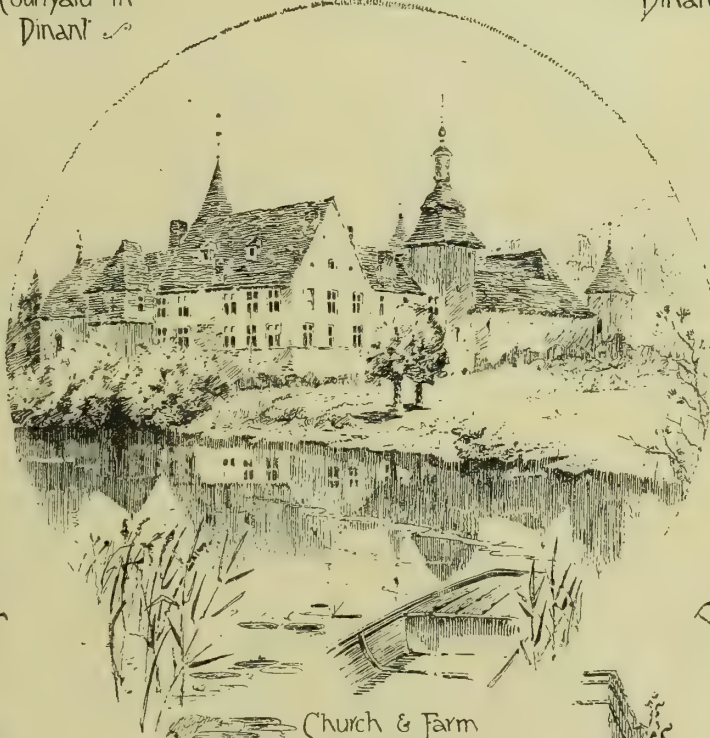




Courtyard in  
Dinant



Dinant Church



Sketches

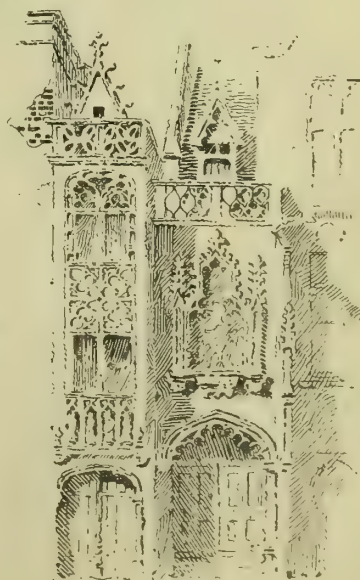
Belgium

Church & Farm  
at Cinserinme  
from



House in  
Brussels

Maison du  
Tonlieu  
Bruges



William H. Keel. del.  
1889







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## ILLUSTRATIONS.

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BATHS AT BRIGHTON.—CROOKSBURY HOUSE,  
FARNHAM.—BELGIUM SKETCHES.

## OUR LITHOGRAPHIC ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 546.)

PAINTINGS FROM THE ROOD-SCREEN, BARTON TURF,  
NORFOLK.

We published in the BUILDING NEWS for Nov. 15th and 29th, 1889, some drawings by Mr. C. J. W. Winter, of the celebrated screen at Ranworth, in Norfolk, and to-day, by permission of the Norfolk and Norwich Archaeological Society, we give a similar selection of drawings by the same hand, in illustration of the paintings on the Rood Screen at Barton Turf, and taken from the folio published some years ago by this Society, with notes contributed by the Rev. John Gunn, M.A., F.S.A., then Vicar of Barton Turf with Istead. The church was ruined by so-called "repair" in 1793, during the absence of the incumbent, who had gone abroad for a tour while the church was "done up." On his return he scarcely recognised the fabric, so completely had it been remodelled. Fortunately he saved the paintings on the screen. The benches of oak, enriched with carved poppy-heads, had been taken away to make room for deal family pews, which Dr. Hook called comfortable places to pray in. The fresco paintings on the walls, and the stained glass in every window, had altogether disappeared. Low-pitched roofs were put on in place of the ancient high-pitched ones, which were adorned with choirs of angels above and saints below, carved out of the solid. The nave was, in fact, ceiled flat, and the whole interior reduced to the character of a meeting-house of the period. The bells, said to be cracked, were sold, and the proceeds applied to this wanton piece of ignorant restoration. The absence of the vicar seems to afford but little excuse to be urged on his account, seeing that he ought to have been near to prevent such proceedings. Barton Turf Church is dedicated to St. Michael. The nave is in the Decorated style, and the tower, of good proportions, is said to have been built about 1400, the chancel being contemporary with it. The screen was erected early in the 15th century, though the paintings are somewhat later in style. The screen has a projecting cornice (enriched with the strawberry-leaf pattern), under which were covings springing from crenellated capitals on the main divisional uprights. The archway in the centre was richly crocketed, and there are remains of double-cusped tracery within the open interspaces of the buttresses facing east and west. The beam of the rood-loft has been removed, and the whole upper part is very much mutilated. The great attractions are the figure-paintings in the lower part. Every portion is richly gilt and painted. The subjects consist of the Heavenly Hierarchies, and of three female saints—viz., St. Zita and St. Apol-

lonia on the Gospel side, and St. Barbara on the Epistle side of the screen. For the convenience of our readers we will follow the order in which the figures are arranged on our sheet; but this is not quite the order in which they rank on the screen. The first figure represents one of the first order or choir of the Inferior Hierarchy, and coming under the term "Principalities." The figure is on a green diapered ground. The nimbus and crown are highly ornamented. The angel has four wings, with light red plumage. The girdle has two rows of bells, the upper ones with clappers, the lower circular. The tippet is richly embroidered and has a golden morse. A vessel like a bottle is held in the right hand, in the left is a palm-branch, indicative of the spiritual nature of their dominion. The second figure is a representation of "Thrones," and is on a red diapered ground. It occupies the second panel on the south side of the screen, instead of the first panel, its proper place, apparently for the better arrangement of the colours. The head is crowned with a wreath of golden oak-leaves, with nine rays of gold above. He has six wings of varied plumage, a plain tippet fastened with a golden morse, and a green mantle with jewelled border. A pair of scales in the right hand, and a throne upon the clouds in the left, indicative that the throne is established in righteousness. The third figure is that of an archangel on a red diapered ground. He stands on a citadel, which he guards in accordance with the description given in the *Aurea Legenda*, with a mace in his right-hand, and a sword in his left. The archangel wears a belt or girdle of bells of different sizes. A green mantle is thrown over all, and he is clad in plate armour without the hausse-col and helmet, but crowned with an embossed orle adorned with leaflets, with two wings above alone visible. The left solleret is partly shown. The fourth figure is an angel on a green diapered ground. Angels form the third order of the Inferior Hierarchy. Their representative here is placed on the last panel of the south side. He wears an ensigned crown upon flowing hair, and is vested, as at Southwold and other places, with the alb and girdle. An alms-box is attached to the girdle, and two naked figures (the conventional representation of souls) are kneeling upon what appears to be a rock. The right hand rests upon the breast, and in the left is a heavy spear of gold for the defence of those assigned to the angel's care. The fifth or last figure shown in the top row on our sheet is that of St. Barbara, V.M., A.D. 306. The saint is drawn on a green diapered ground, and has a rich nimbus and small rays, similar to those borne by St. Apollonia. A narrow fillet of gold upon her head confines her flowing hair. She is vested in a mantle fastened with a morse and kirtle richly diapered, as in the Ranworth screen. A tower is in her right hand, and she is holding her dress with the left. She was of high family, the daughter of Dioscorus, a noble of great wealth at Heliopolis. He persecuted his daughter, and shut her up in a great tower to keep her from marriage. While there she embraced Christianity, which enraged her parent, who, after having his child scourged and horribly tortured, cut off her head with his own hand. The sixth figure standing first in the lower series on our plate represents "Powers" ("Potestates.") They form the third order or choir of the Middle Hierarchy. This is St. Raphael, and he is placed fourth on the north side of the screen on a red diapered ground. He is crowned with a wreath upon the helmet, with an enriched nimbus, and small rays; clad in gold and varied plated armour, helmet with the hausse-col, and aces with vertical lines of the plates, tuilles, and pointed sollerets. He has four wings, a girdle of bells, and a richly diapered golden mantle fastened with a morse embossed, and a rich ornament attached to the breastplate. He stands upon a demon in chains. The calm and unruffled face of the angel forms a contrast to that of the vanquished fiend. He holds a scourge high up in his left hand, and a chain in his right. The seventh figure, coming second in our bottom division, represents "Virtues." He wears a crown of pure white with gold. He has four wings and blue plumage, a linen girdle, a plain tippet with a collar fastened by a morse, and a light-coloured mantle. The background is in red diapered, and the prevailing colour of white is indicative of purity. The right hand is laid upon the breast, while the left bears a sceptre. "Dominations" comes next in the

eight panel on a green ground. The golden tiara or triple crown gave great offence to some bigoted Puritans, who damaged the face of the figure as well as that of the Seraph shown next. A Mr. Dowsing and his followers have the credit for doing this foolish wantonness. The figure is vested in a red-coloured chasuble, with a jewelled orphry, the amice visible to the neck, and dalmatic with a fringe of gold. He has four wings. A golden sceptre is in the right hand, and the left hand is raised. The Seraph figured next (or ninth in our order of grouping) is on a green diapered ground. Seraphim form the first order or choir of the sovereign, or superior hierarchy, called Seraphim, or "Fiery," as mentioned in *Aurea Legenda*. On this account the figure which represents them here is painted with red wings and plumage (on the Southwold screen also with red hands and face and feet), emblematic of the fire of Love, which is God's own being, Love. Thus endued with Divine essence, they are said, as "Cubylers" or chamberlains, to be ever in attendance on the Almighty. In the glowing language of Mrs. Jameson, "they are absorbed in perpetual love and adoration immediately around the throne of God." They precede the Cherubim or the "plenitude of knowledge." This figure occupies the place of honour on the screen—namely, the first on the north of the entrance to the chancel. He is crowned with a wreath of foliage, with nine large golden rays. He has six red wings and red plumage, a golden girdle of clouds, an ermine tippet with border and morse of gold and a mantle, green without and light coloured within; a thurible in the right hand, and the left hand rests upon the breast. The last or tenth figure here shown (there are twelve really on the face of the screen) represents a Cherub covered all over with eyes emblematic of omniscience, and he occupies the second place of honour on the screen; that is, the first on the south side of the entrance to the chancel. He is crowned with a pink-coloured orb, with large golden rays and a cross fleury. He displays six wings of golden plumage, and wears a girdle of linen tied in a single bow, an ermine tippet with an ornamental border and golden morse, and a blue mantle, which colour is always recognised as emblematic of knowledge. Both hands are lifted up as if in adoration of Him who is the source of all wisdom and knowledge. There are no signs of doors to the chancel, and such is the case with the side screen, which separates the Chapel of St. Thomas of Canterbury from that of the "Name of Jesus," which was at the east end of the south aisle. This screen had been concealed behind one of the high-backed pews erected in 1793. The figures on it are of St. Edmund, St. Edward the Confessor, and St. Olave of Denmark, and also of Henry VI. King of England. The latter was painted by a different hand to the other three figures. This screen is coeval with the chapel. The paintings on the rood-screen are probably Flemish, and will bear comparison with the early masters at Antwerp and elsewhere in Belgium. We are indebted to Mr. Harry Hems, of Exeter, for the loan of the folio from which these illustrations are, by special permission, borrowed.

## SKETCHES IN SOMERSETSHIRE.

IN reply to our usual request for a few words of description, we have received the following:—"I am extremely busy. I don't think the Somersetshire notes need any explanation. They speak for themselves, in my opinion.—E. GUY DAWBER."

CATHEDRAL CHURCH OF ST. ALBAN AT PRETORIA,  
TRANSVAAL, SOUTH AFRICA.

THE building aims at being something more than a mere parish church, although the dimensions of the nave will be only 70ft. by 23ft. Originally the extreme dimensions were to be about 190ft. by 80ft.; but the cost of building in that country being about three times as great as in England, it became needful to reduce its scale by about one-fourth. Its plan is cruciform, with apsidal terminations to chancel and transepts, and a central tower, to be finished eventually with a timber spire. The material is red local brick, of dimensions  $9\frac{1}{2}$  by  $4\frac{1}{2}$  by  $2\frac{1}{2}$ , purpose-made. About thirty-five brick moulds, to work with them, have been sent out, for special mouldings for plinths, strings, and cornices, windows, doors, and arcades. The carriage of stone from the mountains, and its extreme hardness for working, precludes its use for anything



but the pillars of the arcades, with caps and bases of the simplest description. The only available timbers are planks and square poles 4in. by 4in. and 5in. by 5in., so that the construction of the roof has demanded very special treatment. Galvanised iron has been recommended by the local authorities as the most available material for the covering; but being liable to decay, and its texture being depreciated by the galvanising process, Mr. White proposes to send out leaded iron for the purpose. This material is free from the difficulties attending the use of galvanised iron, possessing as it does the ductility of lead, and readily taking a common soldered joint, though equally requiring freedom for expansion and contraction. It is free likewise from decay from atmospheric or other acids. It must be laid on boarding and felt, and will not then be liable to be riddled with Cape hailstones, as galvanised iron is. It is proposed at present to commence at the east end of the temporary church, only one bay of nave and aisles, the local estimate for which, before its reduction in size, was £3,000.

#### NEW BATHS, BROUGHTON.

On the 2nd of October last year the County Borough Council of Salford confirmed a resolution of the Baths Committee selecting the plans of Messrs. Mangnall and Littlewoods, of Manchester, for the Broughton Baths in competition. Seven sets of designs were sent in, each under a special motto, and to those marked "Leander" the committee have awarded the first position, and intend them to be carried out. The second premium of £30 was given to Messrs. Darbyshire and Smith under motto "Greater Salford," and the third to Messrs. Booth and Chedwick, who adopted the motto "Simplex." The other designs were by Messrs. Hewitt, Messrs. Beaumont, Messrs. Smith, Willoughby, and Woodhouse, and Mr. T. Cook. The site selected is a plot of land situate in Great Clowes-street. There are two principal entrances from Great Clowes-street—one for first-class and the other for second-class bathers, with a ticket-office for attendant in the centre. The first-class entrance is at the left-hand, and leads to the first-class swimming-bath, to the gentlemen's first-class slipper-baths, and to the ladies' baths, the entrance to the latter being immediately to the left after passing the turnstile, and a pass-door is provided from them to the first-class swimming-bath, enabling this to be utilised for ladies at certain periods of the day, as may be arranged, and thus making the ladies' department thoroughly private. The right-hand entrance-door is for the second-class bathers, and leads to the second-class swimming-bath and second-class men's slipper-baths. The passages are spacious, yet not of unusual length or wasteful, and the arrangement is compact. *First and Second-class Slipper-Baths for Ladies.*—There are three first-class ladies' slipper-baths, and six second class. In the first-class department there is provided a vapour-bath, with cooling-room and shower-bath, and each class has a w.c. The slipper-bath rooms are 8ft. in width, by 6ft. 6in. in depth, and are fitted as per instructions issued. *Gentlemen's First-class Slipper-Baths.*—There are eight first-class slipper-baths for gentlemen, each room 8ft. by 6ft. 6in., and one larger room, 9ft. 3in. by 6ft. 6in., containing slipper-bath and vapour-bath. On each side of the vapour-bath room, with door communicating therewith, there is a cooling room 7ft. 6in. by 6ft. 6in., with couch. To each first-class bath there is a shower-bath and w.c., and all are fitted as per instructions. *Second-class Gentlemen's Slipper-Baths.*—There are twelve second-class slipper-bath rooms, each 7ft. 6in. by 6ft. 6in., with w.c. thereto. In each compartment there would be room for a seat for persons waiting. There is no shower to these baths, which will be fitted up complete as required by the instructions. *Swimming-Baths.*—The first-class swimming-bath is 69ft. by 43ft. within the walls, with a water area of 60ft. by 25ft. The second-class swimming-bath is 97ft. 6in. by 46ft., with a water area of 75ft. by 28ft. The depth is 5ft. 9in. at the deepest end, and 3ft. at the shallowest. *Utilisation of Swimming-bath Room in Winter.*—One or both of the swimming-baths will probably be closed in the winter months. It is here suggested (and has been elsewhere adopted) that one or both of the bathrooms could be used for recreation-rooms, assemblies, or public meetings. The large, second-class bath is well adapted for this, on account of its galleries and numerous means

of exit. A special exit-door is provided in the side wall to Lucy-street for use only on such occasions. If the bath be required for a gymnasium, the principals are strong enough to support swings or similar apparatus. *Committee Room.*—A committee room is provided, 16ft. by 13ft., convenient to the deep end of the swimming-bath, having lavatory, w.c., and urinal. It will be well lighted from the roof, and will have a convenient private entrance from the back street, to obviate the necessity of passing through the general bathrooms on gala days or on special occasions. *Manager's House.*—The manager's house forms the centre portion of the building, over the entrances and ticket offices. The living-rooms and one bedroom are on the first-pair floor, and the remainder of the bedrooms on the second-pair floor. The approach is through the ticket office by staircase, and cut off from the baths; but, if desired, a separate entrance could have been arranged near the gentlemen's second-class baths. *Elevations.*—The architects have given considerable attention to this design. A reasonable amount of adornment was considered desirable, as the baths will be in the midst of a respectable residential population, and it was thought that red terracotta would be suitable as the principal material, the cost being moderate, especially with a repetition of panels, capitals, or ornaments, as in the present instance. As the building is surrounded by streets on three sides, this class of work, mixed with best stock-bricks for plain-faced work, but less ornate, will be also adopted for the side streets.

#### "CROOKSBURY," FARNHAM.

THIS house is now being erected at the foot of Crooksbury Hill, near Farnham, Surrey, from the designs and under the superintendence of Mr. Edwin L. Lutyens, of 16, Onslow-square, S.W. It is intended for the summer residence of Mr. F. Chapman. The walls are built of local red bricks, and the roof of local red tiles. All the external woodwork is of oak, of which material the staircase and screen in hall are also constructed. The terrace walls are to be of rough local stone, with bands and quoins of ironstone. Messrs. Mitchell Bros., of Shalford, near Guildford, are the contractors.

#### "SKETCHES IN BELGIUM."

DINANT, a small town on the Upper Meuse, forms a centre for many a tour in the Forest of Ardennes, and it is in itself a source of interest, possessing a 13th-century church, and numerous picturesque, if late, specimens of domestic architecture. Anseremme, a village two miles further up the river, is of no particular interest, if we except the combined church and farm on the outskirts. The Maison du Tonlieu, Bruges, is too well known to need description. Brussels possesses more old work than many people think; but it needs searching for on the banks of the winding Senne and old canals in the lower part of the city.

WILLIAM H. KEEL.

John Robert Acton, 69 years of age, a retired builder, living at Cromwell Cottages, Hounslow, committed suicide on Sunday by hanging himself in a closet. The jury returned a verdict of "Temporary Insanity."

Nearly £5,000 having been produced by the premium on some debenture stock issued by the Midland and South-West Junction Railway Company, for the construction of a railway between Cheltenham and Southampton, a dispute arose as to whom the premium belonged, the contractors claiming it, as they had undertaken to make the line and to be paid in debentures. Mr. Baron Huddleston and Mr. Justice Grantham decided on Tuesday that the contractors were entitled to the money in question.

On Saturday afternoon Mr. S. Williamson, M.P., laid the memorial stone of the new Chalmers Memorial Church in Anstruther. Built in the Gothic style of architecture, the church will accommodate 750 sitters, and will cost £6,500. The church consists of nave and side aisles, with a tower and spire at the north-west corner. The nave is 75ft. by 28ft., and is lighted by a clerestory carried on pointed arches resting on cast-iron pillars. The area will be lighted by ten windows under the galleries on both sides, and these will contain life-size portraits of ancient and modern ecclesiastical reformers and martyrs. The architect is Mr. D. Henry, F.S.A., Scot., St. Andrew's.

#### ROBERT BOYLE AND SON, LIMITED.

THE directors of Robert Boyle and Son, Limited, ventilating engineers, London and Glasgow, have resolved to pay an instalment on account of dividend at the rate of 12 per cent. per annum for the half-year ending March 31st last, which has been the most prosperous since the formation of the company.

The directors attribute the success to the great and ever-increasing demand for the latest improved form of the self-acting air-pump ventilator, upon which further improvements have recently been effected by Mr. Robert Boyle, adding considerably to its power as an exhaust ventilator, absolutely weatherproof and free from draught.

It is now made of a more ornamental character, of the best rolled steel plates, galvanised and painted with enamel paint, and though greatly superior to all other forms previously manufactured, is sold 50 per cent. less in price, constituting it not only the most efficient and ornamental, but also the most substantially-made and cheapest ventilator in the market. The company have just applied their system of ventilation to the Lord Mayor's Court, Guildhall; H.M.S. *Conquest*, the new White Star Line steamers *Teutonic* and *Majestic*, and the new steamer of the Compagnie Générale Transatlantique, *La Touraine*. These vessels are the largest and finest of their class yet built.

The company have at present some very important ventilating contracts in hand and in prospect, and plans and estimates have been sent in for the ventilation of the drainage system of Bombay, and the ventilation of the Khedive's Palace at Cairo, which was surveyed by Mr. Robert Boyle, the managing director, who is now in India, arranging contracts for Government buildings, and establishing agencies, after which he proceeds to China and Japan, where other important ventilating contracts are pending.

#### CHIPS.

Plans have been prepared by Messrs. Paley and Austin, of Lancaster, for the proposed extension, at an estimated cost of £5,400, of St. John the Baptist's Church, Atherton. The church, which was originally erected in 1723, was rebuilt in 1814, and again (at a cost of £10,000) in 1879.

Over the altar in the undercroft of the Ancient Guesten Chapel of St. Augustine's College at Canterbury, there has been erected a reredos in the memory of the late Right Hon. A. Beresford Hope and the Rev. E. Coleridge, the founders of the college. It is of bronze, with aluminium figures, and has been carried out from Mr. R. H. Carpenter's designs by Messrs. Singer and Forsyth.

The Société du Souvenir Français has decided to cause to be erected at Waterloo a monument to the memory of the French soldiers who fell on that battlefield.

The new bridge which is to be built across the North River at New York, in accordance with the Bill unanimously passed by Congress on Friday, will be seven miles long, extending from Hackensack Heights, New Jersey, to a point beyond New York city not yet determined upon. The estimated cost will be £8,000,000. The bridge will have eight tracks, for railways, vehicles, and foot-passengers.

Mr. John Hutchinson, R.S.A., of Edinburgh, has just completed a bust in marble of the late Dr. William Wright, Professor of Arabic, Cambridge, which is to be placed in the Library Hall of the great English University, in which for so many years he was a teacher.

The Victoria Parade at Pwllheli, South Carnarvonshire, was inaugurated by the Postmaster-General last week. It has cost £1,000, and consists of an esplanade 60ft. wide and covered with asphalt, protected by a sea wall 250 yards in length, while on the landward side is a roadway 45ft. in width. The designs have been prepared by, and carried out under the superintendence of, Mr. R. G. Thomas, C.E., Menai Bridge, and executed by Mr. Evan Williams, contractor, Garth, Bangor. A site has been reserved for the erection of an hotel, the preparation of the plans having also been entrusted to Mr. R. G. Thomas. Already several lodging-houses are springing up in Victoria-road, the architect being Mr. O. M. Roberts, of Portmadoc.

The site of the old Lyceum Theatre, which has been vacant for some time past, situate off High-street, Sunderland, has just been acquired by the Salvation Army for £2,000. Mr. J. Williams Dunford, architect, of 101, Queen Victoria-street, E.C., is preparing plans for the erection on the same of a large citadel capable of accommodating 3,000 persons, at an estimated cost of £3,500.



## CHURCH FITTINGS.

AN ordinary meeting of the Royal Institute of British Architects was held on Monday evening, Mr. Alfred Waterhouse, R.A., the President, in the chair, when Mr. John P. Seddon read a paper on "Church Fittings," illustrated by many drawings and photographs of works carried out from his own designs. It is, he remarked, a question depending on the special circumstances of each case how far the fittings of a church should correspond in character with the architecture of the fabric. It is doubtful, as this age possesses no special style of architecture of its own, whether artistic harmony or archaeological consistency be the more important. A good rule where an old church is concerned is to leave it alone; but when one has to be refitted, its furniture should not be of an earlier, but may be of a later, style than that which is the prominent one of the structure; while with regard to wholly new buildings, they and their contents should certainly correspond. The introduction of novel materials or modes of workmanship, and of the highest class of the subsidiary arts employed, may well serve to distinguish church fittings as being of the 19th century, and not merely slavish copies of old examples. As to church planning, the native Gothic style is elastic enough to admit of any change needed to accommodate modern use and ritual; whereas that now fashionable for secular architecture does not seem, even in its *chef-d'œuvre* of St. Paul's Cathedral, to have been able to assimilate a frank expression of constructional and ecclesiastical needs with its empirical rules of design. Simplicity of plan and amplitude of scale are more preferable for modern use than elaborate but diminutive detail. Church fittings, without reckless abandonment of precedent, should, he considered, as a first requisite subserve utility, but may at the same time be made objects of beauty, and admit of ornamentation of high class and varied nature. Among them fonts have in past times been distinguished by the lavish thought and art bestowed upon them and their accessories, and nowhere more so than in this country. Those of the Norman period are generally the richest and most vigorous; those of the 13th and 14th centuries are more refined in their ornamental detail, but display less fancy in design; the Perpendicular fonts of the 15th century are no longer grotesque, but graceful in proportion and more appropriately enriched. The exquisite canopied spire of the font cover of Ufford Church, Suffolk, and the noble baldachino-like inclosures of the fonts of St. Peter Mancroft Church, Norwich, and of Trunch Church, Norfolk, were referred to as examples of the magnificence often indulged in as regards this particular feature of church fittings in the 15th century. We have now at disposal for the purpose still richer marbles, with cloisonnée and other kinds of mosaic, and the zealous services of able sculptors if we would only employ them. In the fonts of Llandaff Cathedral, Rotherham Church, St. Margaret's Church, Westminster, and others, executed from the designs of the author, some of these means have been made use of as far as funds have permitted. Pulpits, as Ruskin has said, may be over-ornamented, and in some of the extravagant examples in Continental cathedrals this has obviously been the case; yet the moderate richness of design seen in the specimens collected and published by Mr. F. T. Dollman from old churches in England cannot fairly be so censured. In the pulpit in course of erection for the choir of Norwich Cathedral, in honour of Dean Goulburn, from the designs of the author, the material employed is oak; that for Llandaff Cathedral is in stone, with marble columns, while others are entirely of marble, as at St. James's Church, Paddington, and Betchworth Church, Surrey, in the latter mosaic having also been extensively employed. The use of lecterns as the places in churches where the lessons are read dates only from the 17th century. Many old examples of lecterns are, however, to be found, and those which take the form of eagle-desks were no doubt intended for the reading of the Gospels from the north side of the sanctuary, and other simpler ones were provided for the Epistles to be read from. As one lectern only is now employed in moderate-sized churches, there seems no reason to object to this being of the eagle-desk variety. This is generally made in brass. That at Llanbadern Church, near Aberystwith, has an eagle made in majolica ware, with stone support. The altar, with its

surroundings, is, of course, the principal object in a church. The altar-table should be of sufficient width and height—not less than 8ft. long, as a rule, nor more than one-third the width of the chancel; 3ft. 5in. is the minimum height, 2ft. 3in. is sufficient for the width, as such will permit of the retable being then conveniently reached. The table itself does not require elaborate ornamentation, as its purpose is to be vested with rich altar-cloths; at the same time, it should not be mean. Wood is the material most in use, but the altar-shelf behind it should be a part of the structure of the east end, and may be of stone or marble built into it. The reredos is the background to the altar-table, and is enriched in order to concentrate attention to that. Consequently it should not appear as if its object were to draw all eyes to itself. Even though the whole east end be combined into one scheme of decoration, prominence should be given to what is the reredos proper—the immediate background of the altar-table, extending but little on either side of it, and rising to no great height above it, and not encumbered with sensational sculpture. This is the position generally chosen for a carved panel representing the Last Supper—a subject essentially picturesque in contradistinction to sculpturesque, and in white marble ineffective at a distance. Such a panel was placed in the reredos designed by the author for St. James's Church, Paddington, to his great regret. In St. Saviour's Church at Bath the reredos is of stone, executed by Mr. Hems, with a white marble cross in the central panel surrounded by foliage, with seven doves; and in the side ones are the four Evangelists' emblems, and all are in high relief carved in alabaster. The seats for the congregation are the principal fittings for a church, and it is essential that they should be comfortable, and yet not conducive to lounging, and that they should afford proper facilities for kneeling. The variation of practice in so simple a matter is astonishing, and the subject is now under the consideration of the Committee of Architecture of the Incorporated Church Building Society. Mr. William Butterfield has given his views, founded on great experience, in a pamphlet entitled "Church Seats and Kneeling-Boards," which deserves consideration. Mr. Seddon showed an attempt to provide suitable kneeling accommodation in cases where churches are furnished with chairs instead of fixed seats, which has been worked out by Mr. J. Coates Carter, joint architect with himself for Grange Town Church, near Cardiff. Church screens are objects of extreme importance with regard to the effect of church interiors, but against them there is a modern prejudice, and in one diocese they are all but prohibited. They have, however, a useful purpose as marking the separation of the sanctuary from the congregation, and, aesthetically, a church seemed, to Mr. Seddon, unfurnished without one. Wood is the ordinary material employed for screens, and admits of great variety of treatment, whether simple or rich. Mr. Seddon urged that in designing architects should, whenever able, call to their assistance sculptors and painters; and thus, by re-establishing the unity of the arts which is an essential to their success, strive to enlist the sympathy and interest of the public, and render our churches once more museums for the people.

## CROSSE'S VENTILATOR.

THE danger of breathing vitiated air is now so generally recognised that the smallest builders see the necessity of providing in dwelling-rooms some means for the exit of foul air; but seldom does one find any means provided for admitting fresh air. The inventor of the ventilator under notice, in designing what is now known as Crosse's Invisible Flush Inlet Ventilator and Disinfectant combined, has given us a means of admitting fresh air without in any way interfering with the decorations of the room, or taking up space. The Crosse ventilator is a well-made cast-iron box. At the bottom of the tube is a movable well for the purpose of placing disinfecting fluid, mixed with water. These preparations giving off ozone, it is claimed that the air admitted, united with their vapours, is richer in its vital properties than if admitted without. The fluid in the well at the same time acts as a filter, by taking up the dust from the air in its passage through the tube. The back of the ventilator being movable, it can be fitted to any wall from 9in. upwards. The ventilator is

suitable for buildings of any size; and for dairies, cow-sheds, and stables it is invaluable, as cattle cannot gnaw it; and as it can be placed immediately over the manger, it insures each animal getting a perfect supply of fresh air without draught. Messrs. Comyn Ching and Co. have taken up its manufacture, and that is sufficient guarantee that its workmanship is of the best quality.

## DEATH OF MR. WILLIAM BROWN.

LAST Saturday at noon the mortal remains of Mr. William Brown, who for the last thirteen years has had charge of the works (under his employers, Messrs. Longmire and Burge) that Lord Grimthorpe is carrying out at St. Alban's Cathedral, were carried by sorrowing men, whose labours he had so long directed, into the nave of the Abbey he knew so well, and after a preliminary service they were taken to St. Alban's Cemetery and buried. Mr. William Brown, like the late Mr. Chapple, so long associated with him as clerk of works, was a West-country man, having been born at Merevale (sometimes written Merrivale), a village near Tavistock, in Devonshire, on Oct. 19, 1832. He spent the earlier part of his career in the West, principally at Tavistock, and came to London in 1864. There he entered the employ of Messrs. Longmire and Burge immediately afterwards, and remained with them to the day of his death. He possessed the fullest confidence of the heads of the firm, and acted as its representative throughout the whole course of the works at St. Alban's, which Lord Grimthorpe is carrying out, it is said, at a personal cost of considerably over £100,000. Mr. Brown lost his wife last year, which shook him a good deal, and he himself was taken ill towards the end of last December with congestion of the lungs, liver, and kidneys. He gradually got weaker, and on Monday night, the 7th inst., matters assumed a very dangerous state. He never recovered consciousness afterwards, and at ten o'clock the next morning passed peacefully away, at his residence, Holywell Hill, St. Alban's, in the presence of all his sorrowing family.

## CHIPS.

On the completion of the restoration of the old Parliament Hall at Edinburgh Castle it will be placed in charge of the senior Ordnance Store officer in Scotland, and be adorned with decorative arms and armour. It will be open to the public without ticket or fee daily (Sundays excepted) during four hours in winter and six in summer.

The partnership between Messrs. Barton and Jefferson, Princes-street, Westminster, architects, has been dissolved.

The Glasgow Corporation Water Committee have given the contract for the construction of the Blane Valley portion of the new aqueduct which is to connect Loch Katrine with the Mugdock and Craigmaddie reservoirs to Messrs. James Young and Co., Glasgow. The contract extends over about 5½ miles of ground.

The magistrate at the Southwark Police-court imposed on Tuesday fines amounting to £21 7s. on the owner of a house in Surrey-row, Blackfriars-road, for failing to comply with the order of the St. Saviour's Sanitary Authority to put the premises in proper sanitary condition.

A new organ built by Mr. Joseph Tucker, of Bourton, Dorset, was opened at the Wesleyan Chapel at Norton Down, Somerset. Mr. Orlando Baker, of Swindon, was the architect.

Messrs. Archibald Smith and Stevens have received instructions to erect one of their "Reliance" hydraulic lifts at the Badminton Club Chambers. They are also erecting similar lifts at Ashley Mansions, Victoria-street, Westminster; at Chambers in Throgmorton-avenue for Mr. J. Morris; at the Blue Hart-court, for Messrs. Cosh and Co.; at Chesterfield-gardens, for Mr. J. W. Beer; and for Messrs. Carruthers Bros., of Luton.

A new mission church in connection with the parish church has just been opened in Satchwell-street, Leamington. The whole of the interior fittings, including the lighting apparatus, have been supplied by Messrs. Jones and Willis, of Birmingham and London. The same firm has also been intrusted with the execution of a reredos of carved oak for Christ Church, Coventry.

Six large shops and citadel buildings capable of accommodating 1,000 persons are to be erected in the High-street, Walthamstow, for the Salvation Army. The total cost will be about £4,500. Mr. J. Williams Dunford, of 101, Queen Victoria-street, E.C., is the architect.



## Building Intelligence.

**BOLTON.**—The inauguration of the Drill Hall and Riding School for the Bolton troop of the Duke of Lancaster's Yeomanry took place on Saturday. The buildings have been built from designs by Messrs. Bradshaw and Gass, of Bolton. At the entrance is a lecture hall, 36ft. by 21ft., and above this are store-room, dressing-room, &c. The lavatories are on the ground floor. The drill hall is 120ft. by 43ft., and lofty. The interior walls are of local-made patent bricks, the sides being arched with semicircular arches, and relieved by lines of moulded bricks. The roof principals are trussed with light iron rods. Along the whole length of the building, and supported by cast-iron trusses, is a ventilating roof-light, semi-octagonal in form. The glazing here has been done by the British Glazing Company, of London. The floor of the riding school has been covered with tan bark and sawdust, mixed together and deposited in layers, the total thickness being 18in., and to avoid the possibility of a rider being hurt by his horse getting too near the wall, the dado, which is of pitch-pine, and 5ft. 2in. high, is made to slope, projecting at the foot. There are no internal columns; a clear view of the interior from end to end being thereby secured from any point. The exterior walls of the building are constructed of pressed bricks, the treatment being left plain, but relieved by being divided into panels, with over-sailing courses at the top. Immediately adjacent to the drill hall is the riding yard and parade ground, fenced round, but uncovered; it is 245ft. long and 164ft. wide, levelled, and laid with cinders, which are well rolled, and constitutes a first-class equestrianising area. The contract was let to Mr. William Bryce, builder, of Hanover-street, Bolton; the sub-contractors being—for the excavating and draining, Mr. William Pollitt, of Pool-street, Bolton; brickwork, Mr. James Hamilton, of Altrincham; and stonework, Mr. John Dickinson, Bark-street, Bolton.

**EDINBURGH.**—The increase of business at the General Post-Office has been so enormous, it has become absolutely imperative that additional accommodation should be provided without delay, and plans are now in course of preparation by Mr. W. W. Robertson, of H.M. Board of Works, by which additions are to be made to the building at a cost of £30,000. These consist of an extension of the south front of the present building to the eastward, over some unoccupied ground adjoining the railway. The present elevation will be extended to about double the present width, and when completed will form a façade about 180ft. long and 100ft. in height. Over the present sorting office an additional story will be erected, and the north-eastern angle of the building, behind the Revenue Office, will also have a story added to it. The telegraph department will be transferred from the basement to the top story. It is expected that a commencement will be made with the additions in the course of the present season, but they will be carried on slowly and by piecemeal.

**CARLISLE.**—The Board schools for infants which have been erected in Ashley-street, Caldewgate, at a cost of £2,500, were opened on Tuesday week. The schools will accommodate 300 infants. The schoolroom measures 41ft. 6in. by 24ft.—is heated by a large hot-air stove, and is lighted on the east side by sash windows, and on the west by two dormer windows. There are also two large galleries, each having accommodation for 50 scholars. At one end is a baby-room, with a French gallery, with accommodation for 80 children, and also two classrooms, with platform and immovable desk for 60 infants. Between the classrooms and the vestibule, the mistress's room is situated. The flooring is of wooden blocks. On the north side of the site is the covered playground, 44ft. by 24ft., and a caretaker's house. The contractors have been: building work, Messrs. J. and W. Laing; joinery, Mr. J. Reed; plumbing, Messrs. W. and R. M. Hill; plaster work and concrete floors, Messrs. R. M. Ormerod and Son; slating, Mr. Nanson; painting and glazing, Mr. W. Palmer; and ventilation, Messrs. R. Boyle and Son, London.

The corporation of the Trinity House have decided to build an additional lighthouse on the Yorkshire coast between Flamboro' Head and Spurn Point, and the site selected is stated to be at Withernsea.

## COMPETITIONS.

**LEEDS.**—The Corporation of Leeds have awarded to Mr. John Johnson, A.R.I.B.A., of Queen Victoria-street, London, the second premium of £25, for his design for the proposed galleries in the Victoria Hall. Mr. W. H. Thorpe, of Leeds, was awarded the first prize, and his plans have been confirmed, as we stated last week. The work is now to be commenced.

**LONDON.**—Seventy designs have been received by "The Tower" Company, Westminster, for the "Watkin Tower," proposed to be built in London. The jurors have not yet made their award, and the drawings are not yet open to public inspection, neither have the competitors seen them. As might be expected, some of the designs are eminently original, and as examples of novel construction are interesting. We shall give an account of them shortly.

**RAMSGATE.**—At a meeting of the Ramsgate Town Council, on the recommendation of the Sands and Cliffs Approaches Committee, Mr. W. A. Valon, C.E., Engineer to the Gas and Water Department, was appointed the engineer to the Corporation for the purpose of preparing the plans and specifications to be annexed to the proposed agreement with the Board of Trade relating to the improvement of the sea front. The committee recommend that the plans and specifications relating to the proposed front improvements as now submitted by Mr. W. A. Valon be forwarded to the Board of Trade for their approval. The improvements may be summarised as under. The north side of the inner harbour is to have a new sea-wall extending from the corner of Harbour-street to the west end, which gives an opportunity of building the front walls of the ornamental arches on the present wall of basin, and forms a good wide road in front of them. On their completion it is intended to clear away the Harbour Stores, Customs' House, and harbour-master's house, at present in the pier yard, and throw it open to the sea, thus widening and improving the approach to the L.C. and D. Railway Station, making the road in some places 75ft. wide. On the completion of this work, the Albion Hotel will be removed and a road formed, rising at a regular gradient from Harbour-street, so that when the whole is finished there will be an easy and improved approach to both cliffs. By the deepening of the basin, coal-vessels and merchant ships will unload alongside the new Military-road and Crosswall opposite, leaving that part immediately facing the hotels and streets clear for gentlemen's yachts. The total cost of the improvements, including compensation, but without recoupments, which will be considerable, amounts to about £65,000.

H.M. Board of Works have accepted the tender of Messrs. Foster and Dicksee, at £49,833, for the erection of the superintendent's office, new Bankruptcy Offices, in Carey-street, Lincoln's Inn.

At a meeting, on Monday, of the Town Council of Yeovil, a committee appointed to consider the borough surveyor's duties, recommended that the present surveyor be offered an appointment as consulting surveyor, at a salary of £100 a year for five years, and that a borough surveyor be advertised for, at a salary of £350 a year. The recommendation was adopted, and Mr. Vining (the present borough surveyor) thanked the Council for their consideration, and hoped he should live to see the end of the term.

At Sheffield on Tuesday the Earl of Carlisle, by the invitation of the corporation, opened the re-organised Ruskin Museum, which has been removed from the suburb of Walkley to Meersbrook Park, a piece of ground recently acquired by the corporation, who offered to Mr. Ruskin and the St. George's Guild the use of the Hall, a spacious mansion, on condition that the collection should remain at Sheffield for twenty years at least. The museum contains specimens and reproductions of some of the most beautiful art work in existence, selected by Mr. Ruskin.

The prizes offered by the Drawing Society have been awarded as follows to the drawings now on exhibition:—Sir Frederic Leighton's prize to W. K. Hinchliff, Sir James Linton's to C. Francis, Sir John Gilbert's to J. Mothersole, G. F. Watts's to D. Stockings. Of the 62 schools competing the following have received the largest number of awards:—Clapton High, Rochester Mathematical, Sevenoaks, Walthamstow-hall, Camden, Clergy Orphan, Kensington High, Cambridge, Westward-Ho, Gravesend Proprietary, Halifax High, Bradford Girls' Grammar, Sheffield.

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**EDINBURGH ARCHITECTURAL ASSOCIATION.**—At the usual meeting of this association, held on the 10th inst., a paper on "The Accessories of Architecture" was read by Mr. John Keppie, the president of the Glasgow Architectural Association. Professor Baldwin Brown (president) occupied the chair. The subject of site, which is one of the most important with which the architect has to deal, and which in a great number of instances does not receive the attention it deserves, was the first accessory to which attention was drawn. Comparison was made between the setting out of cities in Britain and on the Continent, considerably to the advantage of the latter. Paris particularly was alluded to as a city in which most of the fine buildings were beautifully situated, and the lecturer said that, consequently, they received a much greater degree of public appreciative attention. The use of sculpture work and metal was next alluded to as valuable aids to the architect, not only on account of fine form, but of the texture and colouration of which they were capable and which was as valuable in architecture as in painting. Some remarks were made on the correct method of designing in different materials, such as cast-iron and plaster. In concluding, the lecturer said that, owing to the increase of interest in the various accessories, these arts were now in a more flourishing condition than they were fifty years ago, and, consequently, architecture ought now to be, if it was not, more interesting and thorough than it was then.

## CHIPS.

The boring operations at Lyndhurst for the local gas and water company have resulted in finding a good supply of water at a depth of 125ft. Messrs. Schofield and Lacey are the contractors.

The new stained glass just placed in the west window of St. John's Church, Chester, at a cost of £1,000 borne by the Duke of Westminster, was designed by Mr. Edward Frampton.

The John Bright Memorial Committee, at a meeting held at Manchester on Friday, decided to give a commission for a statue of Mr. Bright, to be placed in some prominent position in Manchester, to Mr. Bruce Joy. A sketch model of the proposed statue was shown, and Mr. Joy's suggestion was adopted that the statue should be in Sicilian marble, and from 9ft. 10in. to 10ft. high, on a pedestal of 12ft. The cost is to be £2,700.

A new recreation hall at Coton Hill Asylum, Stafford, was opened last week by a ball. The room is 54ft. by 28ft., and 24ft. in height. The windows are filled with stained glass, and the floor is of polished pitch-pine. Mr. N. Joyce, of Stafford, was the architect, and Mr. Jervis, the builder. The cost was £1,600.

Mr. Matthew Harris, member for East Galway, died on Monday night, near Ballinasloe, from cancer in the stomach. Deceased, who was 60 years of age, was originally a working bricklayer, but in the *Parliamentary Companion* is described as "architect, builder, and contractor." He had held his seat since 1855.

The public lighting of Chelmsford by electricity was formally inaugurated on Monday night. The light has been installed by Messrs. Crompton and Co. (Limited) whose works are situated at Chelmsford. The three main streets of the town are lighted by means of 18 arc lamps, and the other streets by 200 incandescent lamps, the total annual cost being £873 6s. 8d. This is against £768 formerly paid to the Gas Company for 188 lamps. The contract is for five years.

The chancel of the parish church of Timberland, Lincolnshire, has been enriched by an east window, designed and executed by Mr. Dixon. The subject is the "Institution of the Holy Eucharist." On Palm Sunday this was dedicated in memory of the Rev. C. C. Wheat, who died in 1872, having been vicar of the parish for 30 years.

The local board of Otley, near Leeds, decided at their last meeting to proceed forthwith with a drainage and sewerage scheme prepared by Messrs. Brierley and Holt.

An artist's villa residence is being erected at Burton-on-Trent, for Mr. Geo. Parsons, on the site of the former old Burton Bridge close to the river Trent. The architect is Mr. R. E. Carpenter, M.S.A., of Burton. The contract has been taken by Mr. Jno. Varlow, of Burton.

The contents of the Royal Burg Museum at Nuremberg, embracing the armour and manuscripts and other treasures accumulated by the Landgraves of Brandenburg during many generations, are about to be dispersed by auction.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—A. E. and Co.—L. E. L. B.—B. of B.—B. of G.—J. A. and Son.—H. T. and Co.—J. B.

A. B. O.—(On your facts you seem to have a right of action; but an actual inspection of the premises would be necessary before giving a reliable opinion. You should consult a solicitor.)—H. C. Shaw. (W. H. White, 9, Conduit-street, W.)

## "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Box" and "N. B." in a circle. ("Box" should not have coloured his drawings. See rules.)

## Correspondence.

## ARCHITECTURAL REGISTRATION.

To the Editor of the BUILDING NEWS.

SIR,—Before the question of Registration goes any farther, it is as well to understand what an architect is and what he is not.

In the opinion of some of the speakers at the Institute meeting, an architect is a "member of a learned profession," "the servant of the public," "nothing if he is not practical," and architecture is a business about which "there is a certain amount of fine art, more or less."

We all know that a certain section of the public hold this view of architects and architecture; but surely even the most humble "servant of the public" has, at any rate, a vague idea that architecture is an art and not a matter of "light and air," drains, diameters of cast-iron columns, and the like, and that an architect is an artist, and not a sort of compound animal, partly builder, partly lawyer, and the rest policeman to see that the builder does not cheat.

Of course, if architecture is a learned profession and architects learned professors, let them be examined, found correct, and registered without loss of time.

It is an old remark that building is not necessarily architecture; but apparently this truth is not generally accepted, and many seem to think that building, at any rate when it is ornamented, is architecture.

An architect must possess a very considerable

amount of technical knowledge, but this is a means to an end, not the end itself.

By all means let the Institute examine and give certificates of proficiency in technical knowledge, but let us once for all face the fact that it is the one quality that makes an architect which cannot be tested by examination.

Let people once realise what an architect is (and in order to do this architects must make haste to realise what they are meant to be themselves), and there will be no necessity for Registration; only those who are fit to do the work will get the work to do; the "business architect" must call himself by another name, and the "undertaker architect" can bury himself.

Finally, let our endeavour be to get altogether out of our minds the "learned profession" idea, and remember that the only reason for our existence is that we may—in the words of the Architectural Association motto—"Design with beauty and build in truth."—We are, &c.,

ERNEST NEWTON,  
MERVYN MACARTNEY,  
JOHN BELCHER.

## R.I.B.A. EXAMINATIONS.

SIR,—*"Goth"* is invariably lively and often amusing; but I blushed to read his grave insinuations against the Board of Examiners of the Institute, though I do not believe that they were advisedly made, and certainly his "Notes" of the past week confirms that belief; but he calls to his aid a paragraph from the Architectural Association Notes, where Mr. Fred. M. Simpson undertakes to define the requirements of candidates for the examination as being no more than "elementary knowledge."

Well, it is just that practical knowledge—elementary knowledge, if you like (the greatest engineering work of the age, the Forth Bridge, is elementary in principle)—which makes the architect respected on the works. With the higher calculations which must necessarily be done at the office the builder rarely troubles himself, for he is not responsible if the design is at fault. Recently I was engaged upon work where I had undertaken both architect and builder's duties, employing my own men and paying weekly wages. I had occasion, during the progress of the work, to change my plumber. My new man must have had some conversation with the other man on the job before I appeared, for he soon took the liberty of saying that for what I had spent on the plumbing he could have done the work throughout, and made "a good sanitary job of it." I made no reply, but merely asked him how he would set to work on the job I had called him in to do (bath waste and draw-off sink adjoining). He would "join the sink waste to the bath waste." *The sink was considerably lower than the standing level of the water in the bath*, so I asked him to contemplate the result to the ceilings below when the bath waste happened to be stopped beyond the junction with the sink waste. He was contented therefrom to follow my instructions, and after all proved to be a very decent workman.

"Goth" declares himself "open to conviction." I will endeavour, from my own experience of the examination, to refute the statement, and to remove from his mind such an erroneous expression, so far as I can recall the circumstances of six years ago. But, in order that he and others may estimate the value of what I have to say, it will be necessary to say briefly what my experience had been prior to passing the examination.

I was six years a pupil and a year as assistant in a provincial office. Then I had the good fortune to enter Mr. Waterhouse's office as an assistant, and had for eight-and-a-half years worked under Mr. Waterhouse's instructions and personal supervisions, preparing first the sketches, then the working drawings, and frequently practically the whole of the detail drawings of works of varied character, and some of considerable magnitude. During the same period I also worked fairly industriously out of office hours.

Consequently, I was not unjustified in assuming that my qualifications should be equal to any reasonable examination, without special preparation, excepting a little quiet "at home" reading up of history. I was not mistaken in that view; but the examination was a week of really hard work. The questions were not to be called hard questions; but they were practical and very numerous and comprehensive, requiring

prompt application of knowledge, or many would remain unanswered when the time was up. Reference to notes or memorandums of any description was not allowed, nor was there any intimation or possibility of gaining information of the nature of the questions (in that respect the candidates of later years were better off, for the questions of previous years are now published). The examination was in periods of three hours morning and afternoon, no leaving the room upon any pretext during that time, and upon each occasion a fresh paper. In one instance only did the subject extend over morning and afternoon, that was in "Design." The subject, a Provincial Mechanics' Institute, site at least 100ft. by 50ft., and accommodation consisting of about twenty rooms, including a lecture-theatre, and with restrictions as to the position of some of the rooms. This we were to design and give to one-eighth inch scale, plans of each floor, sections, and elevations—in six hours. I never worked harder either before or since than I did during that spell of six hours. Here let me say that the knowledge of one style of architecture was not enough; Gothic men were expected to know something of Classic—Classic men of Gothic. I had selected 13th-century Gothic (a style I have long ago forsaken for secular work). Finally came the "oral examination," each candidate being seen separately. The examiners sitting on one side of a table and the victim—pardon, I have heard it pathetically described as "waiting to go on the rack"—the candidate placed opposite. After a few ordinary questions I was requested, then and there, to "Sketch a Greek Temple."

Membership of the Institute I did not seek nor value whilst it was to be obtained easily; but when it became "membership only by examination," I thought it both desirable and valuable, and this I believe to be the motive which is now inducing so many to present themselves for that which is not too easily obtained.

Let me now suggest that both "Goth" and Mr. Simpson should go in for the examination. If I am not much mistaken, they will thereafter write of it with respect, at any rate with *practical knowledge of the subject*.—I am, &c.,

T. FREDK. PENNINGTON.

Bedford Park, W., April 15.

## "REGISTRATION" AT THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—At the special general meeting held under the chairmanship of the President, Mr. Alfred Waterhouse, on March 31st, in his speech at the close of the debate the President said:—"The two leading provincial societies (Manchester and Liverpool) were dead against it" (Registration). As referring to the former, this is far from correct. The Manchester Society, with a membership of about fifty, no doubt supports the Institute; but the Association, with double that number of members, has petitioned Parliament to pass the Bill.—I am, &c.,

J. SPENCER HODGSON.

Manchester, April 14.

## THE ARCHITECTURAL ASSOCIATION.

SIR,—I cannot agree with your remarks on the President taking the chair for a second year in imitation of the R.I.B.A. and the S.A. In the A.A. there are two excellent vice-presidents, either of whom would perform the duties well, and nobody deserves the honour more than Mr. T. E. Pryce. If the two vice-presidents will not accept office, there are plenty of past vice-presidents who might undertake the duties. A president serving for a second year looks like stagnation, and shows that the A.A. is not the success it once was. I admit that Mr. Cole Adams served for two years, but under special circumstances, and there are no special circumstances this year.

There is still time to remedy this grave defect and get somebody nominated.—I am, &c.,

OBSERVER.

## PROVISIONS IN QUANTITIES.

SIR,—Adverting to your admirable article on "Provisional Amounts" in your issue of 4th inst., I should be much obliged if you would allow me the privilege of laying the following before the interested public, through the medium of your influential columns.

In connection with provisions there exists at present among certain quantity-surveyors, what ap-



pears to be a most reprehensible practice frequently resorted to by them, unknown to the client, and presumably so, in many instances, by the architects, whereby provisions are insidiously inserted, not of amounts, but of quantities, such as immediately following "Cube yards. Excavate, &c., &c." we find "200 do. do. do. provisional," and after "yards cube concrete," "200 do. do. do. provisional," and similarly after the brickwork in rods, and the timber in feet cube, and so on.

These quantities all help to swell the amount of the tenders, and consequently the surveyor's commission, and it seems scarcely the correct thing that a man should be entitled to 2 per cent. commission on the amounts they produce for simply writing these items down, or that the client should be charged with this commission for quantity-taking when there is none done. This, however, is not the worst, or the last of it, for when the works are completed, and the accounts made up, these provisional items, with their attendant amounts, are deducted from the contract amount, and crop up again in the form of a "bill of omissions" on which 2 per cent. commission is again charged. I am aware the plea is advanced that these omissions are set against the extras, and that the client will be delighted to find he has had some subsequent additions carried out for little, or possibly no, extra cost on the original contract; but then there is also 2 per cent. commission charged for these very extras. It is the principle of the thing that is bad. Two wrongs do not make a right, and the fact still remains that the surveyor twice charges 2 per cent. commission for doing nothing at all. No doubt it brings grist to the mill; but is it right?—is it perfectly straightforward and above board, for professional men belonging to an honourable body like the quantity surveyors to indulge in this practice? As these provisions are noticeably becoming more and more frequent in bills of quantities, I should be glad to hear the opinions of some of your readers on the subject.—I am, &c.,

TWICE CHARGED.

#### THE RIGHT OF SELECTION OF BUILDERS' EMPLOYER.

SIR,—We inclose copy of a paragraph inserted in bills of quantities for erection and completion of new showrooms and factory (from ground-floor level) in Davies-street and South Molton-street, Berkeley-square, for Messrs. Bolding and Sons, together with copy of our letter declining to tender under such conditions. We think builders as a whole ought to resist such interference with the management of their business, and this is the reason we send you the particulars, in case you may desire to make any comment in your paper upon this matter.—We are, &c.,

HIGGS AND HILL.

Crown Works, South Lambeth-road,  
London, S.W., April 12.

#### PARAGRAPH INSERTED IN BILLS OF QUANTITIES.

Memo.—The present foreman of works to be retained and employed during the carrying out of these works, at a salary of £3 10s. per week.

#### COPY OF LETTER SENT TO ARCHITECTS.

Crown Works, South Lambeth, S.W.,  
April 12th, 1890.

Messrs. J. T. Wimperis and Arber.

DEAR SIRS,—As we notice in the bills of quantities for Messrs. Bolding and Sons' showrooms and factory a clause stating what amount of wages we are to pay our foreman, and stipulating the man we are to employ, we must decline to send in a tender for the work. We will not submit to have our freedom of action interfered with as to who we shall employ and what we shall pay, and we do not think Messrs. Bolding themselves would submit to be controlled in a similar way by outsiders in the conducting of their own business.

We remain,

Yours faithfully,  
(Signed) HIGGS AND HILL.

The Dean and Chapter of Chester Cathedral have just fixed a tablet on the north wall of that edifice, in memory of Mr. Robert Platt and his wife, of Stalybridge, Cheshire. Mrs. Platt, at an expense of some thousands of pounds, covered the entire north wall of the nave with mosaics, while Mr. Platt was a large contributor to the restoration fund of the cathedral.

Sir Horace Davey, Q.C., M.P., formally opened on Friday the new schools which have been erected in Oxbridge-lane, Stockton-on-Tees. The schools, which are in the Queen Anne style, have been erected from the designs of Mr. Henry Weatherill, of Stockton, and have accommodation for 829 children; but provision can be made to increase the accommodation to 1,076 scholars. The cost of the buildings is £5,495.

## Intercommunication.

### QUESTIONS.

[10268.]—**The Label in Architecture.**—May I ask if the label over windows is a token of Tudor architecture, or is it found in earlier styles?—WARWICKSHIRE.

[10269.]—**Topmost Story.**—In the by-laws relating to new streets and buildings, such as are in force at Bournemouth, Folkestone, and other towns, do the words "topmost story" apply to the roof space between the rafters and the ceiling joists, which are on a level with the top of walls, or only when the space is occupied by a room; also I should like to know if a house having a ground floor and a first floor and a roof is a two-story or a three-story house, and what thickness must the party-walls be?—BUILDER.

### REPLIES.

[10249.]—**Beam.**—The bending moment of one of the three sections divided by the columns is the product of lever arm at which the weight acts into the weight, and as the load is distributed over one span it will be  $\frac{wl}{8}$ . By removing the columns the length of the lever arm is increased three times, therefore the bending moment will be increased three times. G. H. Ward assumes the load is also increased three times, which it would be if the load were uniformly distributed over the three spans, in which case, of course, the bending moment will be nine times greater than it was when the load was distributed over one span.—G. H. G.

[10265.]—**Sound-proof Fire-proof Floor.**—Sawdust filled in under the floor boards would not be so good as pugging of lime-and-hair mortar. Slag wool packing would be still better. The space under the floor should be filled, and the space between ceiling battens. The construction of the concrete and ironwork is not described; but if it is that usually adopted, the course suggested will be found effectual.—G. H. G.

### PARLIAMENTARY NOTES.

**THE ARCHITECTS' REGISTRATION BILL.**—Owing to the long discussion on the Rating of Machinery Bill, the Architects' Registration measure, which was set down for second reading for Wednesday, was not reached, and it now stands over till Wednesday, the 14th May.

### STAINED GLASS.

**ST. STEPHEN'S CHURCH, BRISTOL.**—The last window on the south side of this church has now been filled with stained glass, the subject being that of the Ascension, which occupies the three lights. In the centre is Our Lord in the act of ascending; beneath Him, on the hill, are St. John and another Apostle kneeling, gazing upwards. On the right and left are groups of the other Disciples, and above them are the two angels descending. The whole has been designed and executed by Mr. Alfred O. Hemming, of 47, Margaret-street, Cavendish-square, W.

**OLDBURY CHURCH, BRIDGNORTH.**—Four south-aisle windows in this church were dedicated on Easter Day, the work and execution of Mr. A. O. Hemming, of London. The subjects are Abraham entertaining the Angels, the Angels appearing to the Shepherds, the Sacrifice of Isaac, and the Crucifixion, the whole being executed with various tints of white glass, with the smallest possible introductions of any possible colour.

The Duke of Fife has consented to open the East Marylebone Free Library on Thursday, May 1.

Mr. Bruce Joy has just despatched to Cloyne a statue of the famous Bishop Berkeley, which is to be placed in the Cathedral of the See over which the great idealistic philosopher presided for eighteen years.

At a meeting of the Tees Conservancy Commission at Stockton, on Wednesday week, Mr. G. J. Clarke, of Milford Haven, was appointed chief engineer to the commission, in succession to Mr. Frederick Jopling, who died recently from influenza shortly after receiving promotion. The salary is £700 per annum. There were 32 applicants for the post. Mr. Clarke, before going to Milford Haven, was successively engineer for the Aberdeen Breakwater Improvements, assistant resident engineer for the Victoria Dock (London) Extension, and was connected with the Bengal Central Railway, Calcutta.

The parish church at Kilmallie is at present being renovated from designs by Mr. D. Mackintosh, architect, Oban, and it has been decided to place a memorial window in stained glass at the east end of the building in memory of the late minister, Dr. Clark. The window has three lights, the centre figure in which represents the Resurrection, and over this is a circular light containing a Celtic cross. One side-light shows the emblems of the law, and the other those of the Gospel. The work will be executed by Messrs. James Ballantine and Son, of Edinburgh.

## Our Office Table.

IN its annual report, just issued, the Northern Heights Footpath Association reviews its work in Hendon and Hampstead, and says it is proposed to publish maps on which all the footpaths and the roads with which those paths are connected will be carefully marked. Another object in view is the preservation of the public rights in Fortune Green, West Hampstead. Counsel have advised that the supposed grants made by the Lord of the Manor are illegal, and that the rights of the commoners remain intact. But, in order to assert these rights, it is necessary that a former copyholder of the manor, who was enfranchised before 1870, should bring an action against the encroachers, and a guarantee fund to meet the expenses of this action is to be raised.

At the annual meeting of the District Council of Edinburgh and the East of Scotland of the National Society for the Registration of Plumbers—an independent body to the London Company of Plumbers, which has also extended its organization to Scotland—held on Saturday afternoon in the Philosophical Institution, Edinburgh, Sir Douglas MacLagan presided, and less than twenty persons were present. Mr. James Rennie, S.S.C., secretary, read the yearly report, which showed that the district council was formed in February, 1888, and that of 173 plumbers who had applied for admission 13 were refused on account of their failure to pass the examinations. Sixteen ordinary business meetings had been held, and two public meetings—one at Galashiels and the other in Edinburgh—and lectures had been delivered. The adoption of the report was carried, and office-bearers were elected.

The finest bridge in Southern India is, according to *Indian Engineering*, the new Chittravati bridge opened last month by Mr. H. R. P. Carter, chief engineer of the Madras Railway, and by Col. C. J. Smith, R.E., consulting engineer for Indian railways. The bridge is over half a mile in length, "and is divided into nineteen openings of 140ft. each spanned by N. lattice girders 139ft. 8in. long, 20ft. wide, and 17ft. deep, supported on cast steel fixed and roller bearings at alternate end." The engineer in charge is Mr. E. W. Stoney.

CALCUTTA is not a city of any architectural pretensions, and, like other cities in India, it has been spoiled by European military engineers and builders. A building council to control the more important building schemes, questions of frontage, and other matters, is talked about; the council to comprise the chief engineer of the buildings branch as president, the engineers of the corporation and port, and two representatives of the building profession in Calcutta. Government red tape and engineer architects have destroyed the amenities of the city.

A memorial stained-glass window, executed by Messrs. Burlison and Grylls, of London, has been placed in St. Michael's Church, Lyndhurst. It is of two lights, the subjects being "Christ blessing the Children" and the "Good Shepherd."

The first section of the restoration of St. James's parish church of West Teignmouth, was completed last week. The church is a perfect octagon in shape, with a domical roof carried on iron columns. The present works have included the replacement of high pews by low seats of pitch-pine, all looking towards the east, and the relaying of new floor, after covering the vaults with Portland cement. Mr. Lloyd, of Birmingham, was the architect, and Mr. Elsworth, of Teignmouth, was the builder. The outlay was £700. The committee have decided to proceed forthwith with the second section of the work, comprising the addition of an apse and two vestries on the south side.

The large east window in St. James's Church at Inverleithen, N.B., built two years ago, has been filled with stained glass, and was the occasion of a special dedication service in this church on Saturday by the Bishop of Edinburgh. The window is entirely filled with figure illustrations appertaining to the Creed. In the two left-hand compartments are the subjects of the Annunciation, Incarnation, Presentation, and Adoration. The central compartment, of wider dimensions, contains larger groups of the Agony and Crucifixion. On the right-hand lights are four scenes of Resurrection and Ascension, with representations above in the tracery of the glorified Trinity and Seraphs. The work was designed and carried out by Messrs. James Ballantine and Son, of Edinburgh.



## MEETINGS FOR THE ENSUING WEEK.

**SATURDAY (To-Morrow).**—St. Paul's Ecclesiastical Society. Visit to the Battersea Churches of St. Mark (3.15 p.m.), St. Peter (4 p.m.), and St. Mary by the Park (4.45 p.m.), under the direction of Wm. White, F.S.A.

**MONDAY.**—Royal Institute of British Architects. Special Business Meeting, 8 p.m.

**TUESDAY.**—Society of Arts. "The Danube and its Trade," by Sir John Stokes. 8 p.m.

Institution of Civil Engineers. Discussion on "Electricity for Welding and Stamping." 8 p.m.

**WEDNESDAY.**—Society of Arts. "Coal in the South-East of England," by W. Whitaker. 8 p.m.

**FRIDAY.**—Institution of Civil Engineers. "Applications of Electricity in Engineering Workshops," by C. Frewen Jenkin, B.A. 7.30 p.m.

**Architectural Association, 9, Conduit-street, W.**—April 26. Visit to Albert Gate Mansions, Messrs. Archer and Green, architects. Meet at 3 p.m.

FRED. R. FARROW, Hon. Secs.  
ERNEST S. GALE.

## CHIPS.

During the ceremonies of Holy Week a fire broke out in the Chigi Chapel of Sta. Maria della Pace amongst the decorations of the altar, and destroyed one of the 16th-century pictures of the chapel and an important picture by Baldassare Peruzzi. The "Sibyls" of Raphael barely escaped the fate of the "Peter Martyr" of Titian and the great altar piece of Bellini, which were burnt at Venice by a similar fire.

The works in connection with the women's jubilee memorial of the late Prince Consort in Windsor Great Park are progressing satisfactorily. The bronze equestrian group by Sir E. J. Boehm is finished, and Messrs. Macdonald, of Aberdeen, are constructing the base and pedestal around the foundation-stone laid by the Queen in the jubilee year. The foundation stone will be entirely concealed. The bronze casting, owing to its height (16ft.), will not pass under the railway bridges, and will consequently have to be conveyed from the foundry by road. The statue will face Windsor, and dedicatory inscriptions in English, Latin, Gaelic, and Sanscrit are being cut in relief upon the panels. The memorial will be over 33ft. high. The unveiling will take place about May 6 or 7.

The foundation-stone of St. Cuthbert's Roman Catholic School Chapel, Slatford-road, Gorgie, near Edinburgh, was laid on the 10th inst. by Archbishop Smith. The building will serve the double purpose of a school and a chapel, and is Gothic in character, plainly treated. There will be room in the school for 160 children, and when it is used as a chapel the building will hold about 300 persons. The architects are Messrs. Buchanan and Bennett, George-street, Edinburgh. The cost of the building will be about £1,700. A church for 600 persons will hereafter be erected adjoining the present building.

The Master of the Worshipful Company of Plumbers, Mr. Bishop, and the secretary of that company attended a meeting at Plymouth on Friday, for the purpose of promoting a branch for Devon and Cornwall of the Plumbers' Guild, by which examinations might be held and certificates granted. The Earl of Morley moved a resolution affirming the desirability of establishing a western branch of the Plumbers' Guild. Subsequently resolutions were passed appointing a council representing the operative plumbers, the master plumbers, and the general public in about equal proportions.

Mr. W. H. Miles, formerly an architect at Bournemouth, and more recently town engineer at Port Elizabeth, has been elected town engineer and surveyor to the sanitary board of Johannesburg from among 29 candidates. The newly appointed general manager to the Johannesburg Waterworks Company, Mr. Andrews, is also from Bournemouth, where many readers will remember he held in succession to his father, the late Mr. G. R. Andrews, the post of borough engineer.

A miners' hall at New Seaham was opened on Saturday. Designed by Mr. Shields, of Sunderland, the building is Domestic Gothic in style.

A portrait of Mr. Harry Hems, of Exeter, with biographical notice, appeared in the *Western Weekly News* of Saturday last.

Good progress is being made with the scheme for improving the carriage approach to Gloucester Cathedral, to which we called attention in our last issue. A meeting in furtherance of the project was held at Gloucester on Saturday, when it was formally decided to float a company to be known as the Gloucester Cathedral Approaches Co., to raise the £7,000 required to meet the liberal offer of Mr. Knowles. An executive committee was appointed, and the minimum width of the street was fixed at 30ft.

## Trade News.

## WAGES MOVEMENTS.

**ABERDEEN.**—The granite polishers in the employment of three Aberdeen firms went out on strike on Monday, against a rule framed by the masters, that men absenting themselves during working hours without leave should, besides losing their wages for the time so absent, be fined sixpence per hour or part of an hour. A meeting of the men was held, when a deputation waited upon the masters, with the result that the dispute was satisfactorily settled, and the men resumed work on Tuesday.

**ALLOA.**—The operative slaters and plasterers of Alloa have received an advance of  $\frac{1}{2}$ d. per hour on current rates of wages.

**DUNDEE.**—The joiners of Dundee threatened to strike on Monday if the new by-laws proposed by them were not signed immediately. The masters held a meeting on Tuesday, when it was agreed to ask the men to send a deputation to meet and adjust the proposed by-laws.

**EDINBURGH.**—A crowded meeting of joiners was held in the Trades' Hall, Edinburgh, on Tuesday night—Councillor Telfer presiding—chiefly for the purpose of considering the strengthening of their organisation. After a two hours' discussion, it was agreed that it would be advisable, with a view to avoiding strikes, to have a Conciliation Board, formed of representatives of the masters and men, for the purpose of considering matters of dispute. A committee was appointed to draw up a constitution for the proposed Board, to be submitted to another meeting, which will also consider the approaching of the masters on the subject.

**PERTH.**—The master painters have agreed to concede an increase of  $\frac{1}{2}$ d. per hour to their workmen, bringing up their wages from 6 $\frac{1}{2}$ d. to 7d. They decline, however, to increase the extra pay for country work from 3s. to 4s. per week. The men have accepted the compromise.

**Holloway's Pills** purify the blood, remove all obstacles to its free circulation through the lungs, relieve the congested air tubes, and render respiration free, without reducing the strength, irritating the nerves, or depressing the spirits; such are the ready means of escaping from suffering when afflicted with colds, coughs, bronchitis, and other chest complaints.

## W. H. LASCELLES and CO.,

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## TENDERS.

Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**ABINGDON.**—For the erection and completion of Salvation Army fortress, Abingdon, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect and surveyor:—

Williams, E. ....	£546 0 0
Ellwood and Sons, Sandy .....	497 0 0
Drew, S. ....	490 0 0
Buckle, J. ....	448 0 0
Barrett, T. ....	455 0 0
Wheeler, G. H. ....	437 0 0
Martin and Barclay, Battersea ....	430 0 0
Rest of Abingdon.	

**BATLEY.**—For the erection of two through-houses, boundary walling, &c., in Healey-lane, Batley. Messrs. Page, Spencer, and Son, Batley Carr, architects:—

Mason:—

Goldthorpe, E., Batley.

Joiners:—

Richardson, J., and Sons, Dewsbury.

Plasterers:—

Metcalfe and Lockwood, Staincliffe.

Plumber and glazier:—

Walshaw, J., Batley.

Slater:—

Thornton, J., Heckmondwike.

Painter:—

Lodge, J., Batley Carr.

Palsading, slates, &amp;c.

James, W., and Sons, Dewsbury.

**BATLEY.**—For the forming, draining, kerbing, channeling, &c., the 3rd section of Clerk Green-street, on the Clayfold Estate, Batley. Messrs. Page, Spencer, and Son, Batley Carr, architects and surveyors:—

Accepted tenders:—

Excavating, draining, &amp;c.:—

Oldroyd, J. and T., Batley.

Supply of kerbs and setts:—

Thompson, W. R., Dewsbury.

Supply of sanitary tubes, &amp;c.:—

Haig, S. and T., Dewsbury.

Supply of ironwork:—

Clark, S. and S., Batley.

**BATLEY CARR.**—For the erection of four dwelling-houses, &c., &c., in Carr-street, Batley Carr. Messrs. Page, Spencer, and Son, architects. Quantities by the architects:—

Accepted tenders:—

Masons:—

Oldroyd, J. and T., Batley.

Joiners:—

Richardson, J., and Sons, Staincliffe.

Plasterer:—

Parker, W., Heckmondwike.

Plumber and glazier:—

Shepley, J., Dewsbury.

Slater:—

Hargreaves, G., Dewsbury.

Painter:—

Lodge, J., Batley Carr.

Ironfounders:—

James, W., and Sons, Dewsbury.

**BRIDLINGTON QUAY.**—For making a new entrance at the north end of Prince's Parade on to the North Cliff, for the local board. Mr. Dyer, architect:—

Rennard, J., North-street, Bridlington (accepted).

**Bristol.**—For constructing a brick sewer in Newfound-land-road, for the city council:—

Hayes, C. A. (accepted) ... £308 7 0

**Bristol.**—For constructing a sewer at St. Philip's Marsh, for the city council:—

Hickery, W. (accepted) ... £310 0 0

**Bristol.**—For paving footways throughout the city for a period of three years, for the city council:—

Districts Nos 1 and 2:—

Galbraith, W. M. (accepted).

District No 3:—

Yalland, T. K. (accepted).

**BROADWELL.**—For new wing and alterations at Broadwell, Gloucester, for Mr. R. G. Francis. Mr. E. C. Dawber, architect:—

Hookham, Stow-on-the-Wold ... £699 0 0

Groves, Milton-under-Wychwood ... 587 0 0

Howman Bros., Stow-on-the-Wold ... 510 0 0



**BROADSTAIRS, KENT.**—For Convalescent Home, for the Board of Managers of the North Surrey District Schools, Anerley. Mr. A. G. Hennell, Forest Hill, architect. Quantities supplied by Mr. J. R. Vining, 89, Chancery-lane, W.C.:

Holloway, H. L. ...	£4,290	0	0
Lockwood, A. G., and Co. ...	3,756	0	0
Johnson, W. ...	3,699	0	0
May, J. T. ...	3,690	0	0
Foster and Dicksee ...	3,681	0	0
Denne, W. and T. ...	3,680	0	0
Holloway Bros. ...	3,670	0	0
Horne, C. ...	3,595	0	0
Battley, R. G. ...	3,574	0	0
Akers, W., and Co. ...	3,570	0	0
Shillitoe, J., and Co. ...	3,500	0	0
Coxhead, F. J. ...	3,499	0	0
Port, W. H. ...	3,400	0	0
Adcock, W. J. ...	3,397	0	0
Slade, C. J. ...	3,395	0	0
Pearce, T. ...	3,353	10	0
Doughty, F. J. ...	3,283	0	0
Langley, J., and Co. ...	3,223	0	0
Martin, W. W. ...	3,149	0	0
Robeson and Rickett ...	3,139	0	0
Pocock, J. ...	3,133	0	0
Black, A., and Son ...	3,124	0	0
Shubsole, L. ...	3,095	0	0
Denne, G. H., and Son ...	3,088	0	0
Brown, J., and Son (accepted) ...	2,933	0	0

**BROMYARD.**—For the repair of a bridge at Paunton, for the highway board:—  
Rouse Bros. (accepted) ... £50 10 0

**COATBRIDGE, N.B.**—For causewaying various streets, for the town council:—  
Drysdale, J., Glasgow (accepted) ... £2,600 0 0

**COLCHESTER.**—For new schools, Kendall-road. Mr. F. Whitmore, Chelmsford, architect:—  
Ward, T. J. ... £1,490 0 0  
Dupont, F. ... 1,893 0 0  
Everett and Son (accepted) ... 1,889 0 0  
All of Colchester.

**EASTBOURNE.**—For the erection and completion of Salvation Army Citadel Buildings, in Eastbourne, Sussex, for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect and surveyor:—

Peelless, J. ...	£2,625	0	0
Huggett, L. ...	2,486	17	8
Coster, J. ...	2,250	0	0
Vinall, J. Jun. ...	1,979	10	0
Cornwell, E., and Son ...	1,850	0	0
Rowland Bros., Horsham ...	1,749	0	0
Coxhead, Leytonstone ...	1,679	0	0
Backhurst, W. ...	1,569	0	0
Mitchell, F., Bexhill-on-Sea ...	1,557	0	0
Martin and Barclay, Battersea ...	1,385	0	0
Rest of Eastbourne.			

**DARTFORD.**—For new showroom, for Mr. S. F. Phillips, 27, High-street. Mr. G. H. Tait, M.Inst.C.E., architect:—  
Gumbrell, W., Dartford ... £410 0 0  
Knight, T., Sidecup (accepted) ... 305 0 0  
Smith, E., West Croydon (too late) ... —

**DARTFORD.**—For drainage work at Gartly-place. Mr. G. H. Tait, C.E., engineer:—  
Hewett, E., Dartford ... £56 10 0  
Kemp, G., Dartford (accepted) ... 39 10 0

**EAST BRENT, SOMERSETSHIRE.**—For first portion of the work to be done at the parish church, for the Venerable Archdeacon Denison. Mr. E. H. Lingen-Barker, architect:—

Jones and Willis ...	£690	0	0
Midland Joinery Co. ...	517	12	0
Goss ...	400	0	0
Hems ...	380	0	0
Kimberley ...	365	0	0
Cowlin ...	349	0	0
Pollard ...	345	0	0
Hawkins and Co. ...	293	19	0
Merrick ...	268	17	0
Dart (accepted) ...	240	0	0

**EDINBURGH.**—For enlarging the Harperidge reservoir, for the Edinburgh and district water trustees. Messrs. Leslie, Edinburgh, engineers:—  
Young, J., and Sons (accepted).

**GLASGOW.**—For the construction of the Blane Valley section, 5½ miles in length, of the new aqueduct to connect Loch Katrine with the Maydoch and Craigmaddie reservoirs, for the town council:—  
Young, J., and Co., Glasgow (accepted).

**GLASGOW.**—For alterations to windows on the first floor of the Municipal Buildings, for the town council. Mr. W. Young, London, architect:—  
Morrison & Mason, Ltd., Glasgow (accepted) £153 9s. 2d. per window.

**HALBERTON, N. DEVON.**—For reseating in pitch-pine and restoring the Bible Christian chapel and replacing present pulpit by a rostrum:—  
Castle, A., Bow (accepted).

**HAMPTSTEAD.**—For the erection of one pair of semi-detached houses on the Frolgan Mansion Estate. Mr. J. Neale, F.S.A., 10, Bloomsbury-square, W.C., architect and surveyor. No quantities supplied:—

	A.	B.
Langdale, Hallett, and Co., London ...	£6,500	—
Holloway Bros., London ...	5,420	£5,214
Garlick and Horton, London ...	5,395	5,193
Foster and Dicksee, Rugby ...	5,252	4,994
McCormick and Sons, London ...	4,387	4,198
A.—Corsehill stone. B.—Monk's Park stone.		

(The tenders do not include mosaic floors, tile hearths, stoves, mantelpieces, painted glass, door furniture, painting, or papering.)

**HIGHWORTH.**—For alterations and additions to house in Westrop-terrace, Highworth, Wilts, for Mrs. Padley. Mr. W. Drew, M.S.A., 22, Victoria-street, Swindon, architect:—  
Wiltshire, G., Swindon (accepted).

**KINGSBRIDGE.**—For erection of buildings at Instert Farm. Mr. W. M. Tollit, architect. Quantities supplied:—

Yabsley ...	£756	10	0
Ruth and Son ...	723	14	7
Warren ...	640	0	0
Hooper ...	622	10	0
Steele Bros. ...	614	0	0
Chapman and Pearce ...	610	0	0
Edgcombe and Harvey, Steete ...	592	0	0
Mitchell ...	549	11	5

\* Accepted.

**KINGSTON.**—For alterations and additions to Fairbairn. Mr. T. Searancke Archer, F.R.I.B.A., architect:—  
Colls and Son ... £2,244 0 0  
Adkins ... 2,106 0 0  
Sweet and Loder ... 2,100 0 0  
Lansdowne ... 2,069 0 0  
Holliday and Greenwood ... 2,088 0 0  
Lawrence, E., and Sons ... 1,979 0 0  
Ansell ... 1,970 0 0  
Higgs, J. ... 1,957 0 0  
Shurmer, W. ... 1,746 0 0

**LEWANNICK.**—For the restoration of the parish church of Lewannick, near Launceston. Mr. A. B. Peters, of Launceston, architect:—  
Hems, H., Exeter ... £2,045 0 0  
Reed, J., Plymouth ... 1,666 0 0  
Blowey, P., Plymouth ... 1,556 0 0  
Rendle, Callington ... 1,500 0 0  
Rosekelly, Calstock ... 1,325 0 0  
Burt, J., Launceston (accepted) ... 1,250 0 0

**LONDON.**—For pulling down and rebuilding warehouse No 5, Heneage-lane, Bevis Marks, E.C. Mr. H. P. Monckton, F.R.I.B.A., 32, Walbrook, E.C., architect:—  
Greenwood, J. ... £1,153 0 0  
Harrison and Spooner ... 1,087 0 0  
Turtle and Appleton ... 1,013 0 0  
Roome, E. A. (accepted) ... 845 0 0

**LONDON.**—For alterations at Nos 186 and 187, Queens-gate, Mr. T. Searancke Archer, F.R.I.B.A., architect:—  
Builders' work:—Stone, B.  
Decorator:—Witt, T.  
Hydraulic lifts:—Smith, A., and Stevens.  
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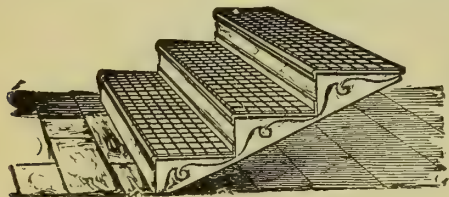
**LONDON.**—For the reinstatement of office fittings, at the International Headquarters of the Salvation Army, 101, Queen Victoria-street, London, E.C., for General Booth. Mr. J. W. Dunford, 101, Queen Victoria-street, London, E.C., architect and surveyor:—  
Coxhead, J., Leytonstone (accepted) ... £1,107 2 4

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Bescot Junction	Clayton	Lichfield	Limehouse	Oldham (Mumps)	Sutton		Tyne	Jamaica Level	firmly
Birmingham	Cliffon	Gloucester Road	Lincoln	Paddington	Sutton Coldfield		Normanton	Leyton, Gram-	Guy's Hospital
Bishopgate	Clietheroe	Greenwich	Little Ealing	Parsons Green	Temple		Northampton	mar School	Lincolnshire
Blackfriars	Crews	Hackney	Liverpool Road,	Patrickcroft	Thornton		Norwich	Leyton, Church	County Asylum
Blackfriars	Crooked Billet	Haggerston	Manchester	Pickles Bridge	Torquay		Portsmouth	Road	Middlesex
Blakely	Level Crossing	Hammersmith	Liverpool Street	Plaistow	Tower of London		Preston	Newhaven	County Lunatic
Blaydon-on-Tyne	Cross Lane	Heaton Park	Llandudno	Pleek	Tring		Regent's Park	North Bow	Asylum
Bletchley	Crumpsall	Hereford, Barr's	Loudoun Road	Plymouth	Victoria Park		Salford	Old Ford	Netley Hospital
Bolton	Cullercoates	Court	Ludgate Hill	Portsmouth	Walham Green		Shorncliffe	Poplar, Byron & Peterborough	
Bolts Bridge	Dalbhill	Highdram Road,	Mark Lane	Prestwick	Walsall		Trim	Bright Streets	Infirmary
Bombay, India	Daybrook	Walsall	Manchester, Ex-	Radcliffe	Walsall		Worley	Southsea, Rubery Asylum	
Bow	Hollyhead	Homerston	change	Road	Walsall		Winchester	Church Path	Northfield
Bowdon Central	Horley	Manchester, Ex-	change	Salisbury Road	Waterloo,		Woolwich	Southsea, Omega St. Thomas's	Hospital
Brick Lane	Hounslow	Manchester, Ex-	change	Seething Lane	Liverpool		Wrexham		
Bristol	Hounslow Bar-	Manchester, Ex-	change	Shadwell	Weaste				
Broadfield	racks	Manchester, Ex-	change	Shedfield	Werneth, Old-				
Broad Street	Dudley Port	Manchester, Ex-	change	Shoreditch	Werneth, Old-				
	Dundee	Manchester, Ex-	change	Snow Hill, Bir-	Westbourne				
	Ealing Common	Manchester, Ex-	change	mingham	West End Lane				
		Kemble Junction	Milverton		Dundalk				

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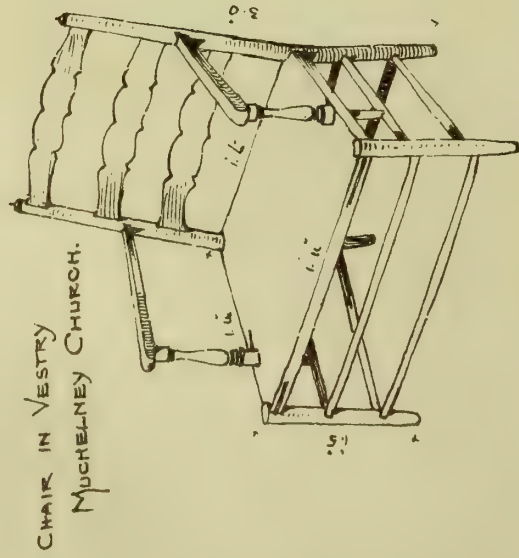




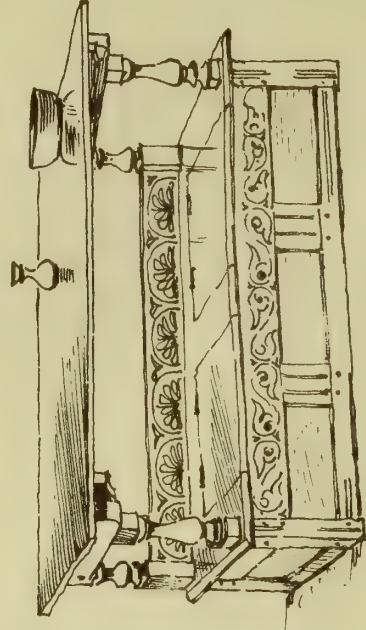


THE BUILDING PEWS APRIL 18, 1890.

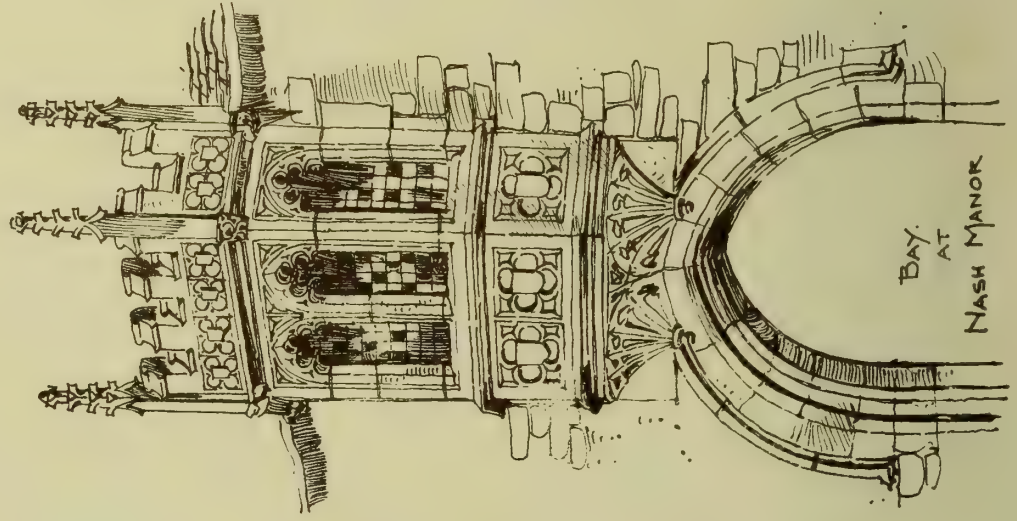
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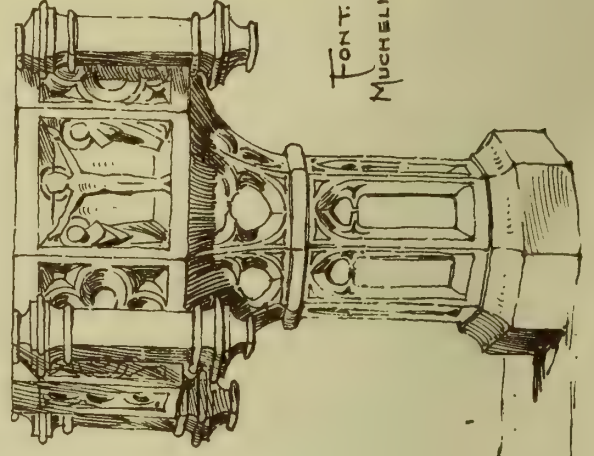
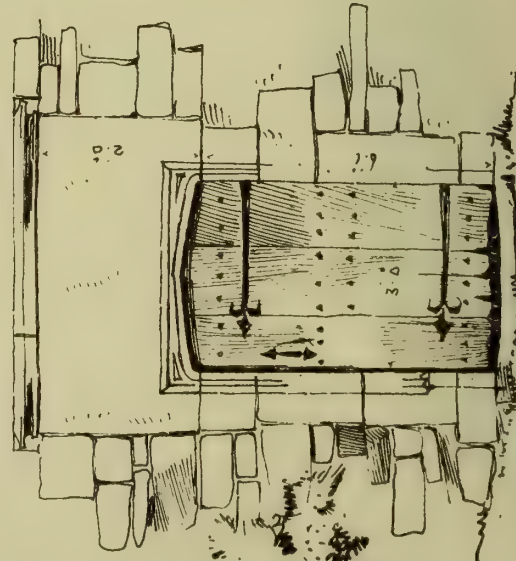


SETTLE AT MONTACUTE



BAY  
AT  
NASH MANOR

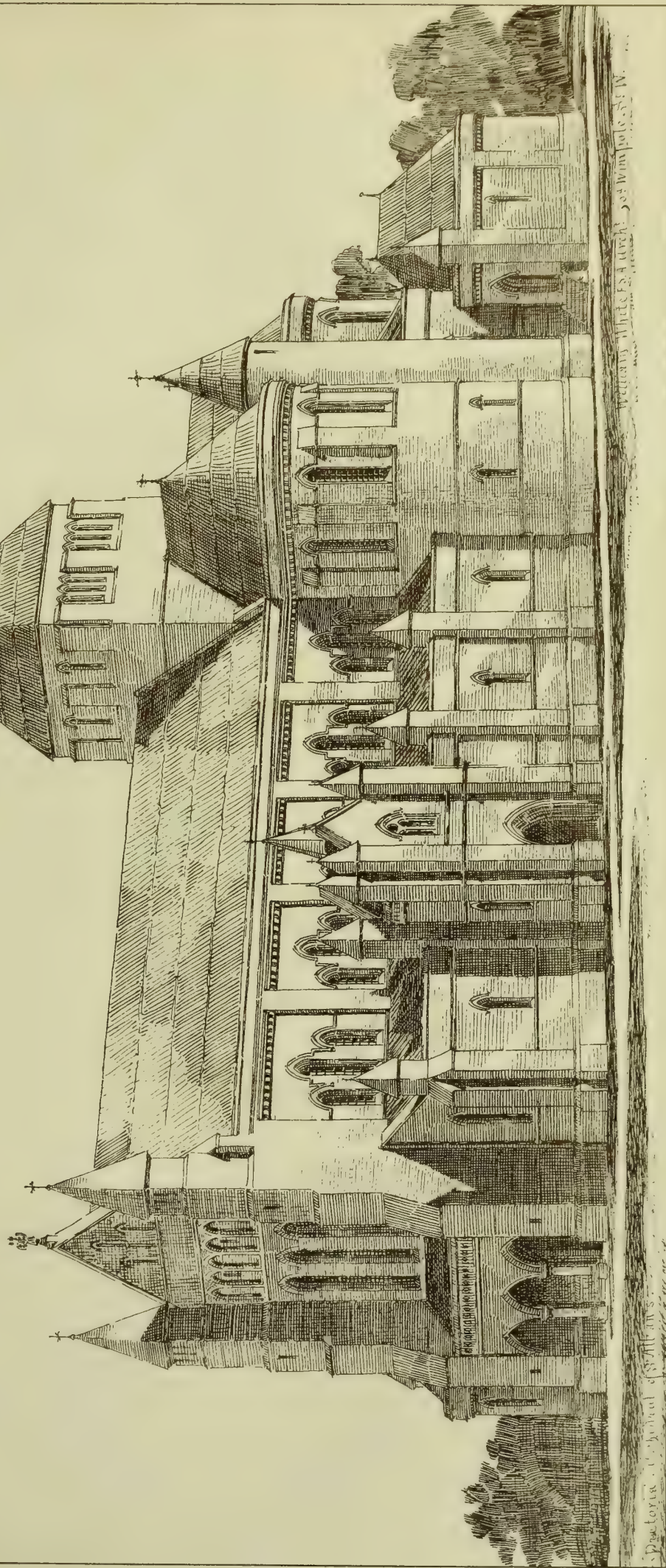
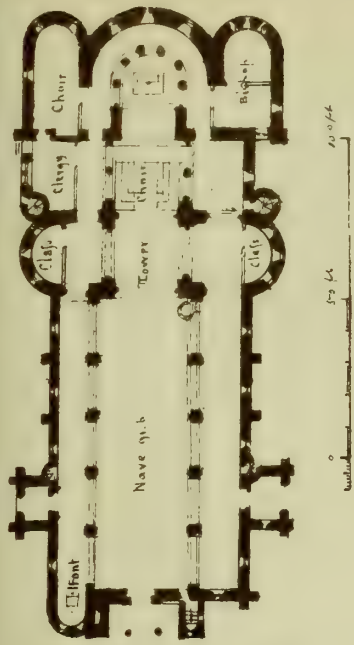
DOORWAY.  
EAST STOKE.



FONT  
MUCHELNEY CHURCH.



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Pretoria Cathedral. Architect, Wm. White, F.S.A.



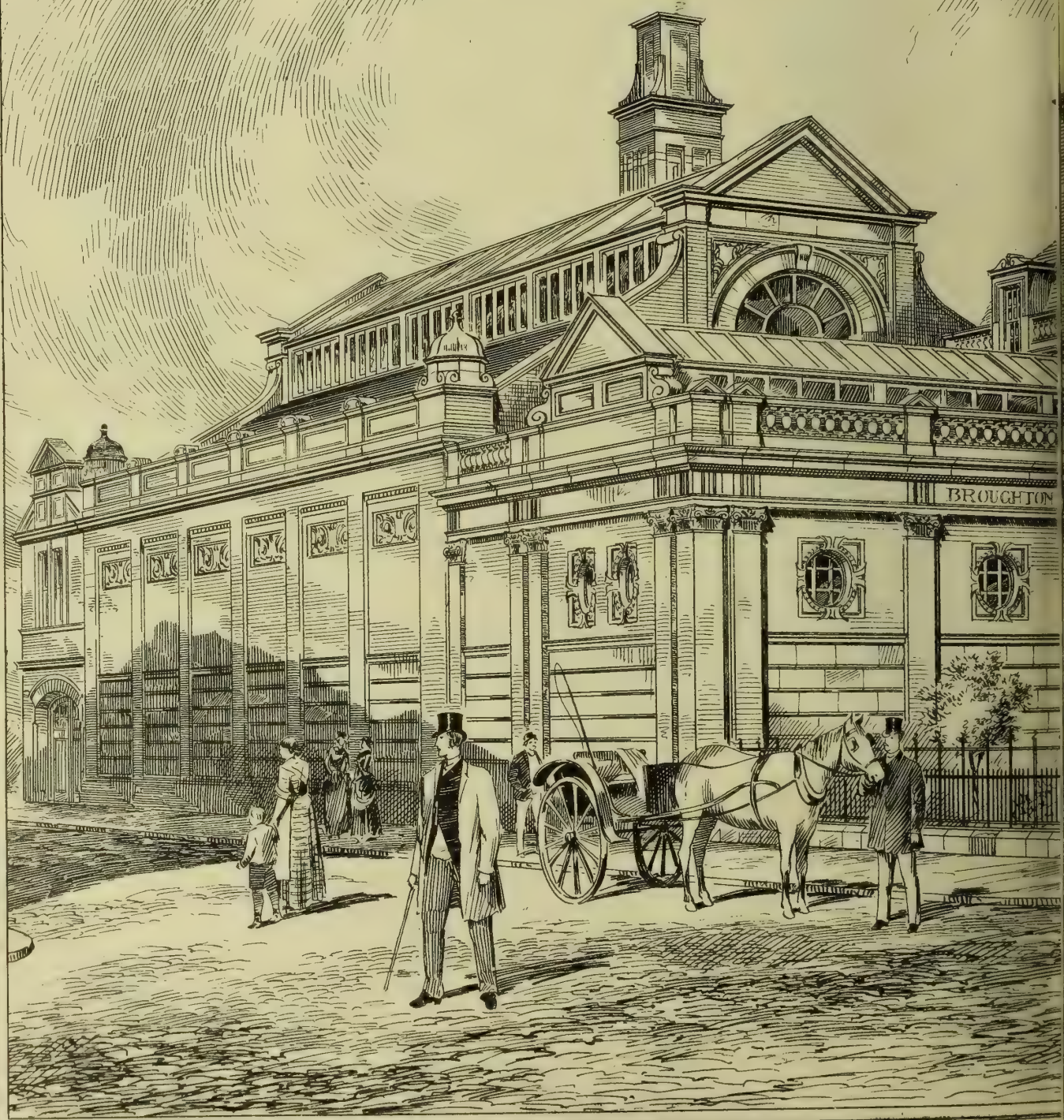








ACCEPTED DESIGN  
BOROUGH OF SALFORD  
COMPET<sup>N</sup> FOR BATHS BROUGHTON  
MANC<sup>N</sup>ALL & LITTLEWOODS ARCH<sup>T</sup>S MANCH<sup>R</sup>





The ground floor plan of the Great Closes Street building is a detailed architectural drawing. It features a large central hall with a 'COMMITTEE' room and a 'MEN'S SECOND CLASS' room. To the left is a 'MEN'S FIRST CLASS' room. To the right are 'MEN'S SECOND CLASS' and 'MEN'S FIRST CLASS' rooms. The plan also includes a 'BOILER' room, 'MEN'S BATHS', 'WOMEN'S BATHS', 'SLIPPER BATHS', and a 'REST ROOM'. A 'STAIRS' area is located near the center. The plan is oriented with a north arrow pointing towards the top right. A scale of feet is provided at the bottom right, ranging from 0 to 100 feet. The building is situated on 'GREAT CLOSES STREET'.

Men's First Class  
Swimming Bath  
Men's Area 79 x 25' 6"

Men's Second Class  
Swimming Bath  
Men's Area 79 x 25' 6"

Committee  
Men's First Class  
Men's Second Class  
Men's Bath  
Women's Bath  
Slipper Bath  
Rest Room  
Boiler  
Men's Bath  
Women's Bath  
Slipper Bath  
Rest Room  
Stairs  
Entrance  
Men's First Class  
Men's Second Class  
Men's Bath  
Women's Bath  
Slipper Bath  
Rest Room

Scale of Feet

GREAT CLOSES STREET

Ground Floor Plan



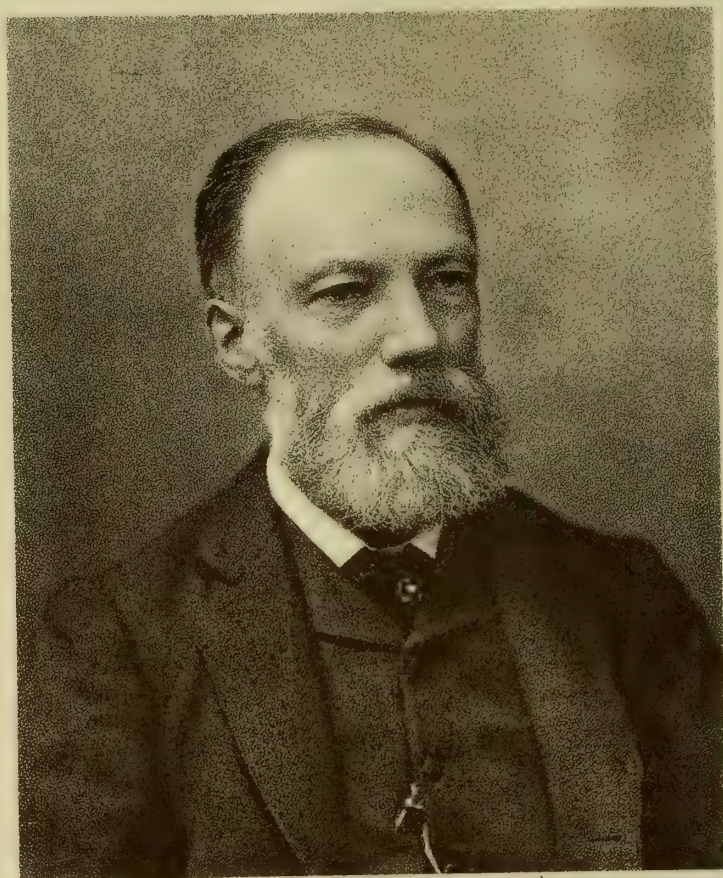






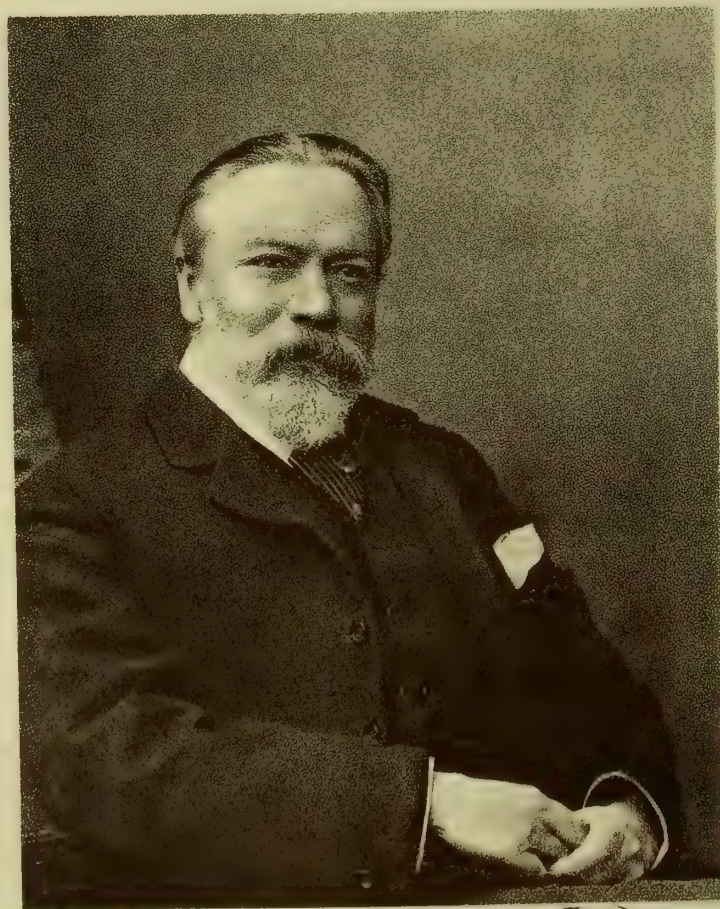






*Aldam Heaton*

ALDAM HEATON



*G.T. Robinson*

G.T. ROBINSON

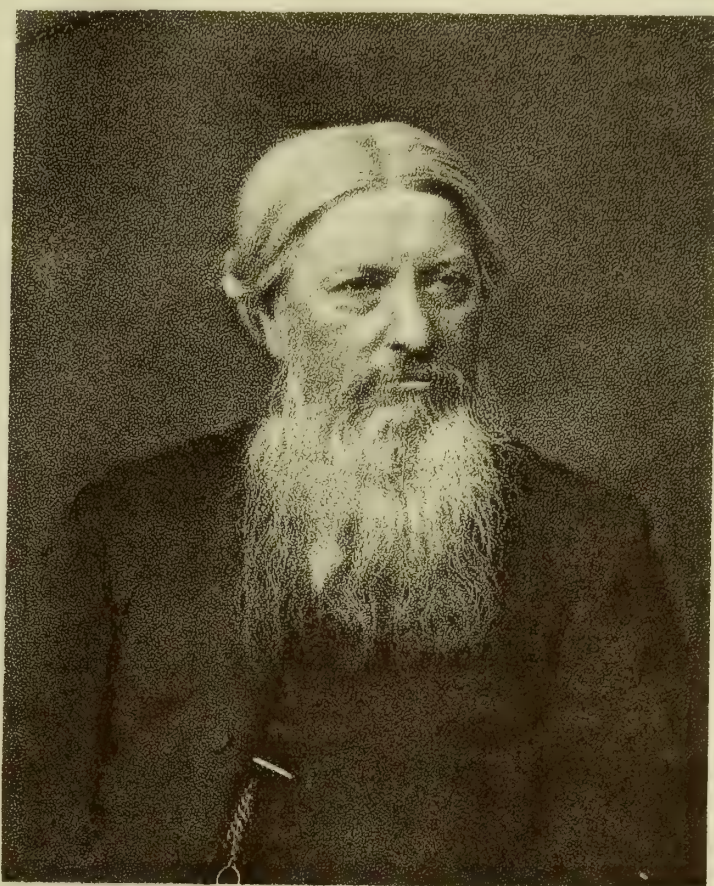


APRIL 25, 1890.



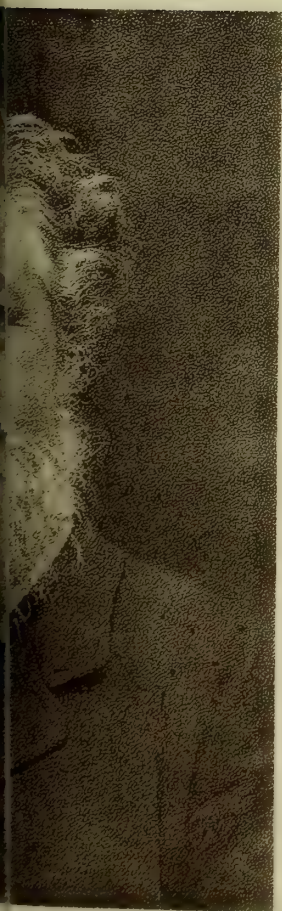
Henry Holiday

DAY.



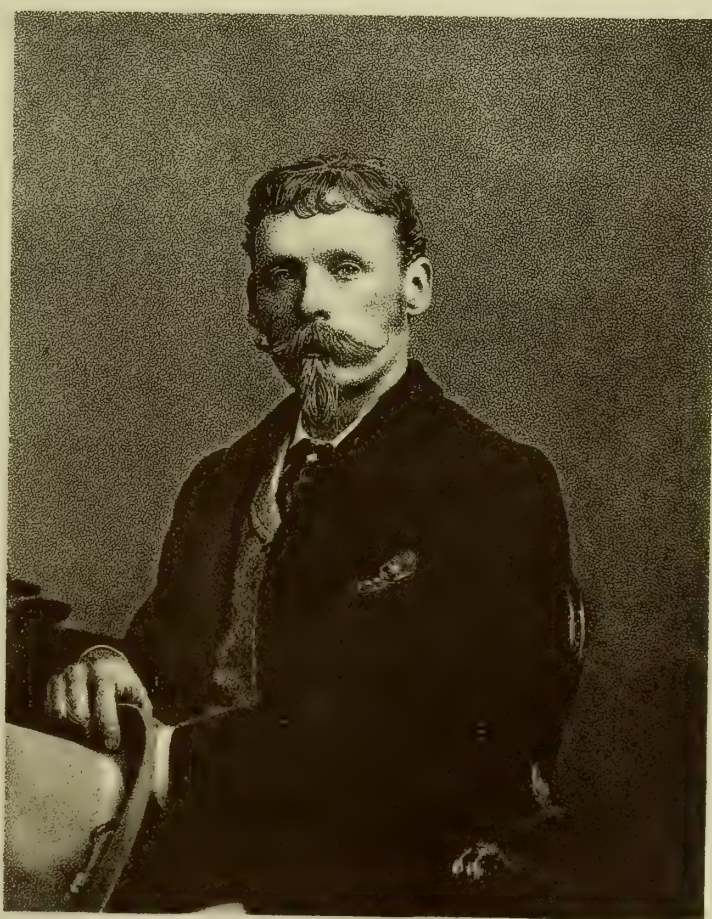
Ford Madox Brown

FORD · MADOX · BROWN ·



William Morris

MORRIS.



Walter Crane

WALTER · CRANE ·







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1842.

FRIDAY, APRIL 25, 1890.

## STORIES AND PARTY-WALLS.

ONE of the questions repeatedly occurring in towns under the control of the Public Health Act is the meaning to be attached to the by-law with respect to the number of stories and the thickness of walls of new buildings. The question mainly arises in regard to the construction of houses of two or more stories, and turns on the interpretation of the term "topmost story." We shall here discuss the subject from the builder's point of view, and also from that which the framers of the by-laws appear to have taken. Ordinary builders, as well as architects, have been accustomed to regard the term "story" as meaning a floor, or as a space inclosed by walls, not as the space included between the sloping sides of the roof and the triangular ends or gable walls, and they have therefore interpreted the phrase "topmost story" as a floor space constructed or adapted for habitation, whether wholly or partially in the roof or not. According to this construction of the by-law, a house having two floors, the upper one ceiled on a level with the wall-plates and a roof of ordinary construction over, would be called a two-storied house. A three-storied house would imply a third floor obtained either independently of the roof, or partially included within it, having windows or dormers, as the case may be. But the Model By-laws which have been sanctioned by the Local Government Board expressly state, in the interpretation of terms prefixed to the By-laws for New Streets and Buildings, that "Topmost story" means the uppermost story in a building, whether constructed wholly or partly in the roof or not, and whether used or constructed or adapted for human habitation or not."

According to this definition, the word "story" implies either a floor to be used as a room, or merely a space included between the rafters of the roof and the ceiling joists of the story below. This is evident from the words "whether used or constructed or adapted for human habitation or not." But the 18th clause further says that: "(a.) The height of a topmost story shall be measured from the level of the upper surface of the floor up to the level of the under side of the tie of the roof or other covering, or if there is no tie, then up to the level of half the vertical height of the rafters or other support of the roof." (The italics are ours.) Here we have a more explicit statement as regards the vertical height of a topmost story—viz., that it is to be measured to half the height of gable or triangle formed by the rafters, and the clause leaves us in no doubt as to the lower limit of the measurement. It says, "from the level of the upper surface of the floor," and the builder naturally thinks that a floor is meant; certainly not ceiling joists or roof ties. The clause we have considered is the turning-point upon which the rules as to thickness of walls depend, because the rules regulating them are governed by the question of the number of the stories.

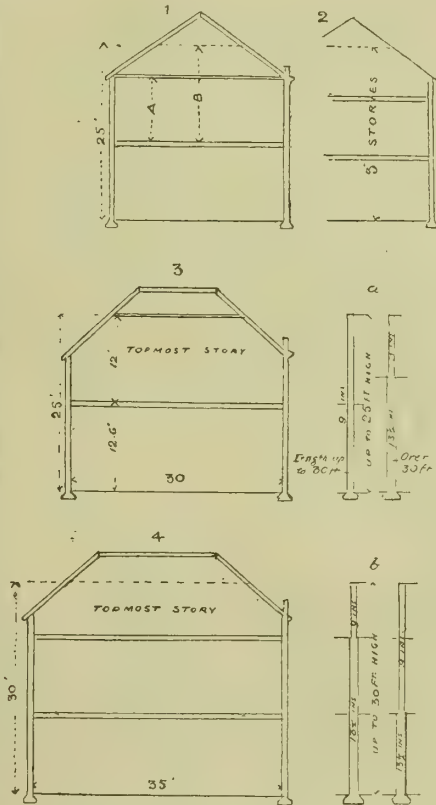
Referring to the clauses on the thickness for walls of domestic buildings, we shall see that they have been regulated first by their height, and secondly by their length, the latter being taken between cross or return walls of the prescribed thicknesses. A distinct instruction is given as to height. Clause 20 says: "The height of a wall shall be measured from the top of the footings to the highest part of the wall, or, in the case

of a gable, to half the height of the gable." From these definitions as to topmost story and to heights and lengths of walls, it will be seen that in an ordinary house with span roof the length of wall will be measured between the front and back external walls, and the height from top of footings to half-way up the gable. We have next to apply the schedule to practical cases; and to simplify the subject as much as possible we confine our attention to the smaller class of houses in which the height of party-walls does not exceed 25ft. to 30ft., and their length 35ft.

First let us take walls which do not exceed 25ft. in height. Under this height there are two cases mentioned in the schedule, one in which the wall "does not exceed 30ft. in length, and does not comprise more than two stories," and the other where the wall "exceeds 30ft. in length or comprises more than two stories." In the first case the wall is to be 9in. thick for its whole height; in the second the wall is to be 13½in. below the

that shown in Fig. 2, where the topmost story is partly in the roof. For a wall, then, comprising three stories a 13½in. wall has to be used below the topmost story, as shown at *a*, and the same thickness is required for a wall which exceeds 30ft. in length, but having only two stories. So that a 13½in. wall below the topmost story is required in each case as is clearly the intention of sub-clause *a*. For walls which exceed 25ft. in height and are up to 30ft. high, the old model by-law prescribed 13½in. below the topmost story and 9in. thick for the rest of its height. This clause has been repealed by some local authorities, and the new clause reads thus: "Where the wall exceeds 25ft. but does not exceed 30ft. in height and 35ft. in length, it shall be 13½in. thick below the topmost story and 9in. thick for the rest of its height, and where the wall does not exceed 30ft. in height and is more than 35ft. in length, it shall be 13½in. thick below the topmost story and 9in. thick for the rest of its height." Sections *b b*, Fig. 4, explain this rule, which is in force at Bournemouth among other places. According to this regulation the same section and thickness are prescribed for a wall over 30ft. high and above 35ft. long that are prescribed for a wall 25ft. high and over 30ft. long.

It is unnecessary to enter further into the schedule. From what we have explained, it is not surprising that builders in provincial towns should find it perplexing to follow the by-laws. As we have shown, the clauses are ambiguous; the term "topmost story" is interpreted in a manner that leaves it doubtful what the exact meaning is, though it certainly implies that a space in the roof not inhabited or adapted for the purpose of a story may be considered one. Taking this clause, and the one interpreting the height of topmost story, it appears evident that there are two ways of counting according to the roof construction. First, when the ties rest on the plate-level on the top of walls, the topmost story is the story beneath the ties, as shown by *A*, Fig. 1. Second, when there are no ties the story is the space between the upper surface of floor to half the vertical height of the rafters, as shown by *B*, or as in Fig. 2. To say the least, there is room for misapprehension. When the roof space is left for a lumber-room, and the roof ties made to serve as joists, the space evidently is reckoned the topmost story, and the others beneath count from it, and the party-walls must be made 13½in. thick below the top story; but if there is no floor surface on the tie the house is only of two stories, and the wall can be built of 9in. from top to bottom, although in both cases the height of the wall is the same, or does not exceed 25ft. Why should the extra story make the difference? One would have thought the height of wall and its length ought to be the guiding factors. Builders often utilise their roof span by turning it into a small store-room, but find to their own cost that it renders them liable for a thicker wall. They naturally ask why? All the interests of good construction and sanitary laws could be secured by making the height and length the determining rules without reference to stories. We do not complain of the thicknesses prescribed: we think they are the least compatible with good construction and the non-transmission of heat and sound. As regards three-storied houses we should like to see the thicker wall always adopted. A brick-and-half wall is not too much as a minimum between three-storied houses. All that is needed is a well understood rule of regulating the thickness. If the number of stories be adopted, it should be clearly stated what a topmost story is, and what it is not, so that the question of a story in a roof be understood. With the help of a diagram, the clauses could be rendered intelligible to anyone. Those towns like Liverpool and Manchester which



topmost story, and 9in. thick for the rest of its height. Our sections *a a*, Fig. 3, show these cases. The height is taken half-way up the gable, and the length between the front and the back walls. As this class of dwelling is common in towns, the importance of the rule is evident.

Let us endeavour to determine each of these cases. Suppose the wall does not exceed 30ft. in length, but comprises more than two stories. We have to understand how the stories are to be reckoned, and which constitutes the "topmost story," because till the meaning of the latter is defined it is not easy to say whether a house has two or three stories. Is the roof-space above the plate level a story? If so, then there are three stories in the section we have given. Is the top story to be measured as at *A* (Fig. 1), or as at *B*? The definition of "topmost story" already given seems to show that *A* is the height intended—that is, "to the level of the underside of the tie of roof." If there is no tie, then the story is measured as at *B*. Between these two definitions there is a difference of half the height of roof. Probably the most ordinary arrangement of a three-story house is



have framed new by-laws, have seen the importance of this question, and we shall be glad to record any deviations or modifications that have been suggested or made by local authorities.

The recent appeal heard and dismissed by the Master of the Rolls and Lords Justices Fry and Lopes, brought by a Local Board in support of their trespass in demolishing building without a sufficient notice is another proof of the arbitrary exercise of powers by local authorities, and we are glad to see that the three judges sitting as a Court of Appeal followed the ruling in leading case of "Cooper v. the Wandsworth Board of Works," that local authorities, before demolishing property which transgresses the by-laws, must give full and clear warning to the owner.

#### ROYAL SOCIETY OF PAINTERS IN WATER COLOURS.

WITHOUT doubt the old Water Colour Society in Pall Mall retains its supremacy, in spite of new-comers. There is a capital show of drawings. We can admire the delicate manipulation of John W. North and Paul J. Naftel, the strong and powerful colouring of W. Eyre Walker and R. W. Allan, and the fine impressionism of Clara Montalba and George Clausen. Among the crowd of clever pictures we see on entering, is Arthur H. Marsh's feelingly-painted "Gathering Fuel" (4), a well-drawn study of wooded upland, two women-toilers engaged in earnest labour; Miss Clara Montalba's "Ponte della Paglia, Venice," a delightful piece of colour, radiant in the warm sunlight of which she is so consummate a limner; S. P. Jackson's fine "Watergate Bay"; and Cuthbert Rigby's rich colour study of autumnal woodland. In Paul J. Naftel's "Cliff at Alport" (7) we have one of his subtly-rendered landscapes full of delicacy and tenderness. These Derbyshire views such as the "Lathkill River" (18), the "Village of Alport" (73), and "Old Cottages" (102) charm by their evidence of patient study of colour and atmosphere. We cannot see much beauty in the large picture by H. Clarence White (6), of "Harvest in Cambria." The wildness of the mountain scenery clashes rather strangely with the quiet harvesting operations in the foreground, the masses of rich colour and vapour produce a diversified but unrepulsive effect. Mr. White has a vivid sense of colour, and his other views of Welsh and Cumberland scenery display some fine renderings of sunlight and mist. In "Fishermen of Old" (137), the scheme of colour and the handling is decidedly Turneresque. Mrs. Allingham, whose work always lends interest to the gallery, sends a delicate drawing of "Blabre's House, Hampstead" (11), the tree is tenderly drawn; near which H. Stacy Marks, R.A., has a capital study of an old *cognoscente*, in 18th-century garb, examining a rare and early book (13). The face is full of expression and character, though the blue colouring may be objected to. But landscape and coast take the lead here, and we hardly know to whom the honours are chiefly due. Landscape has many to divide the favours amongst. W. Eyre Walker stands high. His "Gleam of Sunshine" (9), the broad handling of the hilly landscape, "On Ingleton Fells," with its deep ravine; the delicate colour and drawing in "January in the Woods, Wharfedale" (99); the powerful colour of "A Thundercloud" (160), and the admirable bit of woodland, "Ivy-clad Stems" (187), all in the same favoured locality, amidst the dales and fells of Westmoreland and the North Riding, represent a wide range of treatment. K. Thorne Waite, in his delightfully fresh sketches and drawings of Sussex scenery, the Downs, Lancing, and Bramber, his cottages at Hungerford, and, above all, his fine

drawing, "The Blue Waggon" (59), has proved again his claim to rank as one of our foremost water-colour painters of open landscape in which pure colour, breadth, truth, and feeling are conspicuous. The merry haymakers in the waggon on the rough, uneven ground are a remarkably fine rendering of English rural life, and Mr. Waite knows, too, the value of abrasion and rubbing as technical methods of producing effect and atmosphere. This drawing of hayfield life and labour is certainly one of the most important contributions, to say nothing of other sketches. All of them are healthful and true, without tricks of brush, and free from the vices of thick pigment. Less vigorous is the work of J. W. North, one of the older members. His delicacy of manipulation and subtle technique render his landscapes unique for their tenderness of expression, light, and atmosphere. Mr. North works in a thick body colour, and upon this ground the finer ramifications of branches and twigs are deftly expressed by removal and scratchings of the colour. His "Late Autumn" (110) is a lovely study of wood and cascade, preserving by this method breadth and tone, and the finer interlacings of foliage. "Old Castle Walls and Mounds" (191) is another crisply-painted study of distance and tone, both poetical and feelingly rendered. In the same category we may place the work of Wilmot Pilsbury. "Late Autumn" (35) is a wonderfully clever study of woodland, the leaves and stems sharp and clearly expressed. "Marshy Ground" (78) is sweet in colour; "A Wood in Autumn" (104) is bright and sparkling in its grey tints lighted up by the sun, and "Worcestershire Cottage" (173) and "Gorse in Bloom" (202) are each delicate transcripts of nature into which the painter has infused his own earnestness and emotion. A strong contrast is presented between these and the sterner mood and handling found in the works of R. W. Allan, Arthur Melville, and others. The charge of effeminateness has been brought against the delicate handling of Naftel and North—is it not rather more correct to say that refinement has been studied by this class of landscapist? The vigorous blottesque style of touch seen in R. W. Allan's work, as in his "Market Place, Poitiers" (2), "The Dutch Fishing Village" (74), "At Pauillac," "Landing Hay" (165), "Vintage in Medoc" (167), is clever. Strong colour, a full liquid brush, brilliancy of effect, are the leading characteristics of these drawings or sketches, the grouping of fisher-folk, excellent; on the other hand, there is a degree of hardness inseparable from the style. A. Melville's "North Gate, Bagdad," is clever and bright. C. B. Phillip in his "North British Views in Argyllshire" (30), "Thirlmere, Cumberland" (60), is a powerful disciple of this school; but his drawings are somewhat hard and cold, characteristic of the mountainous districts of the North. Herbert Marshall, on the other hand, in his "Arnheim" (22), and "Woodbridge" (208), sketches with his usual brilliancy and sharpness of touch.

Four charming contributions of Miss Clara Montalba are hung. Her "Tower" (12) "Old Mill, Zaandam," and the "Thames Barge" are full of silvery-grey light or opaline tints; nor has this lady painter of Venetian lagoons and river craft forgotten her power of investing these objects with poetical meaning and interest. Light and colour are in her hands made to tell their own tale, as we see in the silvery light on river and sky and the murky grey of the barge. Tom Lloyd's one picture is "Rush Cutters" (29), a barge, towed by two men, filled with the spoils of the day's labour, the ruby glow of the evening sun lighting up the standing figure of a girl-peasant and a love-making pair—delightful in its serenity and rich, hazy colour. No wonder that it is the

favourite picture. Wm. Callow's sketches are less interesting as a whole, though we can admire the drawings of Amsterdam (31), Coblenz (32), the colour, light, and shadow of the Grand Rue, Lisieux, Normandy, with the fine spire of St. Pierre, the "Juden-Strasse, Frankfort" (109), and the sketch of Mary-le-Port-street, Bristol (188). The Venetian studies are clever, but less characteristic of Mr. Callow's skill as a delineator of architectural landscape. Sir John Gilbert's—the President's—large picture, "Autumn," has much of the romantic and poetical of early days in its composition. There is freedom, but the landscape full of knolls is strangely in keeping with the poem, which has suggested the subject. Alfred D. Fripp, the secretary, is a master of daylight effect, and his work—as the clear drawing of "Durdle Door" (90), with its shadow of rock on the sea, and his "Midday, Ringstead" (108)—show how much luminous effect can be produced by thin light washes. Mr. George A. Fripp has given one or two fine studies of mountain scenery, as the "Loch Avon, Northern Grampians" (101), and "In North Wales" (95), a sunny vale with its long cast shadow, besides several other sketches on the screen. C. Napier Henry's "Bowling Along" is a clever piece of sea painting, and the perspective of the trawler and green swirling sea well done. An old and esteemed name, Birket Foster, is represented by a large drawing, "Arrival of Hop Pickers" (63), careful and minute in the grouping of the children and peasants, though a little too suggestive of the chromo. "A Surrey Lane" is a delightful sketch. Ernest A. Waterlow has some drawings in his usual strong colour and style. "A Northern Harbour" (141) and "The Curfew Tower" are the best. A strong sea and sky is shown by Henry Moore, A.R.A.—rather hard. Matthew Hale has a nice study, "A Sandy Shore," grey in tone, with its moonlit clouds. Carl Haag sends a portrait of "A Worshipful Master"—clever in its strong light on a pleasing countenance—surely that of Mr. Wyatt Papworth. We can only glance at a few others. E. K. Johnson's idyllic composition (38) is rather weak in drawing. No. 98, Edward J. Goodall's "Interior of Mosque, Cairo," is a large, warm-toned drawing, carefully rendered in the details. We must also briefly notice Albert Goodwin's "Sinbad the Sailor's Voyage," where he is on a raft asleep, a masterly study of light and colour; and Charles Robertson's picture, "The Serpent Charmer," a clever drawing, in which the colour and light are well managed. As a figure study, Edward Radford's "Faute de Mieux" (135) deserves mention for good drawing—the colour is rather glaring. As classical figure subjects we may also refer to G. Lawrence Bulleid's "After the Bath" (181), and "In Cynthia's Garden" (162), both luminous and delicate drawings. There is much refinement and cleverness shown in the figures and textures, the schemes being more decorative than pictorial. David Murray's "Showery Weather" is clever and effective as a study of cloud and atmosphere. Arthur Hopkins has a charming subject, "When All the World is Young" (150). "Stepping Stones," by Cuthbert Rigby, is pretty in sentiment. George Clausen's studies (125, 211), especially "Hedgers," are admirable; and A. E. Emslie has a feeling sketch, "The Old House," on the screen.

#### "REGISTRATION" AT THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL general meeting (for members only) was held at Conduit-street on Monday evening last, to receive the report of the scrutineers appointed at the special meeting held on March 31st (see BUILDING NEWS, April 4th, 1890) on the result of the poll demanded at that



meeting. There was only a sparse attendance, and Mr. Arthur Cates, vice-president, took the chair. The following is the text of the resolution submitted to the members to vote upon. It was originally brought forward by Prof. Roger Smith as an amendment to Mr. J. Wreghitt Cannon's resolution:—"That at as early a date as possible statutory powers should be sought to establish, as in other professions, a system of compulsory examination to be held by the Institute, and to be extended to all architects hereafter entering the profession 'whether as members of the Institute or not.'" The amendment (which was carried by 106 against 37) was then passed as a substantive motion:—"That, while not opposed to the principle of compulsory examination as applied to those about to practise architecture, the Royal Institute of British Architects is of opinion that the difficulty of restricting by statutory powers the practice of architecture to those who have passed an examination is at present so insuperable, that it is undesirable to make an immediate application for such powers." A demand was then made, in accordance with provisions of By-law 62, by Messrs. H. Roumieu Gough, H. H. Collins, Oswald C. Wylson, Robert Walker, Maurice B. Adams, and Zeph. King, Fellows, that the resolution be suspended, and a poll thereon be taken by voting papers. The voting forms were thereupon issued to all members of the Institute resident in the United Kingdom, a space being left for each person to insert the words "for" or "against" the resolution in question. The report of the scrutineers, which was read by the chairman on Monday, showed that 708 papers had been returned, but of these 6 came too late, and 18 were informal, and so disqualified. Of the 684 remaining total, 520 voted in favour of the above resolution, and 164 voted against it, giving a majority of 356 for Professor Smith's motion. The result was received with scarcely any demonstration by those present. The principle of Registration has thus hereby been recognised beyond dispute by the Institute, although only about half the total number of professional members have given their vote on the question. Indeed, a very considerable number were unable to record their opinion on the matter at all as presented by the resolution thus submitted to them, because of its dual form. Though really anxious for Registration, they realised that if they voted against the latter part of the above motion, which insists upon delay, they would be taken to have voted with equal force against the adoption of the principle of Registration involved by the first part of the resolution. There is no doubt that the wording was very cleverly managed, and to some extent it has checkmated the demand which was made for a poll. This was certainly not fair fighting; but possibly it may be urged on behalf of the Council that the simple issue of Registration was not before the body of members of the Institute as a clear and definite question. This remains to be done, and no doubt before long a means for accomplishing it will be found by those who have taken the question seriously in hand. At present the matter stands as a drawn game, and those members who have advocated Registration, in spite of the narrow-minded and unworthy imputations which certain interested persons have made in print against them, may well congratulate themselves on the results already arrived at. A vote of thanks was passed on the motion of the Chairman at Monday's meeting to Messrs. Wylson and Middleton for acting as scrutineers. Professor Roger Smith was too unwell to take part in counting the votes. Mr. Blagrove complained that special inscribed envelopes for the return of the voting papers were not issued, it being left to members to post their votes to the secretary, who, in many cases, had to open the envelopes to see whether the letters were ordinary correspondence or not. The Chairman promised that on any future occasions envelopes of the kind mentioned by Mr. Blagrove would be sent out with the voting forms. This was the first time such a poll had been taken of members of the Institute. There was no discussion, and the meeting terminated.

#### THE A. A. SOIREE.

THE annual soiree of the Architectural Association took place on Friday evening last at Westminster Town Hall, and attracted

between 400 and 500 members. The area of the hall was rearranged with seats surrounding small tables, and smoking was the order of the evening. Mr. Leonard Stokes, the President, made a genial chairman, and was supported by his vice-presidents and secretaries, and by Messrs. Cole A. Adams, Thomas Blashill, S. Flint Clarkson, H. L. Florence, E. G. Hayes, and J. Slater, past-presidents. In lieu of the elaborate farce teeming with topical allusions to current architectural questions, given during the past three or four years, the programme consisted of a concert followed by a variety entertainment. In Part I. Mr. C. D. Imhof played the opening overture on the piano, violin solos were rendered by Mr. E. A. Lambert and E. H. Homan, and received encores, and songs were given by Messrs. J. Dixon Butler, A. C. Bulmer Booth, Arthur Thomas, and Captain Watson, Mr. E. G. Killmister closing with a sketch entitled "Some Musical Notes." In Part II., a dozen members of the Association appeared with blackened faces and in the garb of negro minstrels, Mr. H. O. Creswell, as the President, being distinguished by a large tin plate hung round his neck, after the fashion of the royal gold medal. A travestie of an Institute meeting at 9, Conduit-street, followed, the hits being received with hearty applause. The President called on his secretaries (Messrs. Bulmer Booth and C. H. Brodie) to read the minutes, after which he gave an address dealing with the three subjects of Education, Examination, and Registration, all difficulties in the path of progress being proposed to be brushed aside by the easy expedient of allowing those to educate, examine, and register themselves that wished for it, while those that objected to it might do without it. Some interruptions being threatened by bones and tambourine (Messrs. S. B. Beale and E. A. Lambert), the President quieted them by threatening that unless they deferred to his ruling he would have their portraits published in the BUILDING NEWS. At intervals, between the speeches and conundrums, Mr. E. Garth whistled a melody from "The Holly Bushes" in excellent style, Mr. Killmister rendered an American song with chorus, Mr. J. Dunn gave a banjo solo, accompanied by Messrs. P. Bower, R. Welsford, and T. Rutter, and the whole was brought to a close at 11.30 by a break-down led off by Mr. Brodie.

#### "BUILDING NEWS" DESIGNING CLUB.

##### A ROW OF FIVE COTTAGES.

THE designs sent in for this subject are not only very numerous, but they are in a way very good, and show how serious a set of workers have joined our Club. We had no small difficulty in making our selection, because the best of the plans were on one point or another, taken in a general sense, very nearly equal in merit. More particularly is this the case with the second, third, fourth, and fifth designs. "Fiddler" is without doubt the best; "Skull and Cross Bones" comes second, and "North Star" ranks third. These are the conditions set for the competitors to work to:—

"Subject F.—A row of five cottages, the centre one to be a grocer's general shop. Each house to be on two floors, and to comprise living-room, 163ft. superficial area; kitchen, 144 superficial area; scullery, w.c., pantry, tool-house, and coal place (the shop to the central house to be provided extra to this accommodation), three bedrooms and store cupboard to each house on first floor, separate and large wash-house for general use to the rear. The building to face a village street, and have frontage set back from public footway 14ft. Back way to cottages from either end of row. Style left to competitors. Material, stone, or walls with tile-hanging above, optional; roof covered with tiles, scale 8ft. to the inch. Sufficient drawings to show design, including sketch."

We publish the drawings of the first three designs, and in this way their several faults and varied merits can be compared. "Tyne" is placed fourth, and "The Red Rover" next. "Fiddler's" designed is well-suited for a village street, and the houses look like cottages in a row, though perhaps the shop is not emphasised sufficiently—the window, in fact, would do equally well for a private dwelling. "North Star," the third design, errs a little in the other direction in this respect, making rather too much of the shop-front, though we are bound to admit it looks more like business with more light, if not more

air. In "Fiddler's" plan we fear the grocery would make the shop rather stuffy, the living-room, too, opening directly out of it, with all the smell of dinner and display of domestic arrangements. "Skull and Cross Bones" on the other hand cuts off his shop too much, so as to place it beyond control of those sitting in the living-room. A glazed hatchway would have met the case exactly. In neither "Red Rover's" plan nor "Tyne's" could this be done, as in both of them the shop adjoins the kitchen. "Fiddler's" shop is too cut-up; but it gives room for the display of goods, though the door opens the wrong way for a shop where many heavy things have to be got in and out. The staircase to this house is only lighted from the top. The other cottages seem fairly good, and the elevations are very pretty. The landings on the first floors are wasteful of space, except as affording room for boxes and the like kind of "portable property."

"Skull and Cross Bones" gives a shop front which hardly agrees in style with tile hanging, though in ancient examples Georgian bays may be seen inserted in older-gabled buildings. We do not call it a convenient shop, and it would be more in character with some other business than a grocer's general store. The wash-house is not well placed, and it takes up too much space in the yard of the shop premises. The other cottages are rather clever, and the design generally would look well. In the perspective sketch a false effect is obtained by making the windows too small.

"North Star," though unobjectionable in his façade, somehow makes the cottages look like rather more ambitious houses, such as villa places, and his plan, with the long passages and staircase facing the front door, is typical of the speculating builder's favourite arrangement. The exigencies of cheap buildings no doubt lead somehow in this direction, and the long passage does place the external doorway some distance from those of the dwelling-rooms, which is an advantage. The yards are very small, but the wash-house is of good size. The drawings are nicely delineated.

"Tyne" is improving, but his perspective is inaccurate. Note the porches are shown projecting much more than the shop-front bay, whereas they all are of the same depth, and the real effect is quite lost. The elevation is good, and above the average, though the shop-front looks pimping and wanting in breadth. The width—12ft.—is not enough for a central door arrangement. The shop-windows also are shut off too much from the interior by the deep show space the whole depth of the projection. The hall behind the staircase would be shockingly dark, and the wash-house built into the main block is quite a mistake. His plans for the other cottages are unobjectionable. "The Red Rover" has carefully drawn out his plans in full, and on the whole they are very well contrived, with care and skill. There is an attempt, too, in general composition, which we have taken into account. The shop we do not like, and the entrances of all the houses seem somewhat too roomy. The outbuildings are capital, and the wash-house is detailed properly. The covered porch to the scullery would be useful; but the space would be of more service inclosed into the sculleries and larders, and would cost more as at present. "Wallaby" makes his shop look too much like a tavern, and the circular bay is too clever, and is out of scale with the door. The arrangement of the shop is crude, and the top-lighted staircase is out of character with a village. The rooms are ill-shaped and poor in planning; but there is a "go" about the design which shows that this contributor is improving. Such large writing on the plans dwarfs their scale. High-pitched roofs cost money to build, and the space inclosed by them should not be wasted, as is here the case by "Wallaby." "Syak" ranks higher this time than usual. We are glad of it. There is a want of detail in his plans, and they are badly contrived on the sheet. The shop stands under a verandah, over which sails forward the upper story. "So-and-So's" shop is too small, with a very narrow door, much smaller than the other entrances. The elevations are drawn roughly, and the plans show absence of care. "Y" in a circle is rather more commonplace, but more careful and everyday looking. His plans are well considered, too, in some respects; but the elevations are not like what cottages designed with taste should be. "Y" in a circle draws well, and should follow



better types of work. "Horseshoe" sends one sheet in brown and another in black. The plans are too drawn out, giving needless extent of roof. The shop door is round the corner out of sight, and the shop is badly arranged. As to what becomes of the kitchen chimney, or how it reaches the stack over the party-wall, we cannot venture to say, and "Horseshoe" does not explain. He sends no perspective. "Cawder" is unambitious, and he evidently believes in verandahs. He plans with care, though we do not like his shop cut off as it is from the house. The warehouse or store at the back would be useful. The pantries under the staircases would be very small and low for head room. Otherwise the plan looks a practical one. "West Anglian" recesses his shop entrance, which is a mistake, making the shop very small, and spoiling the living-room for the sake of some external effect. The plan is not so good as the elevations, which are capitally drawn. The façade is a trifle too ambitious. "Ko Ko" cramps his front by narrow little windows, and his shop has no larger a window than the living-rooms. There is considerable ingenuity in his planning, and he will do better if he sticks to his work. "Glaucus" has improved already. The projecting shop standing in front of the main block is a novel arrangement, and the whole block would look picturesque enough if a trifle overdone. The other designs are difficult to exactly place in order—they vary so much, some good in one thing and faulty in another, some bad in plan, but having merits in the elevations. "Niger" cuts his group into three blocks, overdoing the central house, though he contrives a roomy, useful shop. The two entrances, one to the shop and one to the house, are exactly alike, and the doors to the other cottages face one another, which is an objectionable arrangement. "Skip Jack" comes next with not a bad design, openly drawn—his trees very much "skip-Jack." "Country Bumpkin" has a plan too small in parts, such as the pantry, coal-place, and tool-place accommodation; elevation over-diversified. "Dot" draws weakly with too fine a line; but if he wastes space over passages, he plans neatly. "Menelaus" sends an elevation, which is really rather good; but his drawings scarcely do it justice. His plan is poor. "Streona," "Noryb," "King Bruce," "Van Roke," "Cyclist," "Attempt," "X.Y.Z.," in a circle, "Icky," "Coombe," "Grafton," "Waverley," "Sea Foam," and "Anvers." This last is spoilt by the wash over the drawings. "Pippit" came in too late. The design is evidently by a good man, who has, however, much to learn before he produces either a good plan or a really suitable elevation. The waste of space in his high-pitched roof would never do for modern cottage-building.

#### CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—IV.

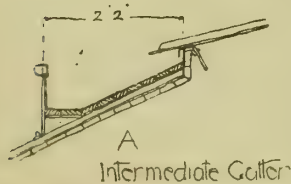
By BANISTER FLETCHER, JUN., A.R.I.B.A.

##### GUTTERS.

IN consequence of the enormous area to the great nave which has to be carried off, an intermediate gutter is formed at A (No. 14) at the point where the glass leaves off. This gutter

#### Palais des Machines

No 18

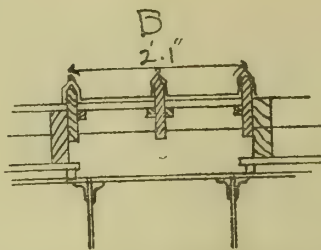


Intermediate Gutter

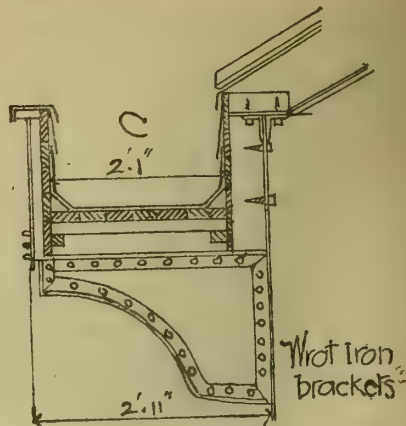
collects all the water from the glass on the upper portion of the roof, and it was necessitated in order to break the force of the descending water, which in a roof of this size becomes enormous. This gutter, of which a section is given (No. 18), follows the outline shown, and is fixed to the wood bearers by screws. The gutter A collects the water and empties itself by means of gutters, B, formed in the slope of the roof, into C, which are the main gutters to the roof. Details of B and C (No. 19) are here given, and their

No 19

#### Palais des Machines

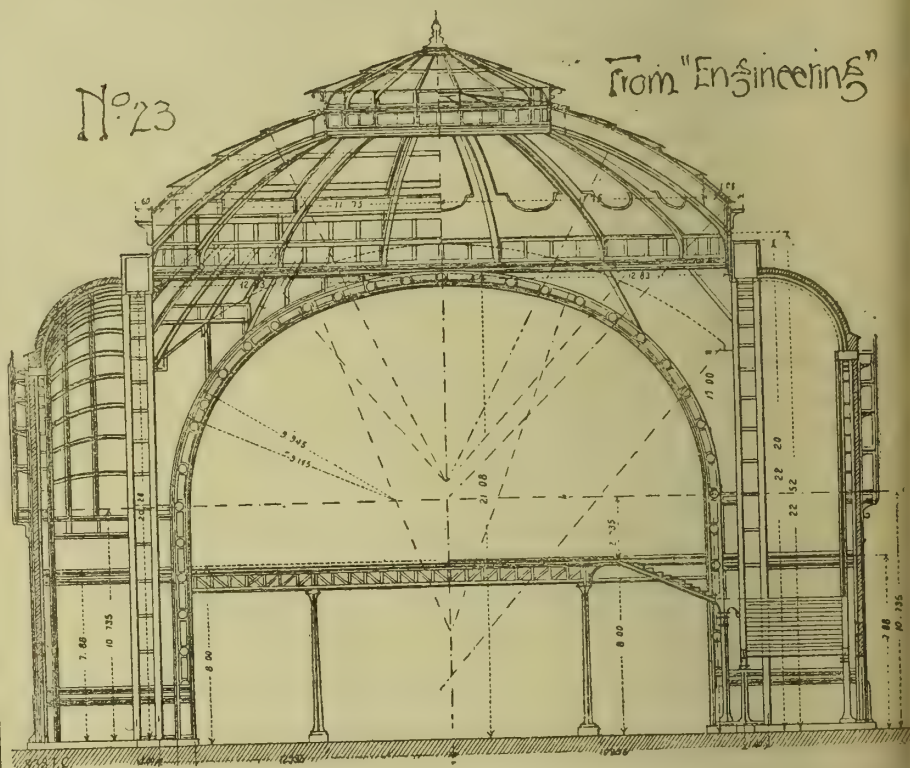


Section of Sloping Gutter



Gutter to Main Roof

No 23



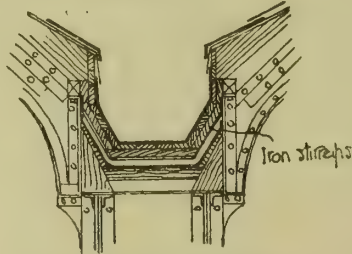
From "Engineering"

position may be seen by reference to the figure No. 14. B is a gutter having two channels running side by side, made in this form to prevent the two opposing sheets of water from meeting at the point where the gutter A meets the gutter B. The gutter B is formed on the outside of the

composed of sheet and angle-irons, and by a backing of wood secured to the back of the girder supporting the rafters by square-headed screws. The zinc bottom runs up the sides and has an apron placed over; over this apron comes the zinc covering of the roof, and on the outer side a cover-plate of zinc is put over the apron and falls also outside the outer part of the gutter. The

#### Palais des Machines

No 20



Gutter to side aisle Roofs



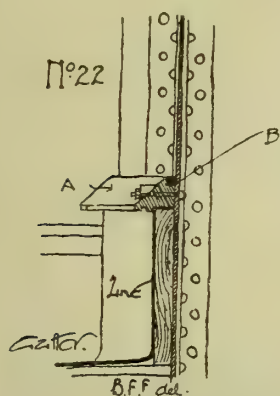
No 21

width of gutter is 2ft. 1in., and it is divided into five parts by drips, each part 16ft. 3in. long; the depth from the zinc coping at the height to the bottom of the gutter is 5in.; at the lowest point it is 1ft. 9in. From this main gutter at the back of every main truss is conducted a down-pipe leading to the gutter formed by the junction of the roofs to side aisles (No. 20). This gutter having to carry off the whole of the water from the top to the bottom of one bay had to be

trusses, and is of the width of 0.65 centimetres, or about 2ft. 1in. These gutters, B, therefore intercept the water on the glass part of the roof by the gutter A, and conduct it to the gutter C by means of the duct B. The gutters C are of the form, shown in No. 14 gauge zinc, and are supported at intervals by wrought iron brackets



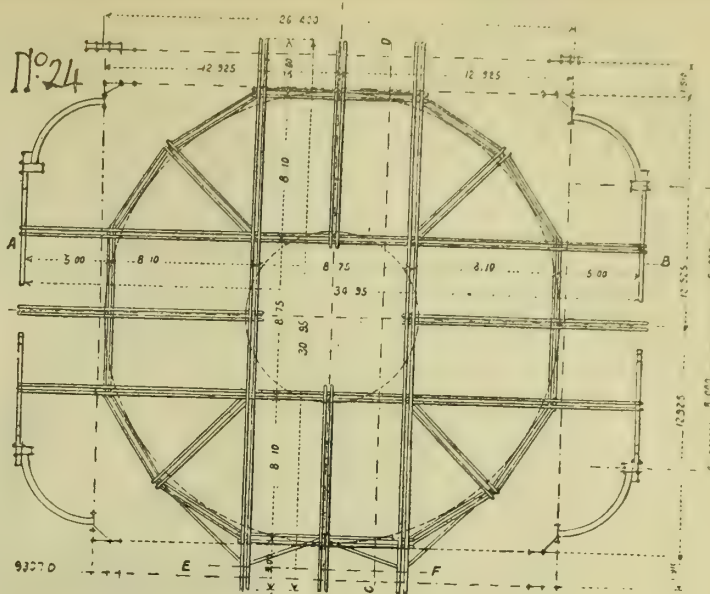
specially considered by the architect, with the result that the one given below was designed. As will be seen, it is in reality a double gutter, the secondary gutter being placed below the upper one. This was done in case of leakage or overflowing in the case of a storm or of a sudden thaw with snow on the roof, in which case the water overflows into the bottom gutter, and is carried away to the down pipes, rendering the inside perfectly safe from overflow. The lower gutter is composed of No. 12 zinc in one width throughout its length, carried on fir boarding; above this lower gutter are placed at intervals iron stirrups, on which the bearers which carry the rough bearing is placed. This upper gutter is No. 14 zinc, and is composed of a bottom and aprons on either side; above this, and covering this last, another apron, which is worked in with the zinc squares of the side aisles, which are roofed with zinc squares placed diagonally.



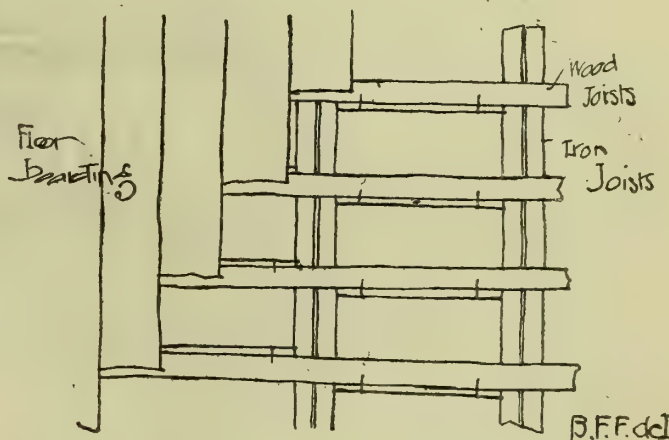
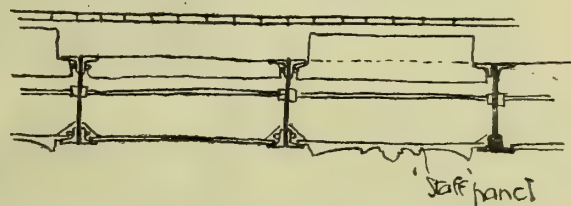
These two gutters both lead in the R.W. head. The upper gutter is divided into three lengths by two drips about 3in. deep. It is nearly 2ft. wide, 12in. deep at its highest point, and 2ft. at its lowest point. The down pipes in which these lead are in No. 14 zinc, bound together at points by zinc rings. Their diameter is 30 centimetres, or nearly 1ft.

**Joints in Side Aisle Roofs.**—Special methods of forming joints had to be studied here in consequence of the slate covering of the side aisles meeting the upright sheet-iron forming the side of the principal gallery. The sketch of the joint (No. 21) formed by the junction of the zinc turn-up, the zinc apron, and the two pieces of sheet iron is given, from which it will be seen that a different system entirely has to be adopted to that of the junction of a roof against an ordinary brick or stone wall, because in a case of this kind there is nothing on which to fasten the flashing. The sketch sufficiently explains the construction, which is as follows:—A flat piece of iron, A, is put between the two sheets of iron; these are then riveted together, the piece of iron A allowing of a space being left for the zinc flashing B, which is pushed up underneath, and is tightly secured by a screw bolt passing through the inner sheet-iron, the flashing, and the outer sheet iron, a lead washer being for greater safety placed between the outer sheet iron and the outer bolt. This same arrangement, however, could not be followed in the following case, which was that of forming a joint between the gutter and the back of the Principal (No. 22, drawn from *L'Architecture*); a most difficult operation, as M. Dutert told me, and one requiring a good deal of thought. A piece of cast iron was made, following the section of the back of the principal, weathered and throated as sketch, and is bolted to it. On the upper side of this is formed a rectangular sinking 1 centimetre (5-12in.) square, which is filled with lead, well beaten, and which forms a perfect joint. On the under-side of the cast-iron ledge, and attached to the wood framing, the zinc forming the side of the gutter is taken up and tucked under this cast-iron piece. This zinc covering and wood backing is also carried round the whole of the back of the principal, as is also the cast-iron top, till they meet the zinc flashings to the side of the roof itself, described previously. The down-pipe to the main roof of the "Palais des Machines" is fixed to the back of the main truss. Great care was necessary in performing this, in order to prevent water entering the building in case of an overflow.

**The Connecting Dome.**—The dome connecting the 30-metre gallery (Figs. 23 and 24 are a sec-



Palais des Machines  
No. 25 Construction of Gallery Floors



tion and plan of this dome) with the Palais des Machines is inclosed in a space 98ft. 6in. by 120ft. 6in., and is carried on four great piers in wrought iron. Between these wrought-iron standards are semi-circular arches, which support a wrought-iron ring, from which the dome itself springs by means of curved rings, which unite in a circular ring 32ft. 9in. in diameter, upon which the central lantern rests; this is also framed with 16 ribs meeting in a ring 3ft. 3in. in diameter. The ribs are connected by circular purlins and rafters on which rest the exterior glazing. The dome itself has suspended from it a spherical ceiling, which serves the purpose of hiding the exterior ceiling and for the reception of the stained glass panels, in the centre of which is fitted an electric light at night time. The pendentives are filled in with painted plaster panels in figure subjects and the inclosing portion to the staircase is fitted in with decorative plaster and ceramic work. These staircases, sketches of which will be given further on, are extremely interesting, the standards being formed entirely out of "fer de commerce," of simple yet elegant design. The covering is in zinc, lead, and glass. At the bottom of the glazed portion of the dome is formed a circular gutter in zinc, in which are formed a series of trapdoors, which admit the electricians who have charge of the lighting of

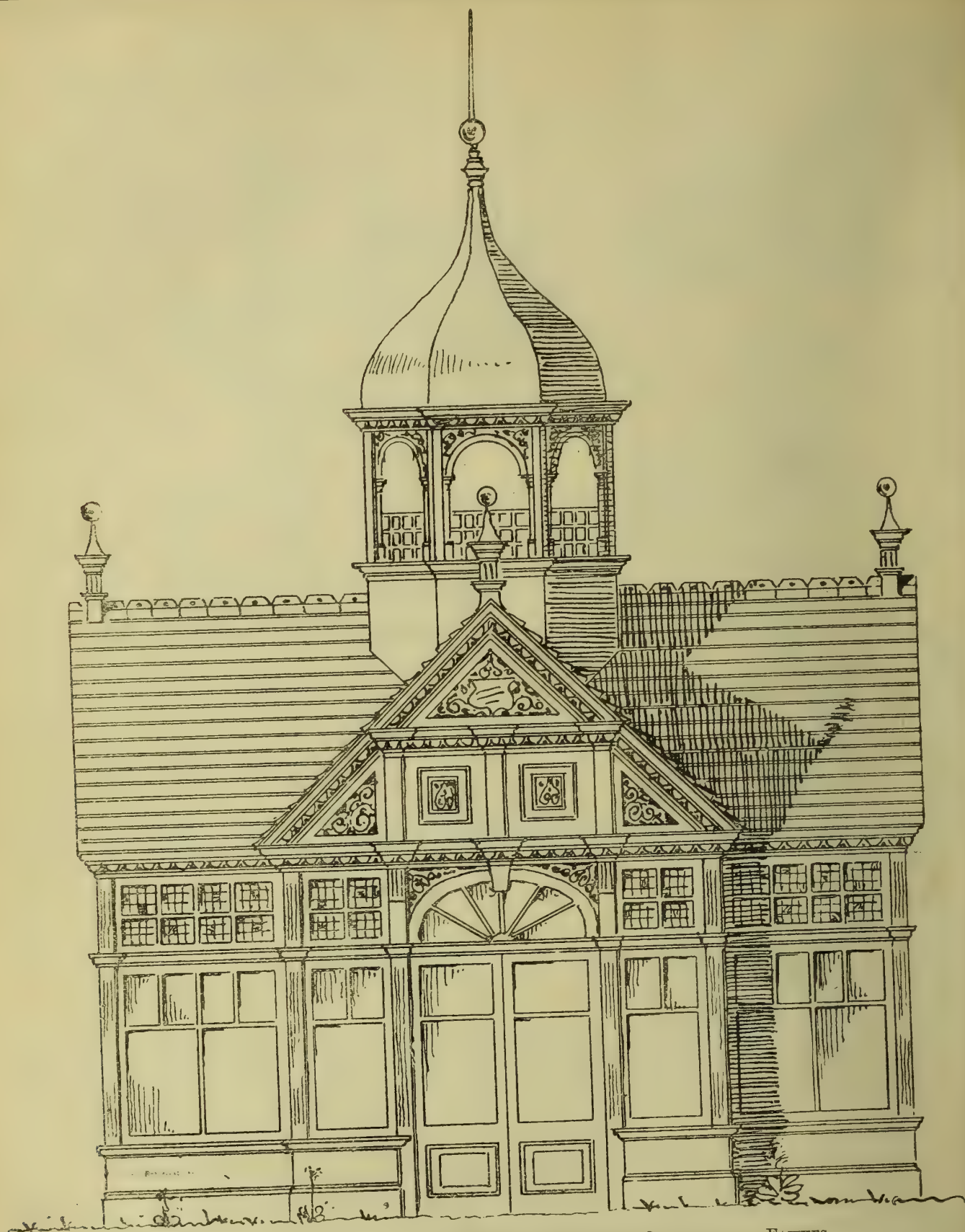
the dome at night. The pendentives, and the side covering to the staircases are covered with lead; the divisions to this last are 20ft. long and radiate by rolls, at the top they are 6ft. wide at the bottom 4ft. 6in. The dome itself is 84ft 6in. in diameter.

**The Contents of Main Roof Covering.**—The main roof to the grand hall has 258,336sq.ft. of zinc roofing. The side aisles have 165,765sq.ft. of zinc roofing in lozenge shapes. The total amount of lead work is 10,764sq.ft. The total weight of zinc is 258 tons, and that of the lead 32 tons.

**The Flooring to the Ground Floor and Galleries.**—Almost the only parts in the interior in wood are the floors and the treads to the staircases on iron frames. The ground flooring calls for no special remark; the boarding is 1in. thick, nailed directly to the joists, 3in. by 3in., about a foot apart, which rest on the ground and held in position by pins. The flooring over the lines of railway (which had to be kept open till the last moment owing to the trains bringing the heavy machinery into the hall) is covered with movable wooden flooring panels. The same lines were used to move these great machines at the close of the Exhibition.

**The Construction to the First Floor** is interesting, yet simple. As will be seen by the sketch, No. 25, the iron joists formed by four angle-irons joined





PAVILION FOR FINSBURY SQUARE. By Messrs. CROMPTON AND FAWKES.

by a deep iron web plate, carry the wooden joists of the floor, and as these simply rest on the upper floor and require holding in position, pieces of boarding 27 millimètres (or about 1 in. in thickness) are nailed to their sides, between the iron joists, with the end fitting under the iron joists. The bays are nailed alternately on each side of the joist; these prevent the wooden joists from rising. No pugging being used, this makes an extremely light floor, and as the architect had to expedite this part of work, no time was required to enable it to dry. The ceilings are formed by

panels of "staff" laid on the lower flange of the joist, and kept in position by the triangular piece of iron shown.

#### THE CORDWAINERS' EXHIBITION.

THIS Exhibition was opened last Monday at the Hall of the Cordwainers, 7, Cannon-street. Among the specimens of early typography is a treatise on War, and is the first dated book executed in Italy with wood engravings. It was lent by Mr. J. B. Calde-

cott. The Roman Breviary, from the famous Giunta press, plentifully illustrated with woodcuts, is in fine condition, and is a good example of typography and early wood-engraving. It is contributed by Mr. Frederick Clarke, while Mr. Rose lends a treatise on Geometry and Perspective, by Albrecht Dürer, the great German artist. Hans Holbein is represented by a series of ninety-two drawings on wood, illustrating the Old Testament. There are also many excellent examples of bookbindings which we cannot enumerate here.

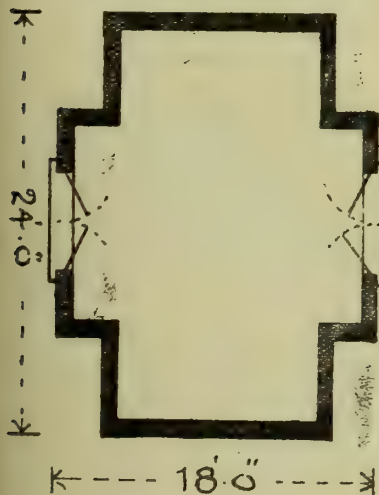


Mr. Sherwood contributes no less than three oil paintings by Leader, and the Master of the Company sends "The Adoration of the Magi," a fine water-colour after Perugini, by Gigliarelli. Mr. H. L. Doulton exhibits "A Scene near Rome at Sunset," a large water-colour by Alfred P. Newton; while Sir Henry Doulton sends to this section "Worcester," "Oxford," and "Rouen," by Turner. Among the pen-and-ink drawings are some by Rossetti, and many drawings by Sandys. These are lent by Mr. Anderson Rose; while Mrs. Rose contributes a case of French, Spanish, and Japanese fans. The well-known mezzotint of "Mrs. Siddons as the Tragic Muse," after Sir Joshua Reynolds, is lent by Mr. John Fraser; and Mr. Chatfield Clarke sends some good etchings by Haig.

The pottery exhibits contain some excellent specimens of Greek and Etruscan vases, lent by Sir Henry Doulton, who also contributes largely with terracottas. Amongst these latter figure the artistic productions of George Tinworth. The Company exhibit their gold and silver plate, amongst which is a silver tankard, with their arms and crest. This tankard was the first piece of plate this Company had after the Great Fire of 1666, and was "the gift of Thomas Palfray to this Society for admittance into the Freedom of the same." The Master also contributes some interesting articles in this section, and sends a great variety of glass-work—old Roman, old and modern Venetian, and modern English and French.

#### PAVILION FOR FINSBURY-SQUARE.

WE publish the design of Messrs. Crompton and Fawkes, horticultural builders, of Chelmsford, accepted by the committee of the inhabitants of Finsbury-square for a pavilion in the centre of the square. The building will be 24ft. by 18ft., and about 40ft. high, cruciform on plan, with ornamental gables facing four ways,



and filled in with enriched panels in relief, surmounted by an octagon leaden lantern, in which a four-dial clock will probably be placed at a future time. The base will be red-rubbed brick-work, and the sides will be glazed for the remainder of the height. The roof will be covered by red tiles. It is contemplated that the building will be opened the first week in June. All the details have been designed by Mr. Fawkes, the well-known expert in horticultural buildings and mouldings.

#### THE SURVEYORS' INSTITUTION.

THE following student candidates have passed the examination for the Professional Association:

Cecil Hugh Aylen, Frederick Herbert Bancroft, Thomas Barclay, Maurice Frederick Beadel, Herbert Tudor Buckland, George William Cobham (special prize, 1890; "Crawter" prize for field work, 1890), Arthur Norman Garrard, Alexander Ernest Green, George Frederick William Hampton, Frederick George Hayward, Vivian Davey Lake, Henry John Leaning, Arthur Walker Merry (Institution prizeman, 1890), Herbert Ernest Molyneux, Alfred George Nockolds, Michael Guy Ogden, Herbert George Potter, Edwin Savill, James Smith, William Walter Rix Spelman, Joseph Charles Summerfield, Francis Charles John Swainson, Ernest George Verity, Claude Henry Watson, Hugh Calthrop Webster.

The following non-student candidates have also passed the examination for the Professional Association:

Francis Reginald Armytage, Arthur Body, Gilbert William Booth, Frederick Edward Boulting, Frederick Henry Brackett, Henry James Cope, Charles Ernest Maitland Desborough, Frank Minshull Elgood, Francis Ellis, William Fraser, William Forest, Harold Griffiths, Hedworth Herbert Grogan, James Henry Hodgkinson, Gilbert Plantagenet Mitchell Innes, Walter Robert Kay, Richard Webster Larkin, Arthur Llewellyn Lewis, Graham Harley Mould, Harry Ekermans Oakley, John Hubert Oakley, George Ossenton, jun., Edward John Partridge (Driver prize, 1890), Richmond Pinder, Herbert Edward Prall, Thomas George Rogers, Charles Frederick Slater, James Frederick Kemp Smith, Walter Wadman Soallum, George James Townsend, Edward Bryan Wood, Charles Bruce Wood.

The result of the examination for the Fellowship will appear next week.

#### BOOKS RECEIVED.

*Primitive Architecture*, by BARR FERREE (New York), is a reprint from the *American Naturalist and Anthropologist*, in which the author shows the sociological influences at work in shaping the types of dwellings and other buildings. Thus communism, like the nomadic phase of life, has produced modifications in structure. Of the communist types, Mr. Ferree points to the terraced buildings of the Pueblo Indians; also to the circular houses of the Mandans and the houses of the North American Indians. The interior arrangements show the influence of this mode of life more than the exterior. The number of partitions vary. The communistic houses are larger than those for single families; means of intercommunication exist, such as continuous awnings. The fireplaces are differently arranged—one is sometimes made to serve for four cabins, as in the dwellings of the Iroquois and the Uraupes. In New Guinea there is a fire to every two cabins. Rank and wealth have had their influence; they have increased the size and height of dwellings, and added to the ornament and number of roofs. The climatic influences are also traced in the height and steepness of the roof, in the adornment of the dwellings by painting. A diversified climate as that experienced in the Temperate zone has led to a progressive architecture. Uniform environment, on the other hand, has resulted in uniformity in thought, in art and manufactures, as we find to be the case in the Frigid and Torrid zones, where the variation of temperature is small. Then there is the effect of environment on construction, as in the shape of houses and in the structure of walls. Rain and wind have been potent factors, flat roofs existing in countries where there is little rain, and steep ones where there is an abundance. Difference of material is another result of climate, but we cannot extend these remarks. Mr. Ferree's brochure gives interesting and instructive contributions to the subject which may serve to whet the appetite of others who pursue this inquiry.

*Health and Comfort in House Building*, by J. DRYSDALE, M.D., and J. W. HAYWARD, M.D. (London: E. and F. N. Spon).—The third edition of this book, which is written by two physicians in advocacy of ventilation with warm air by self-acting suction-power, has just been published. The authors point out that any system of ventilating in single rooms is, and must be, defective, and recommend the addition of a general system of ventilation of the house by means of the kitchen-chimney, the fire here being in most dwellings the only one kept alight daily throughout the year. They advocate the use of open fires and hot-water pipes, and explain that their system is unprotected by any patent. The work is illustrated by sections and plans, including those of the houses of each of the authors, built on the system they recommend, in Liverpool and London respectively.—In *National Health*, Messrs. Longmans, Green, and Co. have published at 4s. 6d. a cheap abridgment of Dr. B. W. Richardson's review of the works and labours of Sir Edward Chadwick. The more practical and popular parts of the larger work have been condensed into a handy volume, which has as a frontispiece an excellent likeness of the venerable "Father of Sanitation."—Vol. IX. of the *Journal of Decorative Art* (London and Manchester: Henry Vickers) has just been issued; and also from the same office a portfolio of "Flower Studies," containing eight well-executed chromo-lithographs of familiar garden annuals, after originals by Miss Kate Rogers, with descriptive letterpress.—The *Transactions of the American Society of Civil Engineers* con-

tain several interesting papers. "On the Fresh-water Algae and their Relation to the Purity of Public Water Supplies," by George W. Rafter, is an important contribution, showing the value of a knowledge of plant-life inhabiting our water supplies. The paper is devoted to freshwater algae, about 1,500 species having been described as peculiar to America. Very beautiful microscopic illustrations are given, occupying nine plates. The author shows that great advantage would be derived in the consideration of sanitary questions by a study of the relations of algae to public water supplies, and a system of classification is suggested as necessary. The algae are considered as purifying agents, changing a part of the dissolved organic matter into insoluble substances. Nitrogen is necessary to their growth, and therefore certain kinds of algae may be considered a useful warning, others as necessary. The discussion on "American Railroad Bridges," by Theodore Cooper, forms another interesting subject. The advantages and demerits of pin-connected and riveted structures are discussed, and one of the speakers urges strongly, and, we think, with much reason, the value of riveting. The connection of stringers to floor beams is generally made by riveting, rivets being used in all first-class pin-connected bridges. Riveted bridges have generally stood well, and are becoming more general in America.

#### CHIPS.

The Royal Academy Architectural School's course of lessons on "Architectural Modelling" has terminated for the session, and Mr. Stannus will commence a series of demonstrations on "Architectural Ornament: in Panel, Frieze, and Capital," on Monday, May 5, at 6.15 p.m.

In the list of Receiving Orders the name appears in Tuesday's *London Gazette* of Edward Brown, Liverpool-street, City, and Vicar-terrace, Forest-gate, late of Hanbury-street, Spitalfields, and Bow-road, E., "architect and surveyor and licensed victualler." The combination of professions is peculiar.

The memorial-stone of a chancel which is being added to the church of St. Michael in Upper Orwell-road, Ipswich, was laid by Lord Elcho, M.P., on Friday. The chancel will harmonise with the nave, and is being carried out from designs by Mr. E. F. Bisshopp, of Ipswich, from whose plans the nave was built nine years since. It will be 31ft. deep and 22ft. wide, and on the north side will be organ-chamber and vestry. The church will, as completed, seat 700 persons, and the present work will cost £1,800.

The Gresson memorial pulpit in the parish church of West Worthing has just been unveiled. It is of Caen stone, octagonal on plan, and Early English in style. Mr. R. S. Hyde, of Worthing, was the architect, and Mr. Harry Hems, of Exeter, executed the work.

The memorial-stone of Highbury School, in connection with St. Philip's Church, Bristol, was laid on the 16th inst. The buildings will be three stories in height, and built of red bricks with freestone dressings. On the ground-floor are a hall, 43ft. by 38ft., and 22ft. in height; Bible-classroom, 38ft. by 17ft., and other classrooms; and on the first floor are other rooms, the second floor being arranged as 18 classrooms. Messrs. Foster and La Trobe are the architects, and Mr. T. H. Brown, also of Bristol, is the builder.

The quarrymen employed in the West Dean district of Gloucestershire, who gave a week's notice for 10 per cent. advance in wages, brought out their tools on Saturday.

A new Baptist chapel at Sudbury, Suffolk, was opened on Wednesday week. It is in the Decorated Gothic style. Its internal dimensions are 56ft. by 36ft. 6in. wide, and 42ft. wide in transept; height to collar-beam of roof, 33ft. The chapel is divided into nave and aisles by moulded iron columns. A gallery runs on three sides. The interior woodwork is of red deal, stained and varnished, the platform gallery front and benches being of pitch-pine. The baptistery, which is lined with white glazed bricks, is placed in front of the platform beneath the choir seats, which are movable. The building is of white brick, with stone dressings. The building will seat inclusive of gallery, 520 persons. The work has been executed by Messrs. Geo. Grimwood and Sons, Sudbury, from the plans and under the direction of Mr. W. Eade and Mr. E. T. Johns, architects, Ipswich.

A new Congregational school-chapel is in course of erection at Bexley, Kent, from plans by Mr. George Baines. It is of Kentish rag, with open-timbered roof, will seat 300 persons, and will cost £3,000, including site.



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CONTEMPORARY BRITISH DECORATIVE ARTISTS. — SOANE MEDALLION DESIGN FOR A BOYS' PUBLIC DAY SCHOOL. — "BUILDING NEWS" DESIGNING CLUB. — CLECKHEATON TOWN HALL. — BUSINESS PREMISES, FORE STREET, E.C. — PAVILION FOR FINSBURY SQUARE. — Lych Gate, LLANGEFNI, ANGLESEY.

## Our Illustrations.

CONTEMPORARY BRITISH DECORATIVE ARTISTS.  
(See description on p. 604.)

A PUBLIC DAY-SCHOOL FOR BOYS. — R.I.B.A. FIRST MEDAL DESIGN.

MR. FRANCIS W. BEDFORD'S prize design submitted in competition for the Soane Medallion at the Royal Institute of British Architects, was illustrated in the BUILDING NEWS for March 7th this year, when we gave the perspective view and principal plan. In our issue for Feb. 28th, the second medal design also, by Mr. Chas. Spooner, was illustrated. To-day we print a reproduction of Mr. Bedford's detail drawing, showing the main façade to a large scale. The notes written upon this elevation furnish various particulars as to the materials intended, and the ample description of the work which accompanied our former illustrations leaves nothing to be added on this occasion.

"BUILDING NEWS" DESIGNING CLUB: A ROW OF FIVE COTTAGES.

(For description see page 579.)

CLECKHEATON TOWN-HALL.

THIS building, which is to be commenced immediately, has the benefit of an exceptionally good site, the front being set back a considerable distance from the road, thus leaving a large open space or square, from which the town-hall will be seen to the greatest advantage. Every care and thought has been bestowed upon the arrangements by the committee, not only for the business requirements of the district, but also to the adaptability of the building to the means of social enjoyment and recreation. The irregular outlines of the plan, which resulted from the various alterations, have been carefully studied, that the elevations might group well together and in picturesque outlines, and the building, when completed, will be without doubt the principal architectural feature of the town. The large hall is planned to accommodate 1,000 persons, and 100 more on the orchestra, the latter having ample retiring-rooms in convenient proximity. The ceiling will be in plaster, elaborately panelled, and with a bold, enriched cove running completely round. The Board-room is a handsome apartment, with an open-timber roof, and enriched plaster panels between the purlins. The Local Board offices are all situated on the ground floor beneath the large hall, and provision has been made that they may be greatly enlarged at any future time, if necessary, without interfering with the light and ventilation of the existing building. The basement is devoted to the kitchens, &c., from which there is a lift in connection with the large hall. The front and return sides are to be built in

hosted wallstones with ashlar dressings, the roof being in dark-green Westmoreland slates. The heating will be by means of hot water on the low-pressure system, the pipes being placed beneath the windows to correct the refrigerating influence of the glass, fresh air being admitted through Tobin's ventilators. The architects are Messrs. Mawson and Hudson, The Exchange, Bradford.

NO. X. FORE-STREET, E.C.

THESE business premises have been built by Mr. William F. Coney, from the designs of Mr. Delissa Joseph, F.R.I.B.A., of Basinghall-street, and have been specially planned to meet the trade requirements of the district. Constructional ironwork has been extensively used throughout. The elevation is in Portland stone, the ground-floor bases being in grey granite. The building occupies a conspicuous position at the corner of Wood-street and Fore-street, and is in close proximity to Cripplegate Church, over the churchyard of which the rear windows look; the tower of the church itself forming a pleasing object in the perspective view.

## CHIPS.

The modern chancel of the parish church of St. Julian, Wellow, Somerset, has been pulled down and rebuilt, from plans by Messrs. Bodley and Garner, as a memorial to the late vicar. The style is that of the 15th century, to correspond with the nave; the walls are faced externally with local ashlar, and the roofs are of oak, barrel vaulted, with ribs and carved bosses at the intersections. A vestry has also been built on the north side of the church. The new east window has been filled with stained glass. The builders were Messrs. Stephens and Bastow, Bristol. The east window is the work of Messrs. Burlison and Grylls, Newman-street, W., and the organ has been erected by Messrs. Gray and Davison, Euston-road, London. The church was consecrated on Wednesday week.

Professor Francis Elgar, Director of Her Majesty's Dockyards, distributed on Saturday the certificates gained by the students in the Crystal Palace Company's School of Practical Engineering. A report showing the prosperous state of the school was read. The chief distinction, the bronze medal, was gained by Mr. A. M. A. Struben, a student from South Africa.

The Burntisland and Inverkeithing Railway was formally inspected by Major Marindin, of the Board of Trade, on Friday. It has been constructed by Mr. Waddell, of Edinburgh, contractor, for the North British Railway Company.

It is reported that considerable alterations and additions, including a new wing, are shortly to be made at Osborne House, Isle of Wight, the residence of the Queen, and that Messrs. Cubitt are the contractors who will carry them out.

The new line of railway between Driffield Junction and Market Weighton, projected by the West Riding Junction Railway Company, was opened for traffic on Monday. It has cost £250,000.

The town council of Ramsgate propose to carry out an extensive scheme of improvement on the sea front, from plans prepared by Mr. W. A. Valon, engineer to the gas and water department. The estimated gross outlay is £65,000.

A new mission church is about to be erected at Gly Farrel, Breconshire. It will accommodate 120 adults, and will be situated about two miles from the mother church. It will be built of hard native stone with local and other stone dressings. The designs are by Messrs. Kempson and Fowler, of Llandaff.

The United Asbestos Company, Limited, whose chief offices are at Dock House, Billiter-street, E.C., have recently opened an additional branch house at Provident Buildings, Clare-street, Bristol. The company's business is rapidly extending, and they have now branch houses in Glasgow, Newcastle-on-Tyne, Manchester, Liverpool, Cardiff, Bristol, Paris, and St. Petersburg.

The Enfield Local Board of Health have appointed Mr. R. Collins, sanitary inspector to the Southgate Local Board, as their road surveyor. There were 113 applications received for the post; the salary is £200 per annum.

In the Divorce Court on Monday, Mr. Justice Butt granted a decree nisi in the petition of Mrs. Harriett Matilda Hill for dissolution of marriage on the ground of the cruelty and adultery of her husband, Alfred T. Hill, builder, formerly of Red-ditch, and lately of Birmingham. The action was undefended.

Professor W. B. Richmond has been commissioned to paint a portrait of the late Dr. Lightfoot, Bishop of Durham, to be hung in the hall of Trinity College, Cambridge.

## COMPETITIONS.

SOUTH SHIELDS.—On Monday, the 21st inst., a meeting of a committee of the South Shields town council was held at the Marine Board Offices, Mill Dam, to receive the report of Mr. G. G. Hoskins, F.R.I.B.A., the assessor appointed to make a selection from the 33 sets of competition drawings. As the scheme is estimated to cost £10,000, great interest was manifested in the decision. The three sets selected by Mr. Hoskins in order of merit are those bearing the following mottoes:—(1) "Constable"; (2) "Ad Rem"; (3) "Magistrate." Mr. Hoskins's report having been unanimously adopted, the sealed envelopes were opened, when the names of the successful competitors were found to stand as follows:—(1) Messrs. Perkins and Bulmer, of Leeds; (2) Messrs. Clarke and Moscrop, of Darlington; (3) Mr. J. H. Morton, of South Shields.

YARDLEY SCHOOL BOARD.—Acting on the advice of Mr. William Henman, A.R.I.B.A., of Birmingham, the assessor in a limited competition for schools at Red Hill, Coventry-road, for 1,000 children, the Board has selected the design of Messrs. Crouch and Butler for execution, and awarded a premium of £15 to Mr. W. N. Gething, and one of £10 to Mr. J. F. Yates. Six sets of designs were received.

## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

CARDIFF.—The architects of Cardiff held a meeting on the 16th inst., and adopted rules drafted by a committee appointed for the purpose at a previous meeting held on March 12th, when it was resolved to form the Cardiff Architects' Society for the advancement of the profession of architecture, and the consideration of questions of professional practice. The architects in practice in Cardiff number about thirty, and the society will doubtless include all these members in addition to many others in the surrounding district. The hon. secretary is Mr. F. Baldwin, Church-street, Cardiff.

A sculptured mural tablet has been placed in a chapel of the parish church of St. Mary Magdalen at Morthoe, North Devon, as a memorial of Miss Heddon. It is 7ft. high, Jacobean in style, and consists of a panel containing three sculptured figures in white statuary marble, with polished surroundings of Staffordshire alabaster and Devonshire marbles. The sculpture is in high relief, and, together with the rest of the memorial, is from the studios of Mr. Harry Hems, of Exeter. The sculpture represents the deceased carried by angels to paradise. Mr. Alexander Lauder, of Barnstaple, was the architect.

At the request of the Parliamentary Committee of the Trades Council, Mr. Broadhurst has given notice that he will move the rejection of the Employers' Liability Bill. The great objection of the working-class leaders to the Bill is its unsatisfactory dealing with the doctrine of common employment, and its still leaving, under certain conditions, the right of contracting out of the Act.

Mr. S. J. Smith, one of the inspectors of the Local Government Board, held an inquiry at the town-hall, Wincanton, on Wednesday week, into an application by the rural sanitary authority of Wincanton for sanction to borrow £500 for works of sewage disposal for the parish of Castle Cary. The engineer, Mr. Farrall, of Sherborne, explained the system about to be adopted, and stated that it was intended to enlarge the existing tanks and treat the sewage by the system known as the international purification of sewage process, and that the effluent would pass direct from the tanks into the stream. The inspector pointed out that it was a practice of the Local Government Board never to sanction a chemical process except where the effluent passed over land. It was explained to be difficult to get land; but the inspector intimated that in all probability the Local Government Board would send their scheme back for revision, and that, no doubt, another inquiry would be necessary.

A meeting of the surveyor's committee of the Carnarvonshire County Council was held on Saturday, when the county surveyor (Mr. Thomas) tendered his resignation, having been appointed to a similar position in Buckinghamshire. The resignation was accepted, the committee passing a resolution complimenting Mr. Thomas upon the most efficient discharge of his duties, and recommending that the council should give him a gratuity of £30 in acknowledgment of extra services. A new county surveyor will be appointed on May 15th, and there are already many candidates in the field.



## WAYSIDE NOTES.

THE atmosphere of the Golden Horn is evidently unsuited to the constitution of the Crimean Memorial Church. According to statements made in the course of a meeting convened on the 21st for the express purpose of raising funds for its repair, this building is in a deplorable condition. Seeing that the church has only been in existence some 26 years, it would be not a little interesting to the architect to know the exact causes of its premature decay. Speakers at Monday's meeting stated that it is "falling into serious disrepair"—"in impending ruins"—its roof "rotten," and likely to become a "mass of damp and mouldy ruins." Neglect and want of timely repair is assigned as the primary cause of these troubles. When first founded, no endowment was provided, and now the object is to raise by subscriptions a sum of £10,000 to be devoted to prompt reparation and the foundation of an endowment fund. Since the building was originally intended as a monument to the Englishmen who fell in the Crimean war, I take it that the Duke of Cambridge, the Archbishop of Canterbury, and others who spoke at Monday's meeting are justified in looking to the country for ample support in their endeavours to repair it, as it would be highly discreditable to the nation if the church went to rack and ruin for the want of a few thousand pounds.

Perhaps the building suffers from the ill-management that attended its very beginnings. If I remember rightly, the competition for the work was anything but a creditable piece of business. Should not the incomparable William Burges have had the job; and was it not taken out of his hands and given to Street?

Mr. William Morris is very sanguine as to the prospect of another Gothic revival. It is to be feared that he will find he is deluding himself and others in proclaiming a day when Gothic architecture shall take root and flourish again in this country. Pan is dead. Mr. Ruskin has done his best to resuscitate and give enduring life to a modern style of Gothic. That admirable writer, and Pugin, and others, have failed, and to most thinking persons it is apparent that they failed, and why they could not but fail. The labours of the zealous Gothic revivalists have been of immense benefit to modern architecture, in that they have impressed architects with a full notion of the value of truthful architectural expression and honest construction. By their writings, and by their works, they have taught many deeply-significant lessons; but in their endeavours to revive old form for its own sake, they failed as signally as did the men who wanted us to admire nothing but Greek and Roman porticoes. I think that Mr. Morris will find the game of Gothic-reviving played out, and worth the candle to no one; and, further, that he will be better employed in expounding to the public the principles of his favourite style; for the truth and honesty, and the power and vigour, and every other good ethical attribute of old Gothic will influence the design of the true architect of to-day, and of to-morrow, and, indeed, of all time that architecture may endure.

What is an architect? Nothing, if not practical? Certainly! No true architect in days past or present has been above his practical and matter-of-fact duties. I rather think it is the other class—say, the "artist architect," who will have to look for a new designation, one expressive of velvet-coatism, dilettantism, façades-without-constructionism! It is a wee bit disheartening, after everyone, apparently, has been so long urging the futility of architectural knowledge without a knowledge of construction and practical work-a-day matters, to read a letter like that of your correspondents, Mr. Ernest Newton, Mr. Mervyn Macartney, and Mr. John Belcher. What is the result of a spread of the idea that an architect is an artist pure and simple? Is it not that we see in the highways the legend, "Elevations designed by Mr. 'Architect'; buildings erected under the supervision of Mr. 'Erector-of-works'?" Is this the sort of thing that your correspondents who look with disdain upon "drains, diameters of cast-iron columns, and the like," would like to see increase in this country? If so, then they could wish for an evil day. If, as your correspondents say, the reason for an architect's existence is that he may "design with beauty and build in truth," how is

he to effect the latter without sound, practical knowledge—scientific knowledge, in which he may be examined as to its extent and thoroughness? Surely *building in truth* means building well, solidly, skilfully, *scientifically*. Then, putting aside pure art questions and constructional matters, how about *planning*? Cannot we ask an architect to draw out a plan, and, if competent ourselves, say, with unerring and mathematical certainty, "This is a splendid plan, a good plan, an indifferent plan, or a wholly bad plan"? Is not the planning and arrangement of a building in which men live and work a matter that should take precedence of all others in importance? I always thought so, having been imbued with the idea through words spoken by men who have held high places.

Many have been led into false views of the nature of an architect by misapprehending Mr. Ruskin's aphorism, "Architecture proposes an effect on the human mind, not merely a service to the human frame." Reading this, people rush to the conclusion that architecture is something very lofty indeed—a very *high art*; architects become puffed up with pride, and look upon their productions as really *too good to be used*—the house too architectural to serve the purpose of a home; and one almost expects to find such persons regarding their churches as too fine specimens of their architectural skill to be employed as temples for the worship of their Creator! I have often observed that there are many architects who, by their talk and writing, regard music, painting, and sculpture as mere businesses, prosaic and matter-of-fact, wallowing in the mud, as compared with Architecture—with the big, big A. They would read the above aphorism of Mr. Ruskin, "Architecture proposes an effect on the human mind, and has nothing to do with any service of the human frame." Whereas it will be seen that the sentence states that architecture, in addition to serving the human frame, affects the human mind. Something of practical service to man is pre-supposed, and it is a super-addition that Mr. Ruskin employs to distinguish architecture from building. It seems of importance that this should be understood, for, in considering the nature of an architect, we must first decide as to what constitutes architecture. And it is my position that even Mr. Ruskin, than whom no one could take a more dignified aspect of architecture, regards it as first and foremost serving some actual need of humanity.

If one firm of builders won't tender for work on Messrs. Wimperis and Arber's conditions, others will be found cheerfully so to do. And that seems all there is to say on the point.

We all enjoyed the conviviality of the A.A. soirée, but I doubt whether we were equally pleased with the entertainment provided. The songs were all right, but the nigger minstrelsy was of the feeblest. Had it been more carefully worked up and practised, it might have proved more of a success. The idea was not bad, but the feeble jokes, and the jokes that didn't tell, were of the crudest. "Looking forward" was scarcely a success, and altogether the evening was by no means so enjoyable as in years gone by.

Five hundred and twenty members of the Royal Institute of British Architects voted in favour of Professor Roger Smith's amendment, 164 voted against. The majority thus shrinking back before the "insuperable difficulties" is 356. Be it noted that the voting papers were so worded that, vote as one might, it was against Registration! An artful manoeuvre, and to a certain extent a successful one. Many, I understand, did not return their voting-papers solely on this account. The result of the polling at Conduit-street certainly will not discourage the Registrationist. It evidences a great advance of thought on the topic, and the widespread dissemination of the principles we advocate. These cannot but grow and develop, and sooner or later bear fruit. We have seen how the feeling for the necessity of reform has increased on every hand, and can now afford to wait, confident, more than ever, of ultimate success.

Earl Compton, speaking at a recently-held meeting of the East London Church Fund, said that he should like to see a wholesome system of fining of landlords of insanitary tenements let to the poor. So should we all; but this evil, as

that of jerry-building, seems to be ignored, and out of the reach of legislative interference, to an extent, that is to say, such as would be effectual in putting down the landlord of rotten tenements and the builder of shoddy houses. In the case of the former, the evils will probably continue until the due letting of London rookeries is affected by a great increase in the number of buildings specially erected to suit the needs of the poorest of the population. Much of this is contemplated, and much has been already done, so that in the near future we may hope that the owners of the garrets and hovels will find they must rebuild or lose all their tenants. Even at the present time the landlords of these foul dens must find that the increase in the number of dwellings for the poor, arranged on sound principles of construction and sanitation and well-planned, tells on their incomes. We may hope for still better signs when some thousands of Sir Edward Guinness's trust-money has been expended. In this matter, reforms will be effected by the planting of virtues rather than by the rooting-out of vices.

Your correspondent Mr. T. F. Pennington's communication, published by you last week, may be interesting as a fragment of a biography; but as to proving the nature of the Institute exam., I failed to grasp its value. I rather fear—judging by his present well-known ability as an architect—that what really happened was that Mr. Pennington worked unnecessarily hard; if so it was to his credit, but scarcely proves that the examination was difficult. The plumbing incident, I think, is rather foreign to the subject of his letter; and *practical* and *elementary* are not synonymous terms. One means one thing, and the other something quite distinct. The incident about the Greek temple is also very ineffective. To sketch in perspective, I presume, a Classical temple, Greek or Roman, should not give an ordinarily earnest student any difficulty. If Mr. Pennington didn't score over that question he ought to have been plucked, whether he studied Early English or Early Greek. The general composition and outlines of Classical temples impress themselves vividly upon the memory in early student days. It would have been a totally different thing had the examiners requested your correspondent to draw out details of a Greek temple to proportions. The "rub" comes in then.

GOTH.

## CHIPS.

Mr. H. Tucker, of Brackley, has been appointed surveyor of main roads to the County Council of Rutland. There were 24 candidates.

The free public library at Edinburgh, built from the designs of Mr. G. Washington Browne, of that city, will be opened on the 4th June.

The tender of Mr. H. L. Holloway has been accepted for the erection of Clarendon Baptist Chapel, Camberwell New-road, S.E., from plans by Mr. G. Baines. The cost will be about £5,000, and the present works are exclusive of a proposed tower and spire.

The completion of the last contract in connection with the sewerage of Freemantle, near Southampton, being the contract for the construction of two Shone's ejectors at the sewage reservoirs at the bottom of Southbrook-road, Fourposts, and the laying of the air and sludge mains from Fourposts to the platform, under the arrangement made with the Corporation of Southampton for dealing with the sewage sludge, was made the occasion on Thursday, the 10th inst., for an inspection of the works at Fourposts. The works have been carried out from plans by, and under the superintendence of, Mr. H. J. Weston, surveyor to the Shirley and Freemantle local board. Mr. H. I. Sanders, of Southampton, was the contractor for the general works, and Messrs. Hughes and Lancaster, have constructed the ejectors.

The memorial stone of the Highbury New Schools, on the Broad Plain, St. Philip's, Bristol, was laid on Wednesday. The new buildings will have frontages of 98ft. and of 40ft. respectively, both faced with red pressed bricks from Shortwood, with freestone dressings. On the ground floor there will be a hall, 48ft. by 38ft., and 22ft. high; and also a room, 38ft. by 17ft.; infant school, 21ft. by 15ft.; lavatory, and a kitchen. On the first floor are two large rooms for the boys' club and mothers' meetings. The second floor will be occupied by 18 classrooms, averaging in size 11ft. square. The cost of the site and building will be about £4,200. The contractor is Mr. T. H. Brown, of Cotham, and the architects are Messrs. Foster and La Trobe, of 20, Clare-street, Bristol.



## LYCH-GATE · LLANGEFNI · ANGLESEY

ROBERT · GRIERSON · ARCA · ARCHITECT.



## LYCH GATE, LLANGEFNI CHURCH, ANGLESEY.

THROUGH the exertions of the Rector (the Rev. Canon E. Williams), a much-needed improvement to this church has been effected by the addition of a spacious chancel. The old east window tracery and glass have been replaced in the new chancel. The floor has been laid with encaustic tiles, of special design, from the Ogwen Tile Works.

The Lych Gate illustrated forms a new approach to the churchyard. Interments here have for some time been discontinued; hence it was not necessary that a coffin-rest should be pro-

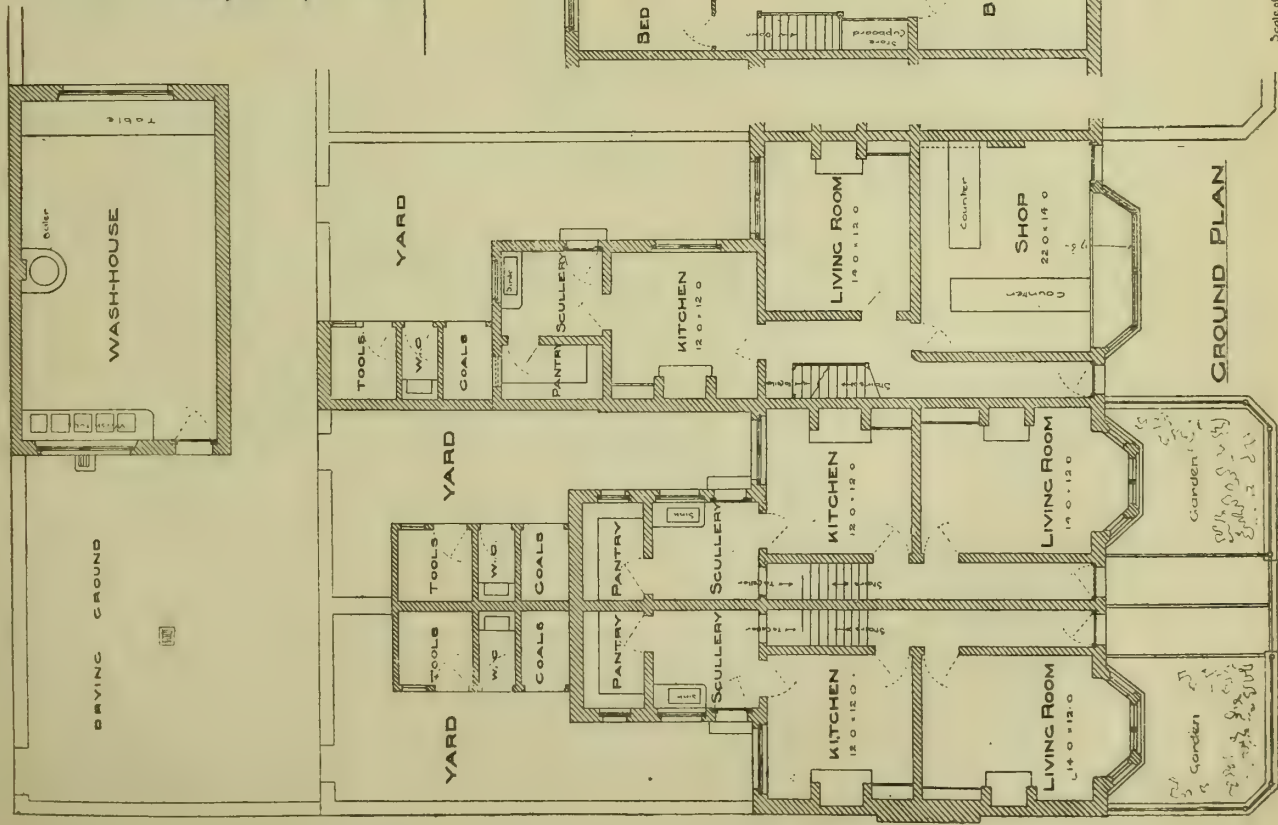
vided. This entrance is placed at the end of an avenue, lined with ancient oaks, by which the church is approached from the village, and these, together with the old church in the background, form a piquant and pleasing village picture. The masonry is of local limestone. The contractor for the work was Mr. John Roberts, Llangefni, and the architect was Mr. Robert Grierson, A.R.C.A., of Masonic Chambers, Bangor.

The schools for St. Mary's parish, Truro, are about to be built at a cost of £2,000, from plans by Mr. Swift, of that city.

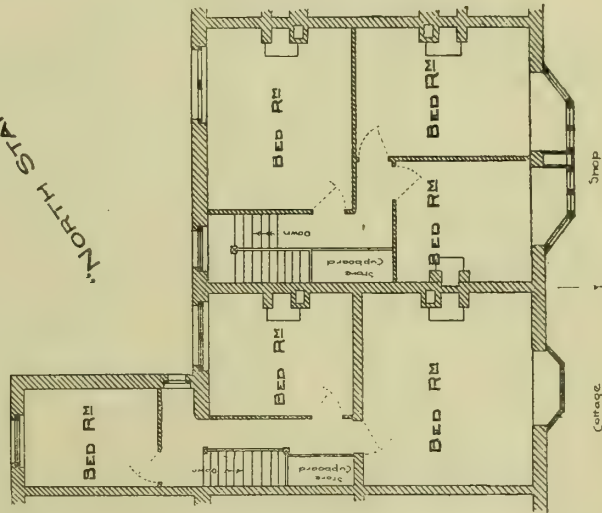
A stained-glass window in the south aisle of the parish church of Whitechurch, Salop, has been erected as a memorial of the late rector. The subject is "The Incredulity of St. Thomas," and the work has been executed by Messrs. Bell and Sons, of Bristol.

Mr. Arnold Taylor, on behalf of the Local Government Board, opened an inquiry at the town hall, Burnley, on Friday, respecting an application by the corporation for a provisional order enabling them to borrow £100,000. Of this, £30,000 is required to complete the new waterworks, £10,000 to extend the gasworks and for other purposes, including the laying out of two public parks which have been presented to the town.

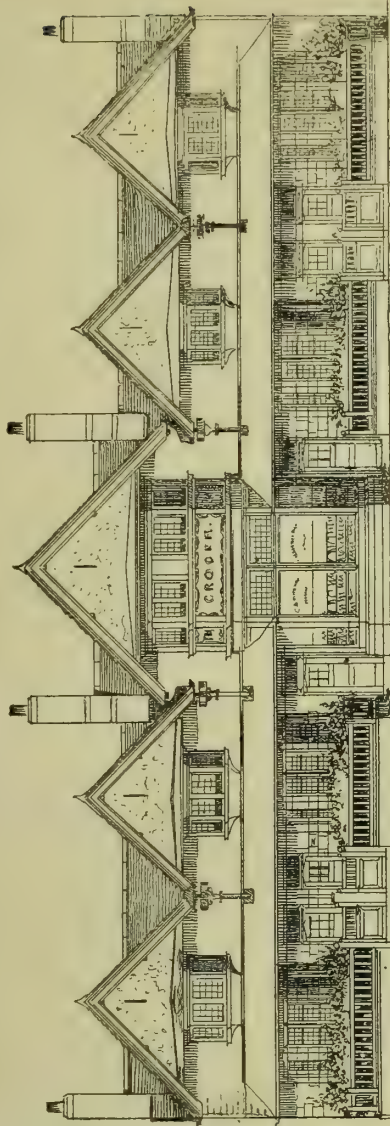




GROUND PLAN



CHAMBER PLAN

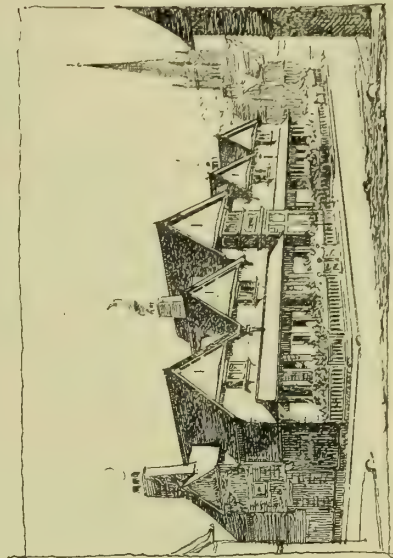


ELEVATION TO STREET

B.N.D.C.

COTTAGES AND SHOP IN VILLAGE STREET.

PLACED THIRD



Scale of Feet 0 10 20 30 40 50 60



## CONTEMPORARY BRITISH DECORATIVE ARTISTS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

NO words of introduction are necessary with reference to the six well-known designers represented on our portrait-sheet to-day. Their work is more or less familiar to all who have any knowledge of decorative art, while one and all of them are associated prominently with the development of ornamental design.

Mr. J. Aldam Heaton was born in 1830 at Leeds, and was educated at Repton, Derbyshire, one of the old Foundation schools. He is a son of Mr. John Heaton, partner in the old firm of Aldam, Pease, and Co., dealers in Yorkshire fabrics. At the age of 16 he drew a repeating design for a Halifax damask weaver, and his drawings gave evidence of a taste for design. He was, nevertheless, brought up to Yorkshire manufacturing, and went through a short apprenticeship as dyer and weaver. At that time there was no such profession as a designer in connection with matters of this character. At the age of 30 Mr. Heaton was engaged in manufacturing in Bradford, and introduced many small improvements in the Jacquard loom. Design being more attractive to him than the commercial side of his business, he removed to London in 1875, and commenced work as a designer of embroidery, designer for the general trade, and frieze-painter. At this time he drew designs for Messrs. Jeffery, Woollams, Templeton, Crossley, and other manufacturers. As business extended, finding the "trade" way of doing things generally wrong in form and colour, Mr. Heaton has been obliged to take up successively upholstery, cabinet-making, painting, and wall-decoration and stained-glass making. Lately he has designed and furnished complete the reception rooms of the *Teutonic* and *Majestic* steamers, and is now engaged on the decoration of four dining cars for the L. and N.W.Ry. Amongst other things he has just completed five large lancet windows (figure-work) for the apse of Aintree Church, near Liverpool. Mr. Heaton is still most at home as a designer, especially of marquetry and of stencilling, which he finds far superior to printing for wall-papers. He is engaged editing a book on 18th-century furniture and decoration for Mr. Bumpus, the publisher, and recently two articles on "Colour" and "Form" appeared in the *Art Journal* from his pen. He employs about 70 hands. Mr. Heaton's portrait is by Mr. T. Fall, of 9 and 10, Baker-street, W.

Mr. Henry Holiday is now in America, and, as he will not return till the summer, we are unable to give those personal particulars which he alone can furnish. His work, however, is very well known, and it extends over a wide field, including sculpture and the painting of cabinet pictures and portraits, as well as decorative subject painting and stained-glass design. The Cavendish Memorial window in St. Margaret's Church, Westminster, is an example of his skill. "Charity" (see *BUILDING NEWS*, May 27, 1887), and "Of Such is the Kingdom of Heaven" (see *BUILDING NEWS*, June 14, 1889), are other instances executed by Messrs. Powell, from his cartoons for a building in Philadelphia. At the Royal Academy in 1883 the Lord Fredk. Cavendish Memorial, erected by the House of Commons, was exhibited, and also some of the principal figures were shown in the same gallery—viz., "The Man of Sorrows" and "The Agony of Christ" (see *BUILDING NEWS*, June 16, 1883). In 1888 Mr. Holiday painted "Aspasia" in oils, and some years earlier we remember some water-colour work of his, also at Burlington House, "Sara, belle d'indolence," &c. The same year another work, entitled "Adam: In the Sweat of the Face shalt thou Eat Bread." In 1879 we had "Theology," a large cartoon for decoration. Of Mr. Holiday's sculpture we may name "Jacob's Ladder" and "Sleep," both exhibited at the R.A. (1881-4). Among the portraits painted by this artist are "Mrs. Gilbert Scott," "The Children of the Rev. Clement Prance," and "The Duet," in water-colour, giving portraits of Alexandra, daughter of the Rev. G. W. Kitchen (now Dean of Winchester), and Winnifred, daughter of the painter. In 1877 he exhibited two other water-colour designs, "Ara Innocentie" and "Diana." Mr. Holiday has in many ways helped to forward the improved treatment of domestic architecture in the matter of furniture and interior design. His own home, Oak Tree House,

Branch Hill, Hampstead, built many years ago now, from the designs of Mr. Basil Champneys, was among the first erected in the so-called "Queen Anne" style, and it had some influence in the design of other artists' homes. We illustrated it among our series of such dwellings in the *BUILDING NEWS* for June 4, 1880. The portrait is from a photograph specially furnished by the artist himself.

Mr. Madox Brown, who was born at Calais of English parents, began the study of art early. At the age of thirteen he was enrolled among the students of Gregorius, a pupil of David, and Directeur of the Academy of Bruges. At fifteen he entered the Atelier of Vanthanselaert, Directeur of the Academy of Ghent. At the age of seventeen he was one of the numerous pupils of Baron Wappers at Antwerp. Mr. Madox Brown's attention was early directed to decorative matters. In 1850, or perhaps before, he and Dante Gabriel Rossetti gave their thoughts to the improvement of picture-frames. About 1861 Mr. Brown was one of the original founders of the firm of Messrs. William Morris and Co., from which establishment the decorative arts in this country have received such an impetus. For the last ten years Mr. Madox Brown has been busied with the mural paintings of the Manchester Town Hall, the last painted one of which is at present exhibiting in Bond-street. Also what establishes Mr. Brown's place among the decorative artists of the day is his decoration of the spandrels of the dome of the Manchester Jubilee Exhibition in 1887. These large and important works were executed by Mr. Madox Brown, with the aid of seven assistants, in five months. Since the clearing away of the exhibition buildings, these large works, which are on canvas—eight colossal figures, each one illustrative of one of the industries of Lancashire, and each figure accompanied by an angel denoting energy—have been acquired for the Technical College in course of construction in Potter's Park, Manchester. Mr. Madox Brown's photograph was taken by Mr. Pae, of Newcastle-on-Tyne.

Mr. George T. Robinson, F.S.A., commenced practice as an architect in 1848, and was extensively engaged in public works, amongst them being the market-halls of Bolton, Wolverhampton, Tunstall, and Monte Video, the town hall of Burslem, and many other municipal buildings. He was also largely engaged in the erection of new, and the restoration of old, churches in the Midlands, as also in works of domestic character, and was for some time partner with the late Mr. Paull at Manchester. Being amongst the early followers of A. W. Pugin in endeavouring to raise the character of design in industrial art, he occupied himself largely in designs for paper-hangings, textile fabrics, metal-work, furniture, and ceramics. These gradually withdrew him from the ordinary routine of architectural practice, and, resigning his Fellowship at the Royal Institute of British Architects, he devoted himself entirely to designing and practically carrying out the various branches of decorative art. Of late years he has been much engaged in designing the internal decoration of ships, and those of the *City of York* and the *City of Paris* for the Inman and International Line, the *Majestic* and *Teutonic* for the Star Line, the four largest ships afloat, have either entirely or in part been designed by him. In literature he has written critical and historical essays in the various professional and artistic journals, contributing many to the *BUILDING NEWS*. At one time he was connected with the *Manchester Guardian*, whose war correspondent he was during the Franco-Prussian war, and wrote the history of the siege of Metz, he being the only English press correspondent who succeeded in remaining there when the others were expelled. Mr. Robinson's photograph was specially taken for us by Mr. T. Fall, of Baker-street, W.

Mr. William Morris, the founder of the works at Merton Abbey, and author of "The Defence of Guinevere (1858)," "Jason," and the "Earthly Paradise," was born in 1834 at Walthamstow, in Essex, and educated at Marlborough College and Exeter College, Oxford. His father was wealthy, and intended his son for the Church; but instead he was articled to an architect, and for about nine months was a pupil in the office of the late G. E. Street, R.A. At college and afterwards his personal friends were pre-Raphaelites. In 1861, in association with Messrs. Ford Madox Brown, E. Burne

Jones, A.R.A., Philip Webb, H. Holiday, and others, including the late Dante Gabriel Rossetti, Mr. Morris commenced his present business in Queen's-square, now in Oxford-street. In prose work, "Hopes and Fears for Art" may be named, and a translation of the "Odyssey." Mr. Morris's interest in Socialism must also be mentioned, in connection with which movement he has long been an ardent worker, as well as for a time in the ranks of the Democratic Federation. His wall-papers, fabrics, tapestry, furniture, and stained glass are of world-wide reputation. He is one of the promoters of the Arts and Crafts Exhibition. He lives on the Upper Mall, Hammersmith.

Mr. Walter Crane was born at Liverpool in 1845, and is the owner of a name related to the knights of Suffolk. His father, Thomas Crane, born at Chester in 1808, was educated in the Royal Academy, where he obtained the distinction of a medal in 1825, and, until his death in London in 1859, practised with considerable success as a miniature painter at Chester, Liverpool, and Torquay, to which last town he had been driven by ill-health. His miniatures were much admired for the grace and vivacity of their designs and compositions. He exhibited in London at the Academy, Suffolk-street, and the British Institution, and, after 1832, almost invariably at Liverpool. Mr. Walter Crane narrates the history of his early impressions of the current art of his youth's time, beginning with a visit to the Academy Exhibition of 1857, when Millais's "Sir Isumbras crossing the Ford" was the cause of infinite discussion. Although little more than a lad, he was already disposed by taste and education to overlook the cruder and imperfect features of this astonishing picture, and to be warmly affected by it. These sympathies had been exercised at a still earlier period than that in question, when, as with scores of young artists, Crane made fancy pictures to illustrate Tennyson and Scott, "copying out," he tells us, "the text, and making bordering illustrations to the words." Thomas Crane must have been an excellent teacher who succeeded so well in instructing his son that the latter so far profited by his counsel as, before he was sixteen years of age, to be able to paint and win a place on the Academy walls for his little picture of "The Lady of Shalott." This was in 1862. Mr. Crane states that on his father's death "I was thrown very much on my own resources." Another authority says, "he studied as an apprentice for three years under Mr. W. J. Linton, becoming thoroughly acquainted with the conditions of wood engraving and its demands on the draughtsman and designer." In those days it was necessary to draw directly on the wood itself, now relieved by photography, which transfers a design from paper to the wood, and thus allows the original work to be preserved. "I consider it was an advantage to me thus to have been assisted with a definite handicraft, as well as an art like wood-engraving, instead of going through the usual academic or school course; besides which, I was just on the way of getting a living, then a matter of pressing necessity." Otherwise, and most effectively, his art thrived "by constant practice, doing anything and everything almost that came in my way, and, sketching out of doors, [I] gained a certain facility both in oil and water-colour." At this period he made many studies in the Zoological Gardens, and thus carried out his plan of drawing everything from nature. This was from about 1859 till 1862, when the apprenticeship to the wood-engraver terminated, and the picture of "The Lady of Shalott" was exhibited. The influence of Mr. Linton made Crane's entrance into the practice of book-illustrating a comparatively simple and easy matter. About 1863-5 he was accustomed to work at Mr. Heatherly's then well-known art school in Newman-street. Here was Crane's work of the evening, and the antique as a model for style in the higher order of design which is manifest in his graver efforts, was thus learned in Heatherly's school. In 1865 he had begun to make designs for picture-books for children, some of the finer instances of which marked a new era in that sort of work, are now treasured by collectors, and will assuredly, in times to come, be valued very highly indeed. "The Fairy Ship," a romance describing in vigorous colours how a certain wonderful craft was laden with almonds and raisins and navigated by a crew of mice, and "The Little Pig who went to Market." To these succeeded "King Luckiboy," and a host of others. While such things as these occur-



ied no small part of his energies, the painter ent, as he tells us, picture after picture to the Royal Academy for exhibition, which the committees of that body as steadily rejected until 1872, when "At Home," a portrait, a water-colour drawing, found a place for the second and last time in Mr. Crane's career. Since 1877 the artist has ceased to court for his later works that gnomonious fate which befell their forerunners. Meanwhile, the Dudley Gallery opportunely opened its doors to the Academy's rejected genius, and, in 1866, its second exhibition contained an important instance of our artist's power of dealing with the pathetic aspect of nature in "Twilight," which in later years was followed by other landscapes and diverse instances, such as a "Shelleyan illustration," 1868; "Spring," and "Ormuzd and Ariman," 1869; "The Red Cross Knight in search of Una," 1870; and, as time went by, similar water-colour drawings. The Dudley Gallery Exhibition of Cabinet Pictures in Oil comprised successively his "Endymion," 1870; "Home News," 1873; "Cupid and My Dame," from Spenser, 1874; "A Daughter of the Vine," 1878; and "This is the Dog that Worried the Cat," 1879. He contributed occasionally to that very interesting exhibition in black and white which, with the Dudley Gallery proper, came to an untimely end in 1882. These instances collectively illustrate the activity and energy of the artist. By means of illustrated books, some of the more important of which have yet to be named, has Mr. Crane become known to the world at large. In the United States his children's books enjoy that sort of popularity which culminates in sticking the coloured plates on screens and in similar places. In Paris and in Germany the picture-books of Mr. Crane and Miss Kate Greenaway are as well known as in England, and with equal warmth admired by differing classes. It was not till 1875 that he essayed a little higher in book decoration, and, under the auspices of Messrs. Macmillan, issued "Tell me a Story." In the next year came, with admirable cuts, "Mrs. Mundi at Home," and Mrs. Molesworth's capital story called "Carrots" (Routledge and Co.). "The Baby's Opera," 1877. In 1879 "The Baby's Bouquet," and, in 1881, the "Herr Baby," Mrs. Molesworth's touching story. In 1881 "The First of May: a Fairy Masque" (Sotheran and Co.), which was followed by "The Sirens Three" written and illustrated by W. Crane (1885), "Flora's Feast: a Masque of Flowers, penned and pictured by Walter Crane," and "Echoes of Hellas" (1888). "The Chariots of the Hours" is undoubtedly one of the finest, if not the finest, and most vigorous of the artist's inventions. The figure of "Flora" is a contrasting illustration of Crane's invention and taste. It is more Greek, yet thoroughly a piece of the Renaissance. "Pegasus" and his god-like owner form a splendid group, exhibit also more of the Renaissance than of Greece. This design, like those of "Flora" and "Sunrise," was lately at the gallery of the Society of Painters in Water-colours, a body in which the artist has recently been welcomed. Mr. Crane's contributions to the Grosvenor Exhibition in 1886 were "The Chariots of the Hours," and a design called "Sunrise," an angel kneeling on heaven's floor and adoring the Creator in this type, the Sun. Another work was "St. George Slaying the Dragon." Mr. Crane's designs for wall papers and plaster decoration have been often illustrated in our pages, as well as some of his chimney-pieces and furniture. He was the originator and President of the Arts and Crafts Exhibition Society. He was a member of the Royal Institute of Painters in Water-colours, but retired when he took up the attack against the Royal Academy a few years ago. His photograph comes from the studio of Messrs. Elliott and Fry, of Baker-street.

The new church at Falmouth, erected from designs by Mr. J. D. Sedding, of London, was consecrated on Thursday, the 17th inst. It has been built at a cost of £4,100.

The proposed reconstruction of St. Cuthbert's parish church, Edinburgh, which has now for so long hung fire, and which has led to some correspondence in our columns, seems threatened with another hitch in the shape of an objection from certain heritors on the ground that the operations will interfere with the interments close to the edifice. A general meeting of the heritors is to be convened early in May to consider the whole matter.

## PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXIV.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.—ABSTRACTS.

EXCAVATOR.

Cube. Dig and cart from surface.	Do. do. part re-turn, fill and ram.	Sup. Hard brick core 12in. thick.
4494 6	4137 6	1112 1 Ddt.
166yds. 13ft.	101 0	616 4 57 9
1655 0	695 0	390 6
40 5	342 8	309 6
278 0	28 5	312 2
137 1	466 4	28 9
11 5	38 6	217 6
186 7	52 6	203 9
38 6	58 4	3190 7
52 6	92 10	57 9
68 4	166 8	3132 10
65 5	120 0	348 yds.
37 2	6372 1	
123 10	236 yds.	
2684 3		
99 yds. 11ft.		

Cube. Concrete in foundations.	Sup. 6in. concrete level bed to receive paving.	Do. filled in over trimmers for hearths.
1655 0	232 6 Ddt.	
40 5	1112 6 57 9	
278 0	616 4	
137 1	390 6	
11 5	309 6	47 10
186 7	312 2	47 10
38 6	28 9	95 8
52 6	217 6	10 yds. 6ft.
68 4	203 9	
65 5	3423 1	
37 2	57 9	
123 10	3365 4	
2684 3	374 yds.	
99 yds. 11ft.		

Run. Planking and strutting to trenches 2ft. 11in. wide and 5ft. 3in. deep.

16 10	Do. 3ft. 4in. by 5ft. 3in.	Do. 3 11 by 5 3	Do. 4 0 by 5 3	Do. 4 1 by 5 3	Do. 5 7 by 5 3
324 4	Ddt.	5 0	5 0	5 0	5 0
5 2	11 0	6 6	6 6	6 6	6 6
15 2	45 4	8 0	8 0	8 0	8 0
344 10	51 10	11 0	11 0	11 0	11 0
11 0					
333 10					

DRAINAGE AND INSPECTION CHAMBERS, &C.

Cube. Dig and cart from trenches.	Do. do. part fill and ram.	Sup. Extra for dishing concrete to form bottom of chamber.
22 6	39 5	5 0
30 2	60 4	8 11
27 6	55 0	7 6
80 2	30 2	21 5
3yds. 154 9	27 6	2 yds. 3ft.
5yds. 20ft. 80 2		
3yds.		

Sup. Reduced brickwork in cement, including rough cutting.

1 B. Sup. Rendering with Portland cement.	Do. do. part fill and ram.	Sup. Extra for dishing concrete to form bottom of chamber.
18 0	13 6	5 0
26 3	21 0	8 11
24 6	19 3	7 6
68 9	53 9	21 5
22 11	6yds. 21 5	2 yds. 3ft.
45 10	2yds. 3ft. 14 0	
		38 0

2in. td. York manhole cover with tooled edges 2ft. 9in. by 2ft. 3in.

1 Do. 3ft. 6in. by 3ft.	1 Wrought-iron rings 2 1/2in. diameter let into York stone, and run with lead.
2	2
4	4

4in. Doulton's glazed stoneware pipe jointed in cement, and digging average 2ft. 6in.

14 0	6in. do., and do., do.	Do., and deep digging or tunnelling to connect with sewer.
14 0	80 8	54 0
18 0		20 0
18 0		
12 0		
82 0		
158 0		

4in. cast-iron ventilating pipe, with joints caulked with red-lead and tow.

5 0	Galvanised iron inlet with mica flap and fixing to iron pipe.
1	1

Extra to bends in 4in. pipe.

2 Do. to junctions in do.	1 End 4in. pipe made good to drain.	1 Connecting 9in. pipe drain to public sewer.	1 Ends 4in. pipe built through 9in. wall, and made good thereto.	1 Do. 6in. do., and do. do.	1 2 Do. 9in. do., and do. do.
1	3	4	13	1	1
				2	2

Drain interception trap.

1 Doulton's 8in. glazed stoneware yard gullies, with iron grating and 4in. outlet bedded in concrete.

4 Approved 9in. sewer-gas interceptor, with cleaning arm, &c., and bed of concrete.

1 6in. white glazed stoneware circular channel, about 3ft. girth, and setting in concrete.

1 Do. about 5ft. girth.

1 9in. do. channel 3ft. long, with branch and do.

1 Allow for paying all fees legally demanded by local authorities.

BRICKLAYER.

Reduced brickwork in mortar, including all rough cutting.

1 B.	1 1/2 B.	Cube.	Deduct.
248 3	248 3	18 5	1 B. 1 1/2 B.
37 11	1 3	839 2	34 0 415 0
31 6	37 11	128 3	52 6 193 11
47 8	8 4	985 10	84 0 112 6
13 0	3 8	109 6	170 6 290 3
18 8	6 6	876 4	72 8
13 8	9 4	reduced.	36 0
4 6	4 6		128 0
12 2	12 2		31 5
359 8	6130 2		29 3
703 6	5340 2		79 9
558 4	359 8		22 8
38 6	140 0		22 0
16 8	10 6		54 8
20 8	161 10		11 7
611 2	27 10		20 2
325 6	78 5		63 0
3061 4	279 2		84 0
170 6	52 6		
3) 2890 10	12912 2		1890 2
963 7	1890 2		
1927 3	11022 0		
	1927 3		
	876 4		
	13825 7		
	50rds. 226ft.		

Do. extra only in cement.

1 B. 1 1/2 B. Half-brick wall in cement.

18 8 9 4 116 8 Ddt. Half-brick trimmer arch in cement.

4 6 4 6 144 8 138 4 35 0

12 2 12 2 70 10

174 2 174 2 332 2

16 8 200 2 138 4

20 8 164 7 193 10

246 10 364 9

82 3 1rd. 93ft.

164 7

Extra to segmental arch in stocks.

52 9 Do. do. in two half-brick rings in cement.

29 8 Do. to neatly axed segmental do. in do. do.

10 0 Rake out cement joints, and point with mortar.

3 9

1 9 3 9

18 11 12 5

6 6 4 4

5 5 3 10

10 5 7 2

34 6 15 9

27 4 47 3

7 6

126 1

Damp-course as described. 6in. square red tiles bedded

523 6 Extra to fair face, and jointed in cement, including cutting.

69 0 and twice distemper.

592 6 per.

15 5 Ddt.

493 5 68 0

276 9 36 3

2275 11 199 5

2503 6 57 9

5565 0 16 7

801 8 276 8

4763 4 147 0

529 yds. 801 8

1170 1

70 4

1099 9

122 yds.

Runs. Fair cutting in stocks.

3 0 Extra to rough relieving arch in two

16 6 half-brick rings in cement 4 1/2in. soffit.

1 6 29 0 Do. 9in. do.

3 0 58 0 4 6 Do. 14in. do.

3 0 13 5 4 6 Extra to bull-nosed angle in stocks.

18 0 13 5

10 6 19 0

55 6 8 0

12 10

4 6

165 4

Extra to brick rounded coping in cement to 9in. wall.

11 0 Rake, wedge, and point lead flashings in cement.

8 0 Do. stepped.

57 4 7 6

80 0 7 6

2 6 54 0

147 10 69 0

Numbers. Ends timbers cut and pinned.

4 Mortises in tile and concrete paving for

4 iron dowels.

12 Forming semicircular aperture

through 14in. stone, 9in. diameter, turning brick arch

over same.

2



Frames bedded and pointed in lime and hair, the reveals screeded.

16	Do. small.	
32	4 Large do.	
8	2 Frames bedded and pointed both sides.	
12	6 Flues, parge and core.	
4	14 Chimney backs rendered in cement.	
2	14 Labour and materials, setting only, grates.	
4	14	
2		
90		

## KENTISH RAG FACINGS.

Sup. Extra to Kentish rag stone coursed random rubble, facing average 7in. thick, with proper bonders, the joints neatly pointed in cement.

5394	1	Ddt.	
2689	5	224	0
712	6	378	0
8796	0	83	5
1500	7	102	8
7295	5	157	4
812	yds.	51	4
		47	8
		192	6
		29	8
		37	4
		76	1
		16	1
		104	6
		1500	7

## MASON.

## SCOTGATE YORK STONE.

Sup. 2½in. tooled paving, bedded and jointed in mortar.

232	6	Run. Circular sunk face to 7in. step to fit bases of column.	
		8	0
		Circular cutting on 2½in. stone to fit piers	
		8	0

12in. by 6in. rubbed and back-jointed step.

9	2	Sunk fair-jointed beds.	
		12	by 7 do.
		45	0
		Fair-jointed beds.	
		8	17
		by 6 do.	
		9	2
		Fair-bed.	
		4	Ends housed to Bath stone.
		4	

Mortise for iron dowels.

4	12in. by 9in. rough.
12	Corbels.
16	<u>2 3in. tooled templates, 14in. by 12in.</u>
4	<u>5 Do. 1ft. 10½in. by 12in.</u>
6	<u>4 6in. do. base 1.10 by 1.10 each,</u> <u>holed for four ½in. bolts, and set</u> <u>in cement.</u>
	<u>2</u>

Cube. Box-Ground Bath stone, including all labour, hoisting, and setting.

In plain band.									
5	11	Plain ashlar.							
13	0	6	5	Quoins	worked fair two sides.				
12	4	2	1	114	6	Do. do. three do.			
11	1	8	6	49	3	31	3	Rebated jambs.	
28	10	147			11	52	6	11	5
69	8	311			8	83	9		
49	6								
54	6								
16	6								
261	4								

Chamfered coping set in cement, including all cramps, &c., and sunk perforations for flues.

57	10	Pilaster, &c., worked circular on front and fair three faces.	
12	11	Stop sunk and weathered sill with	
11	1	moulded stools.	
24	0	32 8 Moulded work.	
		15 4	
		32 8 33 2 Do. set in cement.	
		9 4 25 7 49 4 Mlded. work	
		16 4 9 11 circular.	
		8 9 10 7	56 6
		22 2 5 8	14 0
		14 10 1 0	20 10
		8 4	13 10
		9 4 94 5	13 10
		17 6	20 10
		42 4	139 10
		24 3	
		253 10	

Moulded and rebated.

51	0	Do. and double rebated.			
12	10	12	0	Stop moulded and rebated.	
51	4	11	10	35	0
25	8	12	0	3	10
1	7	2	1	1	11
14	11	15	6	32	8
32	11	7	6	7	9
16	9	60	11	8	9
7	0			16	4
5	4			3	11
7	11			12	4
89	10			24	6
82	8			3	11
71	9			14	7
21	5			1	11
				5	0
501	4			9	4
				42	9
				9	8
				22	9
				11	5
				17	6
				285	10

In door-heads worked fair, with circular moulded soffit and sunk joint, and rebated for door frame.

19	4	In circular column shafts, with sunk and moulded panels worked on same.	
7	11		
27	3	8	9
		14	9
		23	6

Run. Groove for iron tongue.

40	0	6in. coping 2ft. wide, moulded both edges, including all joints, cramps, &c., set in cement.	
20	0		
9	4		
29	4	5	0
10	0	Do. raking.	
5	0		
5	0		
15	0		
4	10		
4	6		
172	4		

Lead plugs and mortises in stone for fixing joiner's work.

24	Forming apertures through 14in. stone parapet wall 9in. diameter, and turn arch over same in stone for exit of rainwater.	
48		
18		
18	2	Carving in plain block letters 3in. high "Girls" on face of key stone.
24		
8	1	Do. "Boys" do.
146		

Kneeler out of 1ft. 6in. by 2ft. by 1ft. 2in. sunk both sides, and moulded to form a part of coping set in cement.

4	Do. out of 3ft. by 2in. by 1ft., with returned moulding at end.
2	Sunk and moulded bonders 2ft. 1in. by 2ft. by 1ft. 4in.
6	Set in cement.

Ball terminals out of 12 by 12 by 2.6 high, moulding and fixing in cement, including dowels.

4	Provide the sum of £20 for carving Bath stone.	
	Allow for stone-carver having use of scaffold.	

## CHIMNEY-PIECES IN BATH STONE.

Cube. Stone and labour in mantel with segmental moulded soffit.

3	2	Do. in stop moulded jambs.	
1	6		
5	5		
10	1		

Run. 12 by 4in., shelf worked fair, moulded front edge back cut and pinned into wall.

4	0	Ends with quadrant corners stop moulded.	
4	6		
54	0		
62	6		
		28	

Moulded brackets out of 9in. by 3in. by 9in., front edge moulded let into mantel at back.

2	Do. cut and pinned in brickwork.	
2		
4		

## SLATE MASON.

Sup. 1in. planed one side, lavatory top on bearers, including joints.

9	8	1in. do. both sides, division to urinal.	
19	3	8	9
28	11	1in. do. one side, back and ends fixed with proper cramps to wall.	
		37	6
		1½in. planed one side, paving, bedded and jointed in mortar.	
		8	0

Labour rounded edge.

5	6	Scribing 1in. slate to wall.	
20	3	9	0
4	0	14	6
11	0	23	6
40	9	5	0
		6 by 4 slate, circular sunk channel set in cement.	
		4	0

Perforated rebated holes for 12in. basins.

2	Quadrant rounded corner to 1in. slate.	
4		
6	3	Hole through channel for brass grating 3in. diameter.
		1

## TILER.

Sup. Broseley strawberry-coloured nibbed tiling laid to a 4in. gauge, each tile secured with two zinc nails.

3243	9	Ddt.	Run.	Cutting and waste to tiling at hips, &c.	
2128	5	69	0		
543	9	113	7	673	0
5915	11	182	7	170	6
182	7			62	3
5733	4			84	0
				989	9
				62	0

Red ridge tile with plain roll set and pointed in cement. To be purchased of Cooper and Co., Maidenhead.

152	6	Termination of ridge with two hips.	
		2	Intersection of ridge with hip and valley.
		2	Do. with two valleys.
		3	

Purpose-made hip tiles, set and pointed in cement.

59	0	Do. valley, do. do.	
		110	6

## CARPENTER.

Centring.

To flat brick arch.	
9	0 To trimmers.
35	0 Run.
To segmental arch 4½in. soffit.	
25	0 Do. to do. stone arch 9in. soffit.
2	1 Do. to flat arch, do. do.
2	1 14in. soffit with circular angles.
4	4

Turning piece 4½in soffit.

45	10	Cube.	Fir in wall plates and lintels.				
4	8	4	10	Do. framed.			
14	8	19	4	78	3	Do. do. in principals.	
5	6	5	5	351	4	132	6
4	2	11	0	32	4	39	5
8	6	2	6	9	2	2	5
20	0	2	6	15	8		
103	4	3	7	330	10	174	4

Supr. Planing on fir.

130	4	Deal battening for tiling.	
28	4	3243	9
915	9	2128	5
206	0	543	9
75	8	5915	11
26	0	182	7
29	4		
335	3	5733	4
1755	11		
		Do. to flat and firrings	
		19	3
		Do. circular.	
		50	

1½in. roof boarding in narrow widths, inodorous roofing felt laid with proper laps to be allowed for.

28 4	3213 9	Ddt.	lin. gutter board and
915 9	2128 5	69 0	bearers.
206 0	543 9	113 7	50 0 lin. close-jointed
75 8		182 7	boards for lead
26 0	5915 11		vertical.
29 4	182 7		91 2
335 3	5733 4		Do. to flat and firrings
1755 11			19 3 Do. circular.
			50

Splay cutting and waste to 1in.

41	4	Feather-edged springer.	
		21	0
		3in. by 1½in. titter.	
		390	0
		2in. rounded roll.	
		6	8
		Splayed ends.	
		37	4
		Circular cutting to ends.	
		4	2½in. do.
		8	Mitres.
		16	Splayed ends.
		2	

1in. narrow chimney gutters and bearers.

3	6	Herring-bone strutting to 9in. joists.	
12	0	255	6
16	6	Do. 1½in. do.	
		202	0
		6in. by 2in. fir wrought and framed upright.	
		12	0



## Building Intelligence.

**BILLINGSGATE CHRISTIAN MISSION.**—This building was declared open by Lord Kinnaird on Wednesday, the 16th inst., at 4 p.m. The mission entrance is out of St. Mary-at-Hill through a lobby. A stone staircase leads up to the mission hall on the first floor, which, with a gallery at one end, will seat about 200 persons. A retiring room leads into mission hall, and two offices are placed over this retiring room off the landings of stairs, one for the librarian on second floor, which also comprises a reading-room and library with an oriel window at angle. The ground floor and basement comprise two large rooms, 37ft. by 19ft. each, which are leased to the post-office authorities. The upper part of all the windows are filled by stained glass lights by Messrs. A. O. Hemming and Co., 47, Margaret-street, Cavendish-square, W. The exterior is faced with red Bracknell bricks, with Ancaster stone dressings, and red glazed brick pilasters to ground floor. An oriel is placed at the corner of the two streets, carried up from first floor over the entrance to post office up to second floor, and on the third floor it forms a clock turret with four faces, the clock being the work of Messrs. Gillett and Co., Croydon. The turret terminates with an ogee lead roof and iron nial. The contract for the building has been carried out at £4,025 by Mr. R. G. Battley, 21, Old Kent-road, S.E., from the plans and under the superintendence of Mr. George Baines, architect, 4, Great Winchester-street, E.C. Mr. James Hollett acted as clerk of the works.

**EAST KESWICK.**—The memorial-stones of the Laurence Memorial Chapel, in course of erection at East Keswick for the Wesleyan body, were laid on Easter Monday. The new building, which is to cost £1,500, is from the designs of Mr. George Danby, of Leeds, and is Gothic in style. The chapel will be 50ft. by 29ft., and will give accommodation on the ground area for 100 persons, while the gallery at the west end, over the entrance lobbies, will accommodate 50 scholars. The roof will be open-timbered. The front of the chapel will consist of a large central gable, inclosing a four-light traceried window, with an octagonal spirelet at the north-west angle, rising to a height of 52ft., and a projecting staircase to the south-west. The Communion-table will be placed in a large arched recess at the east end of the chapel, with pulpit at one side. Over the Communion-table there will be a circular traceried window, filled in with stained glass. The seats will have stall-ends. At the rear of the chapel there will be a schoolroom, 28ft. by 16ft., and 13ft. 6in. high to the ceiling, accommodating 70 scholars. The building will be of Harehills stone, with Killinghall stone dressings. The walls will be lined with brick, and the internal woodwork will be of pitch-pine varnished. The contractor for the whole of the work is Mr. Robert Brelsford, of East Keswick.

**KINGSTONE.**—The parish church of Kingstone, Herefordshire, was re-opened after restoration, on Thursday, the 17th inst. The building dates from the 13th century, and consists of two naves and two chancels. In the north chancel the north wall has been taken down and rebuilt, and the plaster ceiling removed, exposing to view the ancient timbering. The roof itself has been boarded in oak, and felted over the rafters; and it has been recovered with stone tiles. The north wall was taken down and rebuilt, and the windows renewed. The floor has been re-laid on a bed of concrete, and the new flooring consists of stone memorial slabs and of encaustic tiles. The south chancel has been re-floored with slabs and tiles on concrete, and a new roof of oak constructed; stalls of oak, and new windows provided. In the north and south nave the plaster ceiling has been removed, and the ancient timbering being exposed to view, and repaired where necessary. The boarding and felt over the rafters has been renewed and the roof retiled. The floor has been repaved with a bed of concrete, and oak blocks throughout, and the west gallery has been taken down. New oak seating and west doors have been put in. The windows are new, and the arch between the north aisle and the tower has been opened. The architect for the restoration of the chancels was Mr. Ewan Christian, and the builder Mr. W. Cullis, of Hereford. The restoration of the naves has been accomplished at a cost of about £1,100. Of

this part Mr. T. Nicholson, of Hereford, was the architect, and Mr. H. Smith, Kidderminster, the builder.

**MIDDLETON.**—On Saturday last a new cricket pavilion was opened at Middleton, Lanc. The structure is well elevated, and commands a very fine view of the cricket field and country around. The style of architecture is made up of Gothic and Old English, a half-timbered black and white gable in the front roof being a conspicuous and important feature of the design. The plan consists of a public room and two dressing-rooms with separate lavatories and conveniences. The external walling is built with grey-ended Alkrington bricks, and Ruabon red stock bricks to all quoins. The roof is covered with red tiles obtained from Mr. J. C. Edwards's works at Ruabon. The architect is Mr. T. A. Fitton, of Middleton and Manchester, whose design was selected out of about twenty others submitted in competition, and the builder is Mr. Thomas Jackson, of Middleton.

**PRENTON, BIRKENHEAD.**—On Friday last the new Congregational school-church, Prenton-road West, was opened by the Rev. Alex. Mackennal, D.D., of Bowdon. The church has been erected at the junction of Storeton-road and Prenton-road West, and is the first section of a comprehensive scheme, which will include a church to accommodate about six hundred people, having tower and spire, and schoolroom for 250 children, having five classrooms for senior scholars. The present building will be used for Sunday-school, in addition to congregational purposes. Accommodation has been supplied for about two hundred adults. The chancel is fitted with carved pulpit, Communion-table, and organ. All the internal woodwork is of pitch pine, varnished. The contract has been carried out by Mr. John Shaw, of Birkenhead, from the designs and under the personal supervision of the architect, Mr. Thomas W. Cubbon, of the same town, whose plans were selected in competition.

**SOUTHAMPTON.**—New premises have just been completed at Southampton for Messrs. E. Jones and Co., being an extension of existing buildings. The building has a façade of about 100ft. to the Parks, and is of four stories in height, exclusive of the basement. The front and returns are of buff-coloured bricks, with moulded and carved Corsham Down and Portland stone dressings. The centre portion is carried up and forms a clock-tower, in which is an illuminated dial 4ft. in diameter, by Messrs. Potts and Co., of Leeds. The clock-tower is surmounted with an iron railing, terminating with a crown, encircling a lofty flagpole. The cast-iron work has been supplied by Messrs. W. Macfarlane and Co., of Glasgow. The wings have a balustrade parapet, with terracotta vases at angles. The whole of the lower portion of this frontage is utilised as lofty plate-glass shopfronts. A complete fireproof wall has been constructed, dividing the entire building on a line running from east to west, and where openings occur in this division there are two sets of cast-iron fireproof folding insurance doors, with an aperture of 6ft. between each other, the intermediate space being brick-and-stone lined. This division wall is carried up from the concrete foundations to a point above the apex of roofs. The site covered is about a quarter of an acre. The height to the top of the tower is about 70ft. The several floors are served with one of Messrs. R. Waygood and Co.'s passenger and luggage hydraulic lifts. The contractors for the works were Messrs. Joseph Bull, Sons, and Co., Limited, of London and Southampton, and the architect was Mr. William Burrough Hill, of Southampton. Boyle's ventilators are used to all the lantern lights.

The latest addition to the National Gallery collection is a small 15th-century picture of the Umbrian School, representing an equestrian figure with city and mountain in the background, while flames burst forth from the earth in front of the horse. It is numbered 1,304, is known as "Martius Curtius," and is hung in room No. VI.

The new Board School for boys at Newtown, Exeter, was opened for scholars on Friday. The building adjoins schools erected some years ago for girls and infants, and contains large schoolroom, two class-rooms, master's private room, and cloak-room. The designs were by Messrs. Hayward and Son; Messrs. Stephens and Son were the builders, and the desks were supplied by Messrs. Wippell and Son, all of Exeter.

## Engineering Notes.

**GLASGOW.**—The ceremony of laying the foundation-stone of the Great Western Bridge, which crosses the river Kelvin at the Great Western-road, and connects Glasgow with Hill-head, took place on the 10th inst. The arranging for the erection of the bridge has been carried out by a joint committee of the local authorities of the city of Glasgow and the burgh of Hill-head, and the Road Trustees of the Lower Ward of Lanarkshire. The new structure is to consist of two arches of 91ft. span each over the Kelvin, and two land arches, each having a span of 31ft. The abutments, piers, and wing walls are to be of stone, while the arches are to be of cast iron, and the platform beams of steel. There will be a carriageway paved with granite setts, and granolithic pavements at each side 12ft. wide, while the total width of the bridge between the parapets is to be 60ft. Altogether the undertaking will cost £38,578, of which £34,251 is to be expended on the new bridge, and the remaining £4,327 has already been spent in the erection of a timber accommodation bridge. The new bridge has been designed by Messrs. Miller and Bell, C.E., of Glasgow; the contractors for the masons' work are Messrs. Morrison and Mason; and for the steel and iron work Sir William Arrol and Co.

### CHIPS.

It is proposed to erect a memorial of the late Dr. Parry, Bishop of Dover, in Canterbury Cathedral.

A new tower is to be erected to St. Anne's Church, Heyhouses-on-the-Sea, at an outlay of about £1,000.

Operations will commence at once in the erection of the proposed new church at Crawshawbooth, Rawtenstall, for which drawings have been prepared by Messrs. Paley and Austin, architects, of Lancaster.

Mr. T. Mellard Reade has been nominated by the council of the Liverpool Architectural Society for re-election as president of that body, at the annual meeting to be held on Monday week.

At a meeting held in London, under the presidency of the Duke of Cambridge, it was resolved to raise a sum of £10,000 for the repair of the Crimean Memorial Church at Constantinople, and the formation of an endowment fund. The church was built by the late Mr. G. E. Street after a competition, and Mr. R. Herbert Carpenter has just been out to Constantinople to inspect and report on the state of the building.

The Bishop Poole Memorial School at Osaka, Japan, was opened by Bishop Bickersteth on the 10th March. It occupies a site at the intersection of the two central streets of Kawaguchi, the foreign settlement, having frontages of 70ft. and 180ft., with a wing 52ft. long on the east. The remaining side of the square is partly occupied by a bath-house and servants' quarters, while the intervening quad forms a playground for the inmates of the school. The school comprises on the ground floor six classrooms, a meal room, and, in the east wing, dormitories. The upper floor of the main building consists of dormitories divided into cubicles of 4½ mats each, by partitions 6ft. high, opening on to a central passage. It accommodates 82 pupils. The building consists of red brick, with stone dressings, high-pitched roofs, and stone-coped gables. It has been erected from the designs and under the immediate direction of the architect, Mr. Alex. N. Hansell (late of London), of Osaka and Kobe.

The whole of the barracks of the Royal Berks Militia at Reading have been retrained with air and water-tight drain-pipes, under the directions of the Royal Engineers of the Home District, the works being carried out by W. Goodchild, builder and Government contractor, Weldale-street, Reading.

A new cemetery at Newcastle, serving the east end districts of Byker and Heaton, was consecrated by the Bishop of Newcastle on Saturday week. The total cost has been nearly £14,000. The land, twelve acres in extent, cost £700 per acre, and the works have been in the hands of three contractors, as follows:—No. 1. Mr. Edward Edgar, of Heaton Town Farm, Newcastle, road-making, drainage of the ground, and large sewer down Benton-road, £1,350. No. 2. Mr. G. H. Mauchlen, of Tamworth-road, Newcastle, boundary walls, iron palisading, and entrance gates, £1,205 5s. No. 3. Messrs. Milburn and Gibson, of Blackhill, superintendent's lodge and two chapels, amounting to £2,238 16s. 4d. The whole has been carried out under the supervision of the architect, Mr. J. W. Taylor, of Westgate-road, Newcastle.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

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Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., LI., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—W. G. and Son.—G. G. H.—A. M. D.—W. B. W. and Co.—R. D.—J. and Co.—G. T. and Son.—O. S. B.—G. E. and Co.

## "BUILDING NEWS" DESIGNING CLUB.

## EIGHTH LIST OF SUBJECTS.

Subject H.—A Parish Hall and Soup Kitchen, to be erected on a corner site with a side frontage of 125ft. deep, and a frontage of 35ft. to the main road of a small village. The best-sized room obtainable on the site to be provided, allowing for a good roomy stage with a retiring room, suitable for class and committee purposes, or as a green room for theatrical performances. These parts of the hall to have a rear entrance, and the soup kitchen may be in a half-basement. Provide good main entrance, lobby, and stairs to gallery at end of the hall only. The floor of the stage is to be 3ft. above the level of the hall, and to have an arched opening dividing off the wings from the assembly-room. Hall to be heated by hot-water coils in recesses in walls. Style, Late Tudor Renaissance, in stone, and roofs covered with green slates. Provide for ventilation. Scale, 1/4 in. to foot. Sufficient drawings to show design, including sketch view.

DRAWINGS RECEIVED.—"Skull and Cross Bones," "Red Rover," "N. B.," "Sector," "Hubby," "Saxon," "Box," "Coombe," "X. Y. Z.," "Theta."

## Correspondence.

## ARCHITECTS' REGISTRATION BILL.

To the Editor of the BUILDING NEWS.

SIR,—Will you allow me to state, in answer to the many inquiries received, that this Bill has been set down again for the second reading on the 30th inst.; but having regard to the state of business in the House, it is questionable whether it can be reached.—I am, &c.,

EDGAR FARMAN, Hon. Sec.

The Architects' and Engineers' Registration Act Committee, 39, King-street, Cheap-side, E.C. London, April 18.

## ARCHITECTURAL REGISTRATION IN FRANCE.

SIR,—The vexed question of Registration is still taking up much attention in France, as it is in England.

I have just seen a report of the "Commission d'Etude du Diplôme," the last meetings of which

took place at Paris on the 15th and 16th April, under the presidency of Messieurs Garnier et Laroumet. A report was read, giving the answers returned by provincial societies to the questions asked by the central society. These answers varied much; the greater part, however, seemed to demand the obligatory diploma, a large number the voluntary diploma, and a few only the rejection of either. In regard to the answers and ideas, it was remarked that the provincial and central societies do not represent all the architects. Many "confrères" of merit do not belong to any society, and so their opinions are not known. A number of the members of the Commission gave their opinions for and against the obligatory diploma.

In the general discussion Monsieur Mulle, Professor of Legislation at the Ecole des Beaux Arts, spoke at length, bringing forward reasons against the obligatory diploma. He said that, as regards the situation of advocates, medicine, and pharmacy, &c.—for which a guarantee or diploma was exacted, it is especially the public interest that is taken into account, and not the interest of either professions. In order to create a privilege a certain amount of public interest is necessary, and does this really exist for architecture? Guarantees are already made for the profession in the shape of administrative rules and code of constructors' responsibility. The complaints do not come from the public, but from the architects. It is, then, solely in the interest of the profession that the diploma is demanded. Monsieur Mulle proceeded to state that architecture is not the only profession that is overcrowded, that many others suffer from the same overcrowding. The remedy, M. Mulle avows, rests in the good sense of the public. The obligatory diploma for architects would be a disastrous example. Every other profession—civil engineers, shipbuilders, plumbers, carpenters, electricians, &c., would claim the same favour.

The consequences would be that industry would become divided into an infinity of closed "castes," and the régime of the last century—the enemy to all progress—would return.

If the obligatory diploma were created, a new law would be necessary, couched in like terms: "Whoever, without possessing the diploma, shall do deed of architect will be pursued according to the law," &c. Such a law the legislative powers would never consent to pass—a law against an action which is, in principle, most honourable. If a proprietor were himself to build, thus doing deed of architect, would he be arrested and forced to employ a diplomaed architect? It would no longer be the diploma, but the architect, that would be obligatory. Monsieur Mulle wound up by saying that the obligatory diploma would be an attempt against the public conscience, and could not exist. I see by the "Construction Moderne" that the Commission has so far decided by votes: for the obligatory diploma, 3 votes; against, 15; for the voluntary diploma, 6 votes; against, 12. The obligatory or voluntary diploma is, for the present, rejected. I send you this short report, thinking it may interest your readers, and not as in any way giving my views of the matter for or against.—I am, &c.,

ARTHUR VYE PARMENTER.

Palais des Beaux Arts, Lille.

## THE INSTITUTE EXAMINATIONS.

SIR,—I am extremely sorry that I cannot follow Mr. Pennington's suggestion, and oblige him by going in for an examination—which I have already passed. It is, however, a great consolation to me to find that we are so thoroughly in accord as regards this examination at the Institute. I agree cordially with him when he says that the knowledge which enables one to pass it, is just that "which makes the architect respected on the works"—i.e., by the bricklayers and carpenters. The builder, too, as he says truly, "knows nothing about the higher calculations"—but why calculations?—"done in the office"; and the inference one naturally draws is, that Mr. Pennington considers it is unnecessary for the architect to trouble himself much about them either. This is the only point upon which we differ, and it is, of course, a trivial one. I hold that the possession of practical knowledge alone no more makes an architect than the being able to write proves a man to be an author; that an architect is an artist; and that if his work does not possess artistic feeling, it is not architecture, and its designer consequently not an architect. Mr. Pennington, "who undertakes both architect's

and builder's duties, who employs his own, pays weekly wages, and changes his plumb, apparently thinks differently. I am sorry; as it is not worth arguing about so small a matter, we must, I am afraid, continue to disagree.—Your, &c.,

FRED. M. SIMPSON.

## ARCHITECTURAL DEVELOPMENT.

SIR,—The power of the Institute for would be entirely gone if the views of Council on every question were to be submitted to the vote of a general meeting. I notice certificate for membership is in course of circulation, and that the Great Seal has been affixed—no doubt up to the time of its being called into requisition it has been sheltered the Tower of London. The cats dancing rampant have taken a turn for good, their hook tails still exhibiting a large amount of vitality, have developed into the Florid Tudoresque style and their beards are wanting. Notice the crowns, how regal they are! and their contorted tongues, symbolical repose in architecture, all exhibit learning of a very high standard. The column in the ceiling has obviously shunted Norman and adopted the 19th century style—why shouldn't it? The sh-rock, rose, and thistle are all manifestly present—all highly symbolical again; and I do not know whether the design was intended to give a jar of piccolilli or a certificate of membership of a Royal Institute; but obviously the design was never submitted to a general meeting of the Royal Institute; and apart from its not being adopted by the body corporate, it affords a strong inculcation of the lesson that art cannot be taught by examination.—I am, &c.,

CHAS. GUY HALL.

St. Alban's-road, Kensington.

## PROVISIONS IN QUANTITIES.

SIR,—Your correspondent "Twice Charged" has managed to write a very long letter on a small matter, and I think that, with insufficient grounds, he finds fault with the honourable body of professional men.

Does he actually state, and is he prepared to prove, that, for the sake of a pound or two commission, any respectable surveyor writes down provisional sums or quantities?

In a large experience I have never heard of such a case, and think it altogether absurd. The specification states that certain items are to be provisional quantities, say concrete, digger, framed timber, lead, or any other portion of the trade, what is the surveyor to do?—he cannot ignore them altogether.

Then, as to the measuring-up after, I am sure most surveyors will agree with me that measuring jobs are of no benefit at all to the surveyor.—I am, &c., HENRY LOVEGROVE.

26, Budge-row, E.C.

SIR,—As the letter signed "Twice Charged" in your last week's issue reflects somewhat upon surveyors, who, after being charged of matters of forethought with a dishonourable act, are designated generally an honourable body of men, I crave permission in your interest columns to make the following few remarks. I ask on what grounds a surveyor is justified in putting into his quantities provisional quantities of labour and materials, when he is aware alterations may be required, necessitating using the said materials? and where the difference between this and putting in a lump sum of money? And, moreover, the advantage in the former case is that when making the accounts the items are priced by the contractor, and the prices may be used. Who is the surveyor who charges 2 per cent. commission "omitting" the above items? There are, if any, surveyors who get this for taking quantities. I have seen 1½ per cent. charged, works omitted, but more usually 1¼ per cent. only; and why should not a surveyor charge omissions of said items? Who is responsible for the event of "Twice Charged" finding that these items, of, say, concrete and digging, &c. have not been credited? I imagine your correspondent (if he be a "client," which I must doubt) would have few scruples in trying to recover from the "honourable" or "dishonourable" surveyor; and is this responsibility nothing! Why does not the writer argue that making up the accounts after completion included in the 1½ per cent. or 2 per cent. charged for taking out the quantities? The argument would not be much more unreasonable



nd, Sir, if surveyors are to be stabbed in the back in this mean and cowardly fashion, let s have names, and not *noms de plume*, at the foot f the accusations.—I am, &c.,  
A DISGUSTED SURVEYOR.

Sm,—In answer to "Twice Charged," I will ate a case that has happened lately to myself. In the bills of quantities a large item was erted over and above what was required, and pon which 2½ per cent. was paid. At the ttlement, in bills of deductions, another 2½ per ent. was charged for deducting said amount. he work in connection with the above item was en measured, and another 2½ per cent. paid.— am, &c.,  
BUILDER'S MANAGER.

## Intercommunication.

### QUESTIONS.

[10270].—**Provisional Sum.**—Where a provisional um is put in quantities for "Special fittings fixed" from ie price submitted by sub-contractors and accepted by ie architect, can the contractors, after erecting the work, aim a larger sum, giving as a reason a rise in the market tetween acceptance of their tender and the carrying out 'the work? or may they demand an allowance for men's 'drinking" or travelling expenses when the work carried it is situated several miles from their workshop, know- ing the same beforehand? This is a case I have to con- und with, and the tenderers seem to think themselves istified in rendering their account for more than the iginal sum sent in, although the demand is for several unds more than the price they offered to do the work, and the settlement stands over accordingly.—FAIR- AN.

[10271].—**Nuisance from Saw-Mill.**—A. and B. y adjoining plots of land. A. erects workshops and ores; B. builds semi-detached villas to within 3ft. 6in. of A's boundary. A. then lays down a saw and planing mill ithin the above stores, the noise and vibration of which annoy B. A. not wishing to annoy B., would be glad of y suggestion that would abate the above annoyance.— ORTHAMPTONSHIRE.

[10272].—**Percentage.**—Will someone kindly inform e what per cent. on the amount of sales I should have r the following work:—Measuring the land, making lan and section (with duplicate) of three acres of building nd for dwelling houses, showing position of every house, utting out the drains, with junctions to every house, con- nuously inspecting the same; selling the building sites, nd making out the accounts; preparing plans, specifica- ons, sections, and agreements for the letting of the rains and the street formation; supplying quantities (no charge to the contractors for quantities supplied)?

### REPLIES.

[10264].—**Prime Cost.**—As there is no answer in tercommunication to this query, although there was an rticle touching on the subject in the same issue of the BUILDING NEWS wherein the question appeared, yet I did of find the point raised treated on. I thought perhaps n explanation might elicit a reply from someone xperienced. I told the proprietor that I thought the ntractor would be entitled to the trade discount on aying the amount in the usual course of business; but e contends that as he is the actual paymaster, he is ntitled to what discount or allowance can be obtained, as e considers he has the right to order the special work if ecessary, and deduct the amount included from the con- tract. Not having done so in the first instance (although e went to see the goods prior to delivery), I told him I ought the discount, if any could be got, would, in the customary way, go to the contractor. On seeing the akers of the specialties, they state that the prices for eir goods specified and inserted into quantities (giving e p.c. for contractor's guidance) are not subject to dis- ount in the ordinary course, the prices having been given e the selling prices.—FAIRATION.

Waterloo House, in Westgate-street, Ipswich, hich for nearly half a century has enjoyed the restige of having the finest shop front in the Eastern Counties, has just been remodelled and reted. The window frontage of 115ft., hitherto roken up by broad piers, is now almost continuous, nd the central shop is surrounded by two tiers of alleries. The lantern lights above the three new howrooms are fitted with Robert Boyle and Son's entilators. Messrs. Grimwood and Sons, of Ipswich and Sudbury, were the builders, and Messrs. F. Sage and Co., of London, the shop eters.

At St. Paul's Cathedral, Mr. William E. F. ritten is completing the designs to fill the spaces etween the arches under the whispering gallery. f the eight spandrels, three have already been mpleted. Two of them are by G. F. Watts, .A., representing St. Matthew and St. John. The hird is from the design of the late Alfred Stephens, ho executed some twenty years ago designs for ur of the spaces, the subjects being the prophets aniel, Ezekiel, Isaiah, and Jeremiah.

On Monday week a new mission-room, erected dja-cent to St. Jude's Church, Wolverhampton, as dedicated to the Bishop of Shrewsbury. The om, which corresponds in character with the urch, has cost £500. The builder was Mr. H. illcock, and the architect Mr. T. H. Fleeming.

### LEGAL INTELLIGENCE.

JAGGER V. DONCASTER UNION RURAL SANITARY AUTHORITY.—This case was heard in London on Tuesday and Wednesday week by Mr. Justice Cave without a jury. The plaintiff, in making additions and alterations to his dwelling-house in Bentley-road, near Doncaster, had neglected to comply with the requirements of certain by-laws of the sanitary authority, whereupon the authority, acting under the powers conferred upon them, demolished a part of the premises. The plaintiff now claimed an injunction restraining the defendants from a repetition of the acts complained of, together with £1,500 damages for injury to his property. By-law 55 provided that 16sq.ft. air space should be left open in the rear of any new building. It was not denied by the plaintiff that he had failed to observe this, but he contended that the by-law did not apply to his case. But, even assuming that it did, the defendants exceeded it by demolishing beyond the 15sq.ft., and were therefore liable for excess of damage. It was proved that the premises were unroofed beyond the proper limit, that the debris fell in, and that that part of the premises was left uncovered all night. The defendants admitted that the 15sq.ft. were exceeded, but contended that it was only to a necessary and inappreciable extent, though it was proved that a man was employed for 14½ hours in retiling the roof. They further alleged that specific instructions were given to the contractor not to exceed the 15ft. limit, and that if the Board's authority was exceeded the Board was not responsible. At an earlier stage of the proceedings the Board had summoned the plaintiff before the magistrates for not submitting a plan of the proposed alteration in accordance with another by-law, when he was fined 40s. Mr. Justice Cave, in giving judgment, said: The plaintiff contended that the proceedings of the defendants were wholly wrong, inasmuch as he had entered into a covenant with the owner of the adjoining land for its purchase; but there never was any agreement between Jagger and the adjoining owner, and so the defendants were justified in pulling down such parts of the building as were not in conformity with the by-laws. No doubt the persons employed did go beyond the part of the land which belonged to the plaintiff, and as to that excess there was a default. But the defendants, besides employing a contractor, in addition directed a servant of their own to assist in the demolition, and I do not find such circumstances as to make him a servant of the contractors. The sanitary authority would, therefore, be liable jointly with the contractor. There is no suggestion that the servant thought he was going beyond his instructions—probably they were not sufficiently definite. Doubtless the parties engaged in unroofing the part abutting on Jagger's own land thought they were doing their duty, and so the sanitary authority is liable. What is the extent of their liability? As to the portion standing on the plaintiff's own land, a considerable part of the slates was stripped off, and for this the defendants would be liable. The sanitary authority could not have pulled down that part without pulling down the whole, including the slates, and on that ground they are not liable. Jagger had persistently disregarded the by-laws. He built, knowing he had no right. He was given an opportunity of either acquiring the land at the back or pulling down what he had built, but he did neither; and so the sanitary authority were right in saying that they had a right to pull down the part in excess, even if the whole should fall, and to do it in the most convenient way to themselves. They are not allowed to do it in a dangerous way, but consistently with safety may effect their object in the way they please. On another ground the defendants are not liable, for, assuming they were not justified in removing the tiles, yet no damage has been proved. The damage would have happened just the same from the dust and mortar, and as to any damage caused by rain, the evidence was insufficient. On the whole there would be judgment for the defendants.

CARAVANS AND THE BUILDING ACTS.—HALL V. SMALLPIECE.—This case of a conviction by a magistrate of the owner of caravans and tents, for a supposed violation of the provisions of the Building Act, raised a question as to whether such erections can be considered as buildings within the scope of the Building Acts. The original Act contained provisions as to buildings with walls, &c., and a question having arisen as to whether they applied to temporary buildings, the 45 Vict. c. 14, section 13, extended them to "any wooden structure or erection" of a movable character set up without a license in writing from the Metropolitan Board of Works, which is now superseded by the County Council. The defendant had set up at Hampstead five structures or erections of a movable or temporary character without a license from the County Council. These structures were a steam round-about and three caravans, all on wheels, and a shooting-tent, &c. The magistrate convicted the defendant, but stated a case, on which he appealed. Mr. William Smallpiece, district surveyor for East

Hampstead, appeared in person to support the conviction, claiming that these were structures or erections within the recent Act. The Court came to the conclusion that the magistrate was wrong, and that the conviction could not be supported. Lord Coleridge said that if the conviction had been under the original Act it must be admitted that it could not be supported, as these things were certainly not buildings. But these were plainly not intended to be used in any sense for the habitation of man. They might be in some sense structures, but not surely within the meaning of the Act, the scope and object of which were to supplement the Building Act. The words "structure or erection" must be construed in the same sense as in the Metropolitan Building Act, 18 and 19 Vict. These, therefore, were not structures or erections within the recent Act. The conviction was wrong, and must be set aside. Mr. Justice Mathew concurred, and said it was a strange straining of the Act to make it apply to mere caravans or things on wheels. Conviction accordingly quashed.

POWERS OF LOCAL AUTHORITIES TO DEMOLISH BUILDINGS.—HOPKINS V. SMETHWICK LOCAL BOARD.—This appeal, from the decision of a Divisional Court consisting of Mr. Justice Denman and Mr. Justice Wills, was heard on Tuesday by the Master of the Rolls and Lords Justices Fry and Lopes. On October 12, 1888, the plaintiff deposited with the Smethwick Local Board for approval the plans of certain buildings which he intended to erect in their district. The plans were considered and rejected, and notice of the rejection and of the reasons for it were given to the plaintiff. The plaintiff again deposited plans, which were again rejected, and this happened a third time. Towards the end of December the plaintiff, having received no authorisation from the local board, began to erect the buildings. The defendants gave him notice to remove the buildings, and, on his non-compliance, themselves, in accordance with a resolution passed by them, entered on the land and demolished the buildings. The plaintiff then brought this action for trespass, and at the trial before Mr. Baron Pollock at Stafford the learned Judge held on the cross-examination of the plaintiff that the defendants were justified in what they did. The Divisional Court reversed this decision, holding, on the authority of "Cooper v. the Wandsworth Board of Works," that it was the duty of the defendants to have given the plaintiff notice of their resolution to demolish his house before proceeding to demolition. The defendants appealed, but the Court now dismissed the appeal. The Master of the Rolls said that the power which the Local Board had assumed to exercise was a power affecting the property of the plaintiff in the most highly penal way possible. Those who had the authority to exercise such a power must take every care to follow out each necessary step in the strictest manner. The case of "Cooper v. the Wandsworth Board" was an authority to show that where a local board had power on the misconduct of a building owner to enter on his land and demolish the offending building, there was a necessary implication by the fundamental principles of justice that they must give the owner notice of their intention to take that step. That case appeared to be rightly decided and on sound principles, and it governed the present case. Lord Justice Fry entirely agreed. Some opportunity ought to have been given to the plaintiff to show cause against the demolition of his house. Lord Justice Lopes concurred.

On Saturday the Bishop of Gloucester and Bristol held a dedication service in the new mission church of the Good Shepherd, which has been erected in York-place, Brandon-hill, Bristol. Designed and built by Messrs. Bailey, Harding, and Vowel, it has cost about £450. It is a plain brick building with a temporary iron roof, and a permanent chancel with a slate roof. There are three stained-glass windows in the chancel.

Under the auspices of the Clifton Archaeological Club the names of some celebrities are being affixed to houses in Bristol in which they had resided. The name of Hannah More has recently been affixed to the building in Park-street, once her home, and the name of Sir Thomas Lawrence to his house in Red-cross-street. Soon the names of Chatterton, and Bird, the artist, will be appended to houses in the city associated with their memories.

At the last meeting of the Suffolk County Council an application was received from Mr. Henry M. Eyton, of Ipswich, for compensation by reason of his having been superseded in the office of county surveyor for East Suffolk. He urged that he had held the office uninterruptedly from June, 1865, and during each of the last five years had received £200 salary as surveyor of bridges and buildings, and £80 as surveyor of roads. The clerk to the council advised that as the appointment was an annual one no such claim could be sustained, and it was agreed that the application be not entertained.



## Our Office Table.

THE annual exhibition of the Royal Cambrian Academy will open on May the 26th, at Plas Mawr, Conway. The Academy is making steady progress. The coming exhibition is expected to be of special interest. Several of the leading members, including Mr. Clarence Whaithe, R.W.S., Mr. Peter Ghent, Mr. Joseph Knight, R.I., Mr. Anderson Hague, Mr. Charles Potter, and others, will probably be well represented. We are glad to see that the Academy is fully alive to the claims of architecture to be well represented in a national academy of art. The membership already includes Mr. Douglas, Chester; Mr. Baker, London (who is the compiler of a beautifully illustrated work describing Plas Mawr), Mr. Stephen Williams, and Mr. Edwin Seward, of Cardiff. At the last meeting of the members, Mr. Robert Grierson, architect, of Bangor, was elected an associate.

GREAT efforts are being made by the council of King's College, London, to meet the growing wants of the age in the direction of electrical engineering. The engineering department of this college has always had a high reputation; but now, thanks to the munificence of Lady Siemens, a new laboratory for electrical engineering, to perpetuate the name of her distinguished husband, and to be called the "William Siemens Laboratory," is to be constructed and fitted with every modern electrical appliance. The council have equipped a fine engine and boiler-room, with all the machinery requisite to provide the necessary power, and it is hoped that by this means the whole college will ultimately be lighted by electricity. A new chair of electrical engineering has been established, and the first professor has been appointed—namely, Dr. John Hopkinson, F.R.S., the President of the Institute of Electrical Engineers, than whom no better selection could be made to undertake the direction of such a laboratory. It is hoped that the new arrangement will commence with the October session.

At the last meeting of the York City Council a long discussion took place with reference to a recommendation by the Municipal Offices Committee that various extra or substituted works be carried out in connection with the erection of the new Sessions Courts, with police-station, &c., in Clifford-street, amounting in the aggregate to £2,698 6s. 3½d. The Lord Mayor explained that, since the design of Mr. H. A. Matear, of Liverpool, was selected in competition, an increase of 10 per cent. had taken place in the value of all building materials, and, in addition to that, the committee thought that the building ought not to be spoilt for lack of the proverbial ha'porth of tar. Mr. Matear explained that the increased cost was chiefly required for concrete instead of lime in foundations, and the substitution of wrought for cast iron to balustrade and railings, of lead for zinc in dormers, and of stone for concrete in steps. The recommendation was carried by 14 votes to 11.

MR. EDWARD SUTTON, architect, of Nottingham, writes complaining of the alterations which the present Roman Catholic Bishop of Nottingham is making in the Cathedral on Derby-road in that town, one of Pugin's masterpieces. Bishop Bagshawe commenced, Mr. Sutton informs us, by moving the beautiful sedilia and placing the back part on stilts to prevent its falling, and put in front of it a bench which, if painted, would just suit an Arboretum. He next erected a rail in front of the rood-screen supported by iron rods, one of which goes through the marble of the brass monument put down to Canon Mulligan by the congregation at a cost of 100 guineas. From the high altar the beautiful crucifix was removed and a more lofty one erected; the sanctuary lamp was taken away and the light placed in the piscina. The next vandalism was the introduction of two skylights, and the blocking up of two painted windows with oil paintings, which made the church darker again. Then Dr. Bagshawe took out four painted windows done by the best artists, the templates being filled in with common glass. Now there are twelve skylights introduced, in one instance by cutting away one of the illuminated principals of the roof. Mr. Sutton charges the Bishop with committing a sacrilege in taking out the stained glass, and adds that he has written to Dr. Bagshawe protesting against the alterations.

A THEATRE is about to be erected by a new company in Ipswich, under the patronage of the leading men of the district. Ipswich has greatly increased in latter years, and has now some 60,000 inhabitants. The new theatre will, therefore, fill a vacancy much required. It will be constructed to hold about a thousand people. The site is near the middle of the town, in Carr-street, a continuation of the main thoroughfare, which has been widened, jointly by an improvement company, the corporation, and the tramway company. It should prove an admirable site. The theatre will be fireproof, and will be lighted by electricity, the structure being isolated from other buildings. Mr. Walter Emden has been appointed architect, and Mr. Arthur Pearce, F.C.A., is secretary.

THE North British Rubber Company (Limited) have, with the permission of the Edinburgh town council, made an experiment with vulcanised indiarubber for pavement in front of their warehouse, 106, Princes'-street, in that city. The area of pavement dealt with is, the *Scotsman* says, about 350sq. ft., and the rubber slabs, which have been specially manufactured for the purpose, are of large size, measuring 17ft. by 3½ft. in breadth, by over an inch in thickness. These slabs, which are of the same colour and about the same thickness as the Craigleith paving-stones removed to make way for them, have been set in a bed of concrete 6in. in thickness. The vulcanised indiarubber used—which weighs over a ton—is prepared so as to stand almost any weather, being guaranteed to be impervious to heat up to 250° Fahr. The result of the experiment will, of course, be seen when the indiarubber has been exposed for some time to the traffic and the weather. Vulcanised indiarubber has just been used in place of lead to repair the steps of two stages of Sir Walter Scott's Monument, which had become worn with footsteps constantly passing up and down. The steps have each been cut in the usual way, and a plate of iron, on which the rubber had been vulcanised, set into a groove in the stone and firmly cemented. This was done under the supervision of the city authorities, and seems up to the present time to have given every satisfaction.

THE annual report of the city surveyor of Birmingham (Mr. W. S. Till), just issued, shows that during the year 1889 4 furlongs 172 yards of additional sewers were constructed by the Public Works Department, bringing up the total length under the charge of the council to 202½ miles. The number of private drains laid into the sewers was 509, against 524 in the previous year. As to works on the streets, limestone pavements were substituted for gravel during the year to the extent of 22,395 square yards. One mile, 1 furlong, and 134 yards of streets were declared highways during the year, making the total length of declared highway in the city 196½ miles. The quantities of Rowley and other stone purchased for repaving the macadamised roads during the year was 25,511 tons 12cwt.; and the total quantity of water used on the streets and roads was 52,496,330 gallons, of which 7,727,940 were used for flushing sewers. The total number of lamps under the control of the Public Works Committee is 7,460; and the cost of lighting, extinguishing, cleaning, and maintaining the same was £12,383 2s. 3d.

Messrs. C. A. Daw and Son, of Palace-gate, Kensington, the builders of the Shaftesbury Estate, abutting on the Bayswater-road, were recently twice fined for constructing gates for the exclusion of the public from the estate. The appeal against this conviction having been argued in the Queen's Bench Division on Wednesday, the Lord Chief Justice said that, as the builders derived all the advantage of lighting, watching, and drainage, they must give the public the benefit of a thoroughfare. Mr. Justice Mathew concurred, and the conviction was affirmed.

A select committee of the House of Commons passed a Bill authorising the construction of a railway, 6½ miles in length, commencing by a junction at the South Tottenham Station, passing through Walthamstow, Leytonstone, and Leyton, to a junction with the London, Tilbury, and Southend Railway at Forest-gate.

The Duke of Westminster opened West Ham Hospital on Wednesday. The new Hospital is at the rear of the dispensary, with which it is incorporated, and it accommodates beds for 12 men and 12 women; and there are wards for six boys and six girls. The total cost of the hospital was £7,000.

## MEETINGS FOR THE ENSUING WEEK

MONDAY.—Surveyors' Institution. "The Principles of the Exemption of Public Undertaking from Rateability," by F. Marshall 8 p.m.  
Leeds and Yorkshire Architectural Society. Election of officers. 8 p.m.  
TUESDAY.—Institution of Civil Engineers. Discussion of "The Application of Electricity to Welding." "The Barry Dock Works," by J. Robinson. 8 p.m.  
WEDNESDAY.—Society of Arts. "Photographic Lenses," by T. R. Dallmeyer. 8 p.m.  
Civil and Mechanical Engineers' Society. Annual meeting. 7 p.m.  
THURSDAY.—Royal Archeological Institute. "Dumy, Grenadiers from Carlisle," by Chancelor Ferguson; and "Anglo-Saxon Ornament compared with Designs in Anglo-Saxon MSS.," by J. P. Harrison. 4 p.m.  
Society of Arts. "Design Applied to Wood Carving," by Lewis F. Day 8 p.m.  
FRIDAY.—Architectural Association. "Hospitals," by Keith D. Young. 7.30 p.m.

Architectural Association. 9, Conduit-street, W.—May 2. Paper on "Hospitals," by Mr. Keith D. Young. Nomination of officers for the ensuing session. 7.30 p.m. Gentlemen wishing to become members in time to join the classes at the commencement of the session should send in their nomination forms, duly signed, before May 2. The subscriptions of those elected in May will cover the ensuing session.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

## CHIPS.

We have received two very ill-tempered letters from Messrs. W. Longmire and Co., of 34, Osma-burgh-street, Regent's Park—the first, demanding our authority for the short obituary notice we published last week on p. 571 of the late Mr. William Brown; and the second, in response to our refusal to comply with that request—informing us that "we have taken the liberty of using their name in connection with statements that we had no authority from them for making, and they therefore request we will make this clear to their readers," which we do willingly, wondering all the while what can possibly have excited the ire of Messrs. Longmire and Co. in the paragraph referred to.

For the post of engineer and surveyor to the Watford Local Board at a salary of £275 per year with a residence at Holywell Farm, there were 12 applicants. The local board selected seven candidates, and have appointed Mr. David Waterhouse at present engineer and surveyor to the Watford Local Board.

Mr. E. Onslow Ford, A.R.A., has been selected as the sculptor of the memorial to Christopher Marlowe, about to be erected in Canterbury.

The partnership heretofore subsisting between Edeson and Rowntree, of Scarborough, architects, surveyors, and land agents, has been dissolved.

The annual report of the directors of the National Gallery shows that during the past year, out of a total expenditure of £4,000 for ten pictures by old foreign masters, only £209 was spent on pictures by English artists.

New public buildings, in commemoration of the Queen's Jubilee, have been erected at Tunstall, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

Reopening services were held on Sunday at Wycliffe Congregational Church, Warrington, after undergoing renovation and decoration. The work has been carried out at a cost of over £400. The designs were prepared by Mr. G. F. Armitage, of Altrincham, gratuitously, and Messrs. Hesket and Sons, of Warrington, have done the decorations.

A new United Methodist Free Church is about to be built at Cowes, at a cost of £2,300. Mr. S. E. Tompkins is the architect, and Messrs. J. Ball and Son are the builders.

The work of enlarging Inchmerry House, near Exbury, Hants, one of the seats of Earl De La Warr, is now nearly completed. The contract has been carried out by Mr. W. J. Martell.

The extensive alterations and works of restoration to the parish church at Monk Fryston are being pushed forward by the contractors, Messrs. John Hall Thorp and Son, of Leeds. The restoration will cost nearly £4,600.

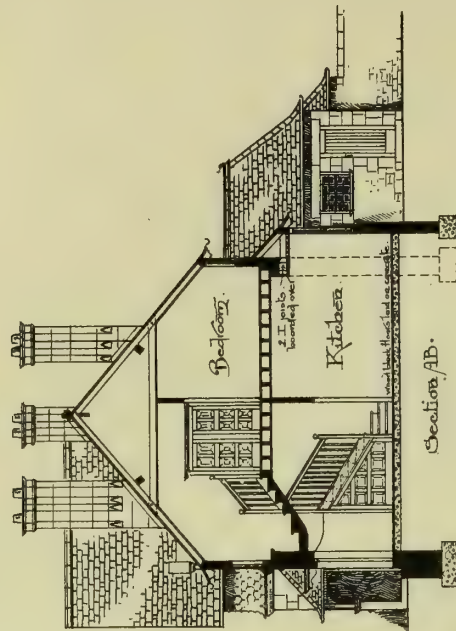
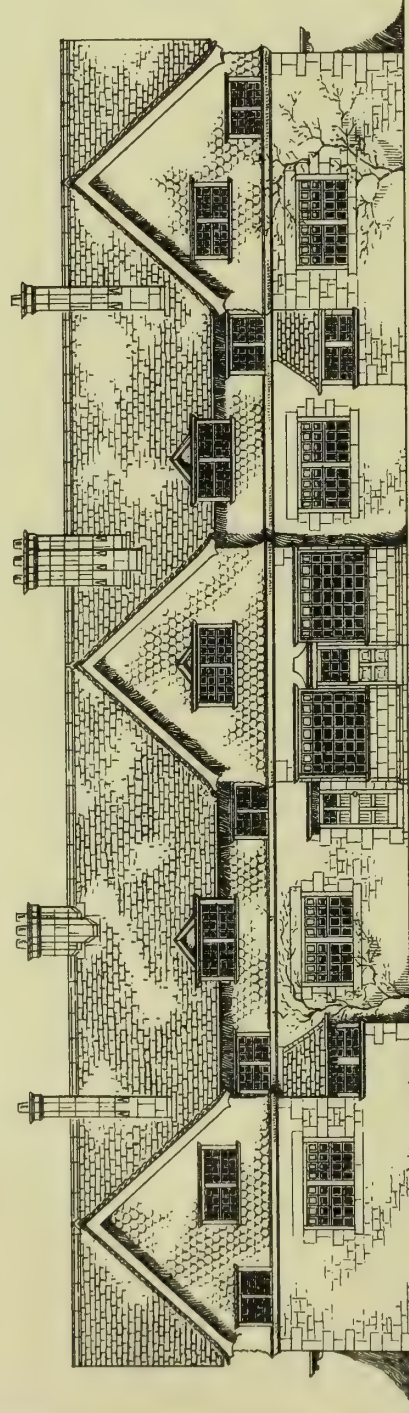
The trustees of St. Baldred Church, North Berwick, have instructed Messrs. Seymour and Kinross architects, Edinburgh, to proceed immediately with the enlargement of the church, by the addition of a south aisle. This enlargement will provide nearly 200 additional seats.

Mr. J. Hickman Barnes, C.E., London, inspected the site of the proposed harbour works at Thurso on Friday on behalf of the Loan Commissioners. He believes that a safe and commodious harbour can be constructed at Thurso.

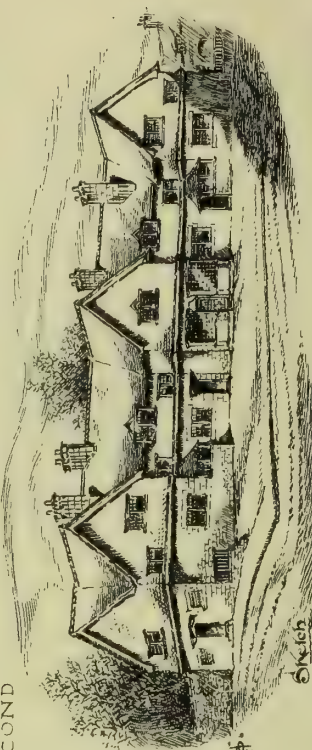








PLACED SECOND



**BUILDING NEWS**  
**DESIGNING CLUB.**

*A Room of Five Colleges.*



First Floor Plan.

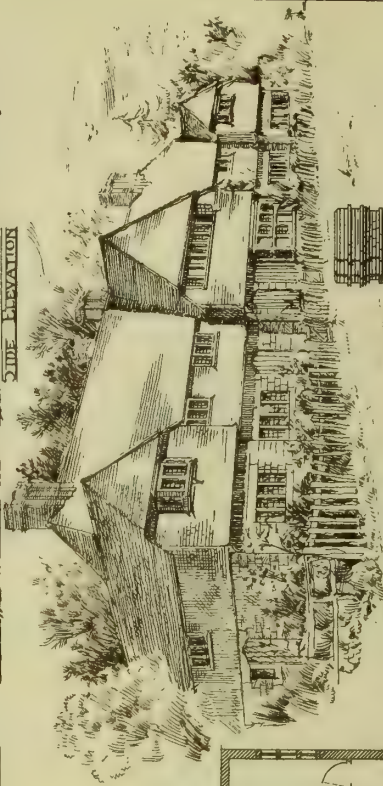
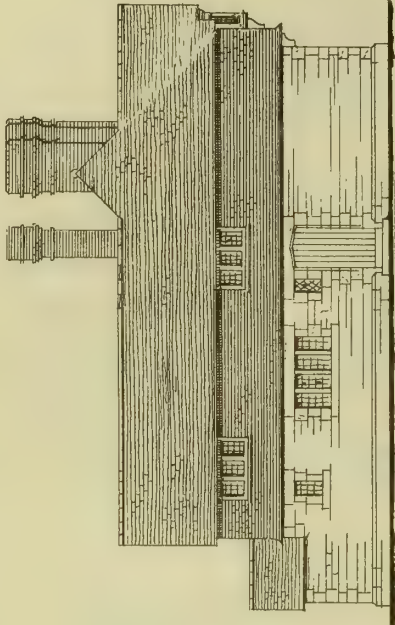
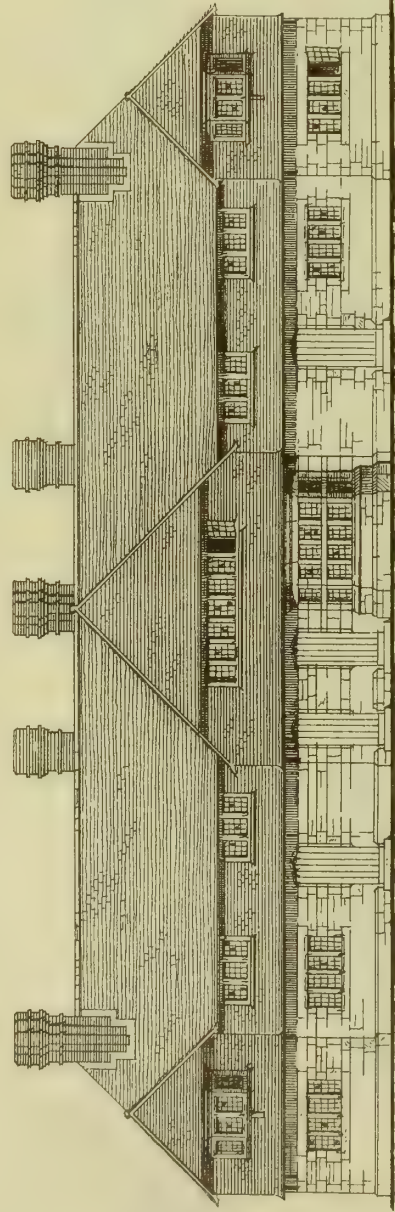
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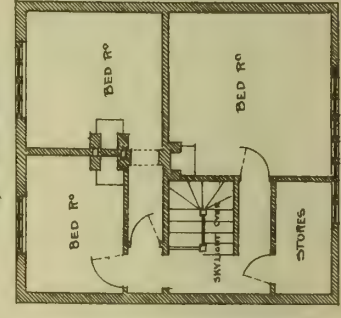
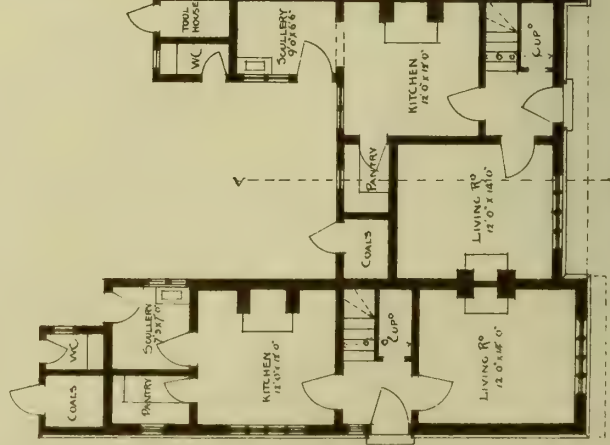
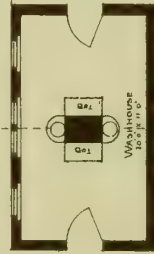
THE BUILDING NEWS, APRIL 25, 1890.



BUILDING NEWS DESIGNING CLUB  
BY  
"HBBB"

PLACED FIRST

TOOL HOUSE



SECTION A-A

SECTION A-A

SCALE OF FEET

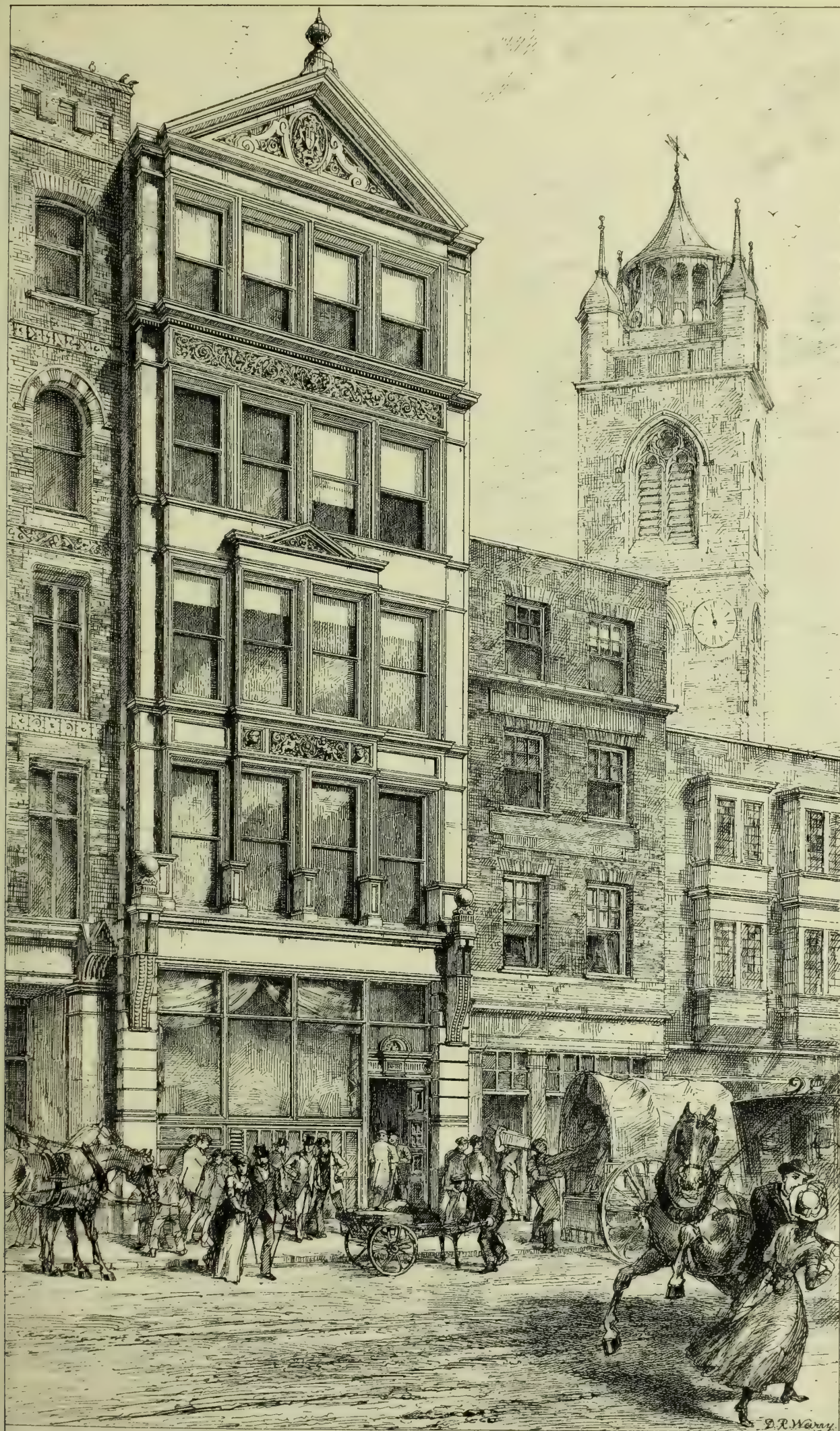












Business Premises, Fore Street, E. C. Delissa Joseph FRIBA, Architect.











THE BUILDING NEWS, APRIL 25, 1890.

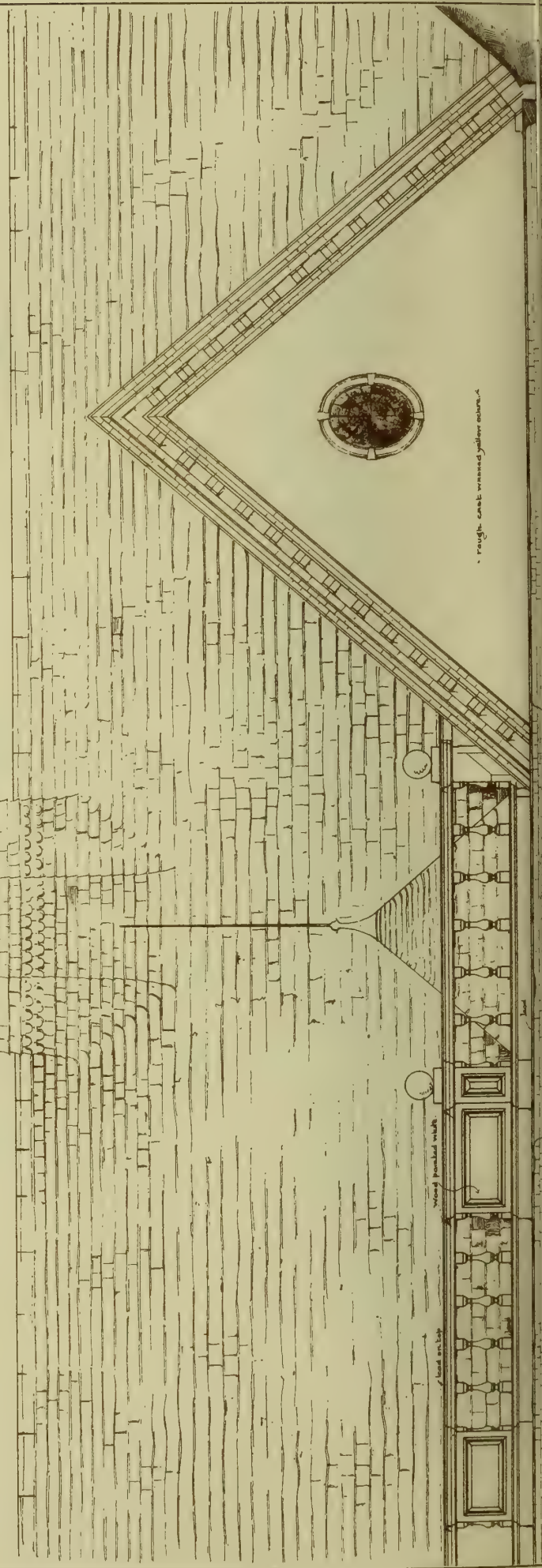
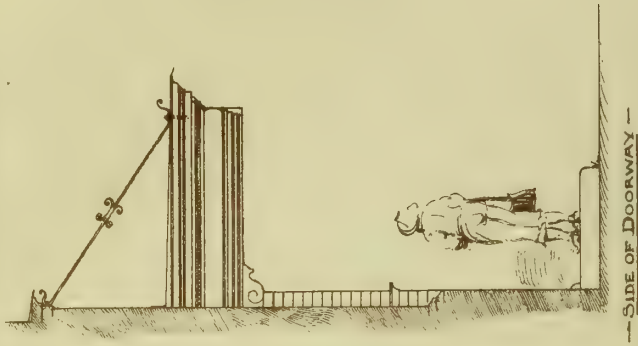
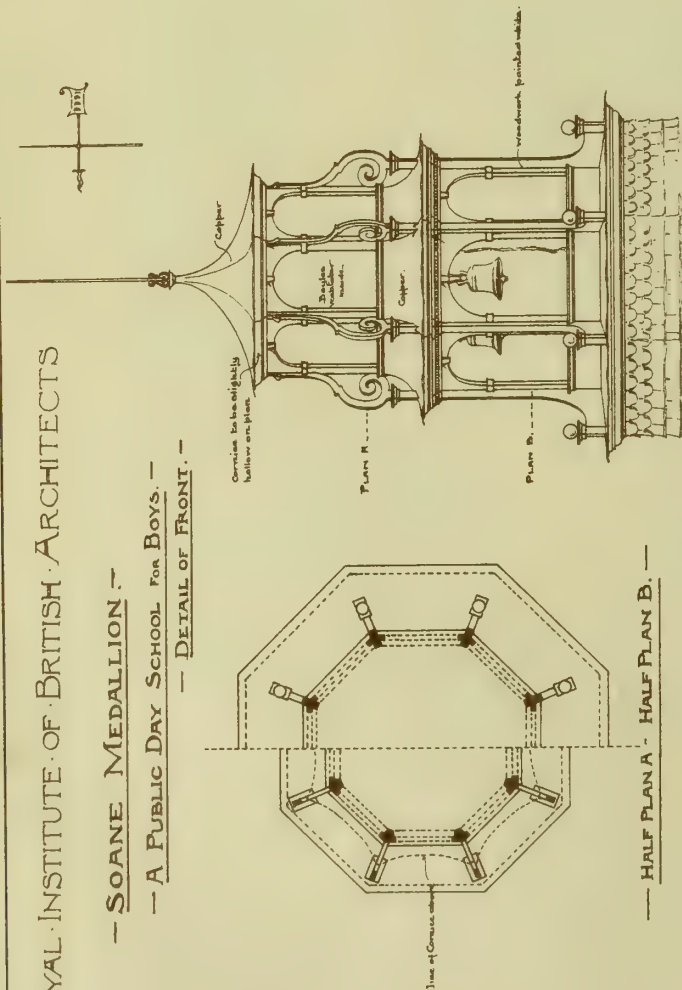
1ST·MEDAL·DESIGN·BY·FRANCIS·W·BEDFORD

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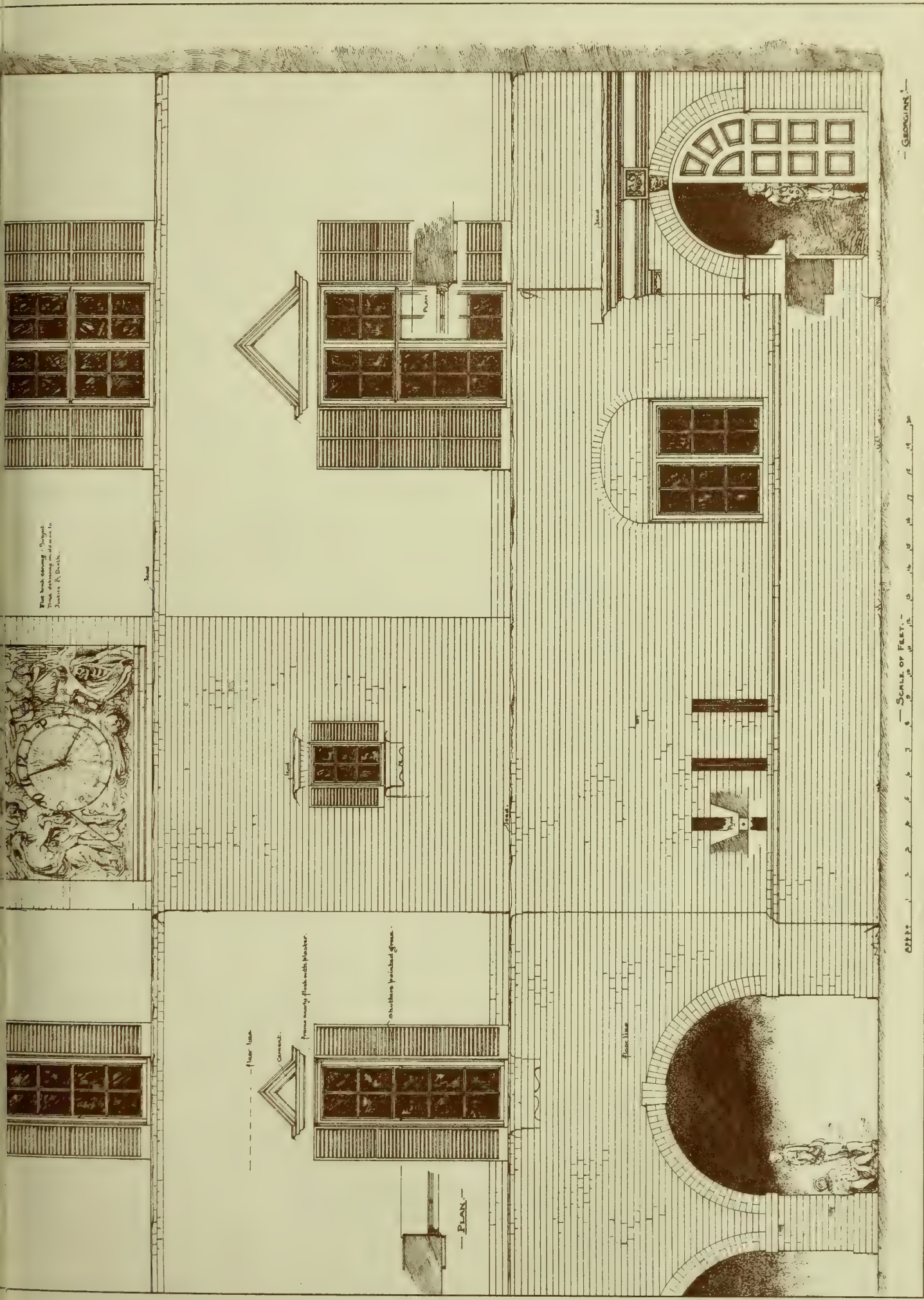
— SOANE MEDALLION. —

— A PUBLIC DAY SCHOOL FOR BOYS. —

— DETAIL OF FRONT. —













# THE BUILDING NEWS

## AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1843.

FRIDAY, MAY 2, 1890.

### BUILDING SPOILIATION.

THE necessity for a general scheme of main thoroughfares and subsidiary streets in the districts round the Metropolis is becoming more apparent every year. We find suburbs, once delightful retreats for the busy City man, which attracted the *élite* of the professional and commercial classes, fast losing their fair name and reputation. Putney, Fulham, Richmond, Kew, on the west; Hampstead, Highgate, Hornsey, Finsbury, on the north; Clapham, Brixton, Dulwich, and Norwood, on the south, are already being irretrievably spoiled by the reckless speculator, who can build as he likes without control, and make as many streets as the limits of his land will allow. True, there are certain building regulations; but what have they done to prevent the disgraceful crowding of localities, in parts where the residents look for gardens or open spaces sufficient for their own and their children's health and recreation? Absolutely nothing, for while every acre of land is allowed to be crowded with from fifty to sixty houses, which is about the average density in many of the new localities, the higher class of suburbs are being brought down to the level of those in poorer districts. For really what is it that constitutes the distinction between higher and lower residential localities?—nothing, after all, but the difference in space for every resident. In the West End suburbs the area per individual is greater than that at the East End; not only are the houses larger, but they stand on a larger area of ground, the streets and roads are wider, and the parks are more numerous. So that space is one of the fundamental conditions of the higher and better class of localities. The greedy landowner and the speculative builder are doing more to bring about an equality between the two classes than any other individuals, for they are rendering town and suburbs as much like one another as possible, by destroying those characteristics which people of means or of higher culture seek in their endeavour to obtain some approach to country life. There must be a limit to the increasing extension of the "centre ring" of Greater London, the constant moving of the better-to-do classes further out, and it is only by timely legislation that this yearly growing evil can be checked.

What is required, in the interests alike of landowner, landlords, and tenants, and the public, is that a certain quantity of land should be given to each house, so that, instead of squeezing 50 or 60 houses on one acre of land, there should be a less number of houses built. What is the minimum area required by the Building Act? Section 29 says every dwelling-house shall have "in the rear or on the side thereof an open space exclusively belonging thereto of the extent at least of 100sq.ft.," unless all the rooms can be lighted and ventilated from a street or alley—which means a space of only 10ft. square, about the size of a small room. "The Amendment Act, 1882, Section 14," merely makes it necessary that every dwelling-house should have in the rear a space of 10ft. by the frontage, except when the frontage exceeds 30ft., when the space is to be 450sq.ft. Thus, as a rule, only about a third of the area occupied by the building is allowed as an open space, and even this bare amount is practically rendered of no value, for it is permitted that the space may be occupied by a one-story building up to the ceiling of the ground-

floor story, as the next clause sanctions. Therefore, the provision does not prevent building over the entire area, but only reserves the space above the ground floor story which may be lighted by skylights.

The rapid growth of building demands the repeal of this provision. If we look at the back yards and premises of houses in any of our streets, we shall see how the latter clause has been taken advantage of. One-story shops and offices are built over the vacant spaces both in front and rear. Legislation is required to put an end to this highly-objectionable and pernicious practice. It would not be unreasonable to require that every house built should have an open space at the back at least equal to the total area built over. An ordinary dwelling-house of two rooms deep, and of 20ft. frontage, with its projecting back offices, occupies on an average about 800 square feet, allowing 26ft. as the depth of the house proper, and about the same depth for the projection. To this house there ought to be attached in the rear a space of open ground of the same area, and no additions to the premises should be allowed to curtail it. It is lamentable to see how many private-house gardens and courtyards have been filled up for business and trade purposes after the leases have expired, or after the properties have been transferred from private occupancy to trade.

But this allowance of area for each house is quite inadequate for the newer localities in the suburbs. If we are to draw people to them for residence, some inducement is wanted. People will not go five or ten miles out of town if they are compelled to dwell in neighbourhoods that are no better off for open ground than those in the denser parts of the Metropolis. They go to dwell at Richmond, or at Clapham, or at Dulwich, because they can there find a house within a short distance of a public park or common whose inalienable rights they can enjoy. We see the power and charm of this attraction by the development of building estates in the neighbourhood of these favoured suburbs. Commons and parks are, however, few and limited, and as we cannot be always acquiring new grounds; there is the absolute necessity of providing a certain proportion of open land in all new building estates. County Councils ought to have powers conferred upon them to require landowners who are about to lay out their land for building near any town to provide a minimum area of it as an open space to be used for recreation by the inhabitants. The London County Council ought especially to have powers granted them for this purpose in the case of all building estates, say, ten miles from London. On every estate of, say, ten acres, two acres could be well spared in some part of the ground removed from the main roads, as in the centre of the estate. The space wasted in making useless and expensive roads to obtain frontages could be profitably converted into open ground. The ground so set apart would speedily return its interest in the superior class of tenants who would occupy the houses surrounding it, and the ground landlord would be the chief gainer. But a fair compensation could be given to the owner by the authorities. The space could be planned in reference to the large rental houses, which could be made to back the open ground. On some new estates plots of meadow or park land, where large trees exist and add to the beauty of the site, have been left by the owners, who have found that they have been the chief incentive to residence on the estate. At Telford Park Estate, Streatham, for instance, the plots have been left open for lawn-tennis or cricket, and reserved to the inhabitants. Unfortunately, estate agents are enemies to this sort of arrangement, because they look upon it as a sacrifice of a few fees. They, however, make the most of the natural

attractions in the first instance; the plans and captivating bird's-eye view show thickly-wooded parks not too closely studded by detached villas, and generally an open space left for a lawn or a church. But all this is done to captivate the too-easily-deceived would-be purchasers and tenants.

In the formation of our streets, the modern builder has it all his own way. If there are any "general building lines" to follow, they do not prevent him from spoiling an old thoroughfare, and if possible of obtaining the consent of the authorities to a relaxation of the rule. We have lately exposed some of these infringements. But they will continue till legislative measures are passed to prevent any one coming out beyond the old lines. Putney, with its picturesque old High-street, has been ruined by shops that have been built in advanced lines; Camberwell has been spoiled, and now Denmark Hill is also threatened; Streatham, another semi-rural suburb, is fast being spoiled by new houses and shops brought out close to the roadway, much in advance of the old buildings on each side; Fulham has lost its picturesque character from the same unfortunate yielding to speculative builders. Building encroachment is destroying our suburbs and towns as residential places. The Manchester Corporation have wisely control over their streets. We do not want hard and fast straight lines, but sufficient power to prevent encroachment, and control the frontages. Much ought to be left to discretion in dealing with old and crooked streets and thoroughfares, so that curved and even irregular lines in the old road may be preserved as far as possible when desirable. The 40ft. width of road for new estates is disgracefully narrow when the pathways are taken out of it, and we see the result in the monotonous and dreary lines of new houses which are built on recent estates. The 40ft. was tolerable when houses were generally of two stories, when front gardens and open spaces between houses existed, but the 40ft. modern straight street of four and five stories is an abomination, and any length of it is painfully wearisome. For a street of shops, a width of 45ft. is a reasonable minimum, but 48ft. or 50ft. is better. The narrow-sighted policy which fixed upon 40ft. as the width of roadways is rapidly destroying the newer suburbs. A few acres of houses so built present a dreary wilderness intolerable even to those who are obliged to live in them.

What is it that makes our towns and suburbs so intensely dull and uninteresting? Why is it that people prefer the old to the newer watering-places? The answer is, Because the builder has done everything to rob the residence of the amenities of life. Nature has been sedulously kept out of the view; sunlight has been obstructed; parks and even gardens have been absorbed; rigid building lines have made it impossible to obtain any variety in the architecture or in the interiors, while excessive ground-rents have made space in room or hall a luxury only to be purchased by the wealthy. Building legislation for the future should be directed to remove these evils in our towns. We conclude by making the following practical suggestions:—(1) Local authorities should have power to require that every public building should be isolated or open on three of its sides; that every new house should have a minimum of space back and front—the latter can be maintained by making every front set back at least 10ft. from the new road boundary. (2) Straight lines should not be enforced; curved building lines to be required in all long streets or roads on new estates. (3) On the rebuilding of old premises, the curvature or irregularity of the old building lines should be strictly preserved. (4) No frontage line should be permitted to come out before the lines of adjoining premises in main



thoroughfares. (5) These lines should be determined by a committee in which the artistic element is represented, and all questions of projections, such as bay windows and porches, should be brought under their control. (6) Elevations should be passed with reference to height and variety of treatment, no design being allowed which repeats unnecessarily the same features. (7) In old thoroughfares the extension of shops and buildings over forecourts and gardens, which have ruined our leading streets and roads, should be disallowed—Mr. Arthur Cates has made this suggestion in a recent paper. (8) The authority to have power to deal with all corner buildings. (9) In the laying out of all new estates for building, the landowner should be required to expropriate some part of the area for the public benefit, or for those who are tenants, the control of such area being vested in the central authority. (10) A plan of the new streets and roads proposed should be sanctioned by the authority, who should have power to limit the number and width of new streets and roads on a given estate, and also determine the main lines of frontage. Landowners themselves would benefit directly by these restrictions, and the fair name and repute of localities be saved.

#### ARCHITECTURE AT THE ROYAL ACADEMY.

THE most important drawing in a very good show, at the Architectural Room of the Royal Academy, is that of Mr. Norman Shaw's new Central Offices for the Metropolitan Police, now nearing completion on the Thames Embankment, where the demolished National Opera House was to have stood. The common-sense arrangements and practical character of the plan of this building are the result of no little thought, while the boldly-conceived and well-defined treatments of the façades, with their angle-turrets and elaborated gables, are as dignified as they are picturesque. The base is entirely of grey granite, and above red brick is relieved by bands of stone, the whole being surmounted by high-pitched roofs covered with green slates. The details of the work will well repay careful attention; as, for instance, the main cornice and the way in which the eaves above have been stilted by a dwarf wall between the circular turrets which emphasise the angles. The massive chimneys, grouped in four stacks, give—by simple means—a sense of scale and insure a dignity of skyline. The main range of pedimented windows, along the river front, is particularly happy in effect. Whether the obelisks on the gables are quite the best terminals is a matter of doubt, and the segment-headed windows on the return front hardly agree with the smaller ones ranging with them; neither do they gain by contrast with the others below. The main entrance is very bold and large in scale. This pen-and-ink view shows the portal front; but the river-elevation is drawn in sharp perspective. Next week we shall illustrate the design. Sir Arthur Blomfield's Church House, to be built in Dean's-yard, Westminster, is shown by two drawings, and may be named as the largest projected work illustrated in the Academy this year, while naturally from its character and purpose the design will be studied with much interest. We give reproductions of these drawings herewith to-day, together with the principal plans of the buildings. The site to be occupied by them extends along the whole length of the south side of Dean's-yard from Tufton-street to Great Smith-street, where an important elevation will follow the lines of that thoroughfare. The perspectives are hardly delicate enough to properly delineate the refined detail on which these elevations so much depend, while the absence of light and shade leaves the work unassisted by tone or

colour of drawing, and thus a crudeness is suggested which, judging from Sion College by the same architect, is hardly to be expected in the executed work. The plans, which add so materially to the interest of the illustrations, are absent from the Royal Academy. Mr. John L. Pearson, R.A., who, we understand, was intrusted with the hanging this year, contributes two modest water-colour elevations to small scale of the new wing to the quadrangle of Sidney Sussex College, Cambridge, which he is erecting, and comprising some chamber buildings. The style adopted no doubt harmonises with the older premises, and it may be described as a sort of Elizabethan style of work with broad bays, all in stone, carried up the entire height between breadths of red walling, terminating in broad squat gables. On the quad side there is a low colonnade, or, rather, an arcaded cloister. The general effect is undoubtedly dignified; but propriety is not always a sufficient substitute for interest and "go." The Duke of Newcastle's beautiful and costly church of St. Mary at Clumber is exhibited in three water-colour drawings by Mr. G. F. Bodley, A.R.A., and they all three show what a master of English Gothic work can do in the way of honestly treated and pure ecclesiastical church-building without going out of the way after novelty of effect and mere cleverness. The red stone of which it is built, like that at Hoar Cross by the same architect, gives warmth of colour both inside and out in vault and walling, for the church is handsomely groined throughout. The style is Early Decorated, with marble shafts sparingly introduced in the side chapel and elsewhere. The octagonal open lantern-like stage at the foot of the spire (remining one in a general way of Exton, Rutlandshire) seems too lofty and big in scale, and the embattled square chamber at the east end of the north aisle, built to receive the organ, looks like an afterthought. The rood and screen below it in front of the choir are very rich examples of modern woodwork based on old lines. The two bedroom designs exhibited by Professor Aitchison, A.R.A., are not of much interest, and certainly do not add to his reputation. The larger and more important of the two has a chimney-piece in mahogany, the chief feature of which is a great disc of bevelled looking-glass, and the high panelled dado has tall compartments enriched with arabesques in stencil patterns. A green wall-paper forms a frieze. In the other, the dado panels look like walnut-wood, and are quite plain, with a yellow-patterned paper over up to the ceiling of ordinary type. The same artist sends a large water-colour, made, probably, for his Academy Lectures, of "House of Pansa, Pompeii." Sir Arthur Blomfield is fortunate in having another forthcoming big work in London, viz., St. Saviour's, Southwark. The new nave, designed in a pure Early English style, is here represented by two outline pencil studies. The exterior is slightly tinted: but the interior reminds us of the drawings, now long since out of date, when correctness was thought more of than trashy flashiness and American trickery. The rebuilding of this nave will add another example to our notable works of the Gothic Revival; but we presume the architect does not aim at anything particularly original. Mr. Norman Shaw, R.A., lately built a very clever little cheap church for the Harrow Mission in Latimer-road, and he here shows the memorial reredos now being executed. The shaped frame of foliated and carved fretwork is very effective with quaint little birds perched up aloft on the verge of it to break the line. The figures in colour of the Crucifix and SS. Mary and John are being painted by Mr. Hamilton Jackson, of Chiswick, and the gesso gold ground with foliage all over it is from the hand of Mr. Lethaby. Mr.

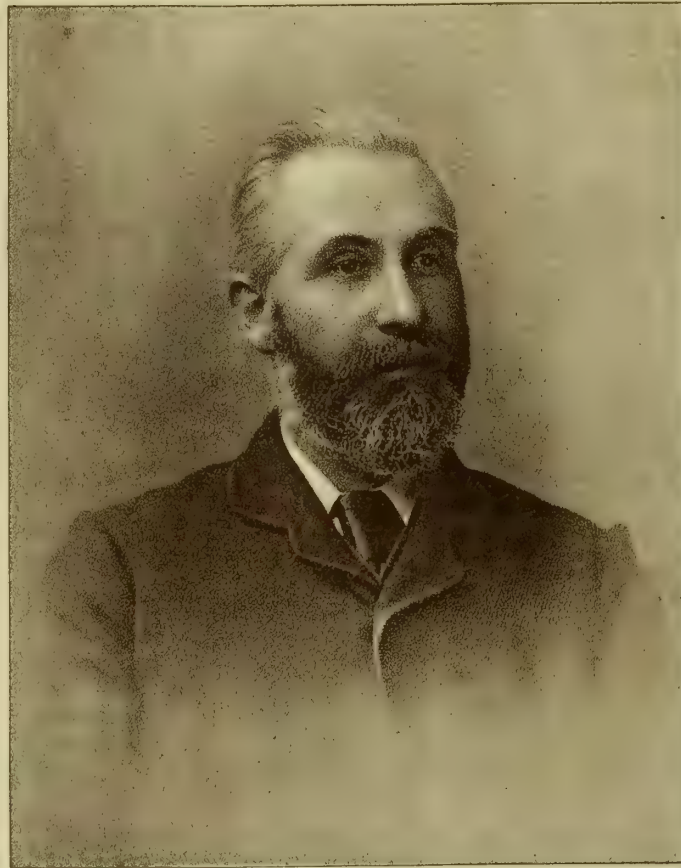
Alfred Waterhouse, R.A., is not strong this year at the Royal Academy, owing mainly to his recent trip in Spain. He only sends one drawing, and that below his usual standard of excellence. It represents the Offices of the Prudential Assurance Company, West Regent-street, Glasgow. The windows are square-headed throughout, and the general effect is simple enough, with shops in the return front; but the over-sailing turrets, rising awkwardly in front of the narrow-splayed angle, are very unfortunate. Their arched corbels increase this effect, and the outline, though intended to give a Scotch character to the design, seems, at least from this perspective, to be anything but pleasing.

As a whole, the drawings this year are very good, and we are pleased to note that many of the Transatlantic trivialities copied by some of our rising draughtsmen during the last few years, have now been given up for more sober and honest work. Perhaps the most telling drawing in the room is one by Mr. H. Wilson, done in light washes of colour (after the fashion adopted by the late Randolph Caldecott for his children's picture-books) for Mr. J. D. Sedding, of an industrial school at Knowle, near Bristol. This is the best thing this architect has done for a long time, and it is as clever as you like. The porch, in a Tudor manner, and coming in the centre of a long line of half-timbered building, is flanked by statues placed low on the splay, with another one over the doorway, and it is admirably proportioned. The chapel, in a sort of Early Renaissance, suggested by Burford Priory and the church at Compton Wynyates, is surmounted at the end by a copper-covered and crisp-looking bell turret, oddly placed seemingly, but just where it is wanted in the picture. The end building to the right is covered with plaster, somehow calling to mind that in the Butter Market at Ipswich, and over the roof of this is a wing in quaint variety with brick chimneys, and then some smaller buildings equally picturesque. There is great skill in all this; but Mr. Sedding's ill-drawn and wild design for a proposed church at Ealing shows ability run riot, and to no good purpose. Mr. Aston Webb's house, Pevensey, Shropshire, a mansion now building for Sir Offley Wakeman, is much more to the purpose, and marks its author's capabilities as an architect. The details of the work are fresh and original, without any attempt at mere effect such as we have just complained of. The garden front is largely in half-timber, but the house is really chiefly of stone. The plans show a large living hall and a well-arranged suite of reception-rooms. The entry is marked by a low tower of quiet design. The drawings, showing three buildings, are excellent, and so is that of the new offices for the Metropolitan Life Assurance Society, by Messrs. Aston Webb and Ingress Bell. This pile of buildings is a thoroughly good piece of street architecture, with ample fenestration, having elevations broadly treated with bands of plain masonry to mark the floors. The deep reveals to the windows give good depth and shadow, while the rich angle-turret over the doorway adds point to the façades, and in spite of this being a common treatment enough, the method in which it is here managed is really original. Space fails us to describe more now in detail. Among the other exhibitors whose work we will notice next time are Messrs. George and Peto; T. G. Jackson, John O. Scott, Somers Clarke and Micklethwaite, J. Belcher, A. E. Street, Dunn, Hansom, and Dunn, T. Garner, T. E. Collcutt, J. M. Brydon, L. Stokes, Grayson and Ould, E. W. Mountford, and others. We see some very good things from the hands of Messrs. Horace Field, E. J. May, E. Newton, Chorley and Connon, Col. Edis, F.S.A., W. D. Caröe, Maurice B. Adams, John



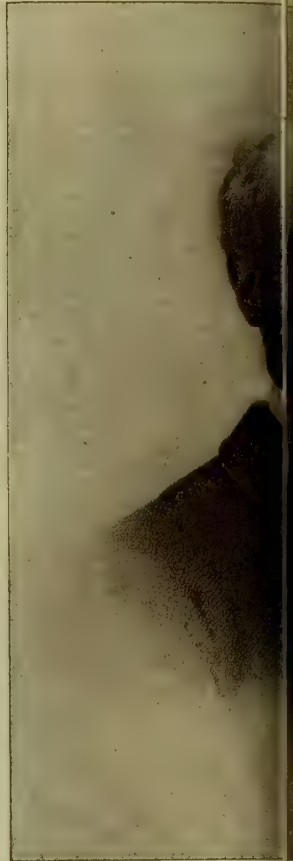




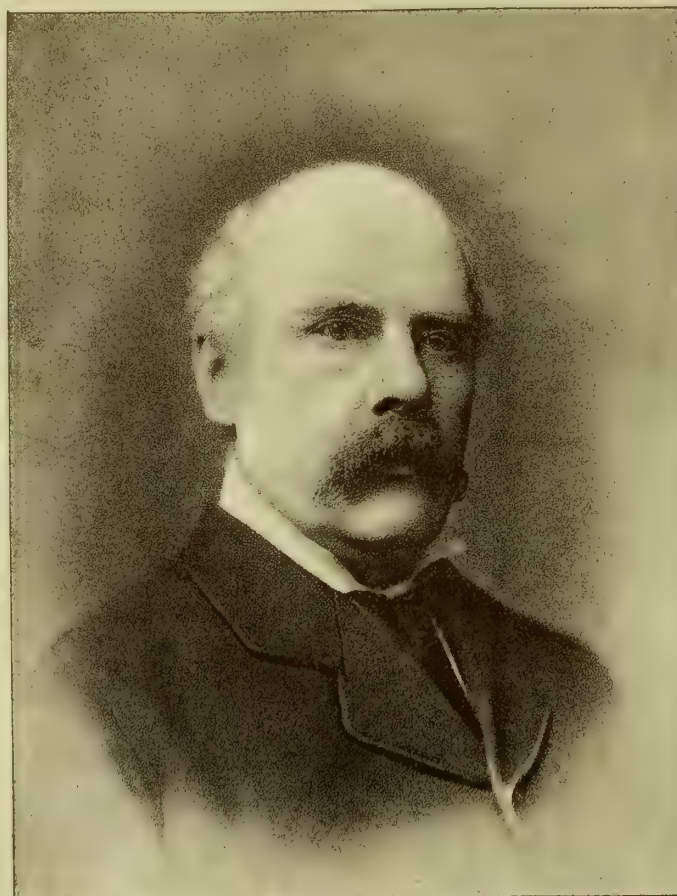


*William Godwin & Son*

MR W. GODWIN (MESSRS GODWIN & SON, HEREFORD)



MR W. H. BUCK



*Samuel Harris*

MR SAML J. HARRIS (MESSRS GILLOW & CO, LONDON & LANCASTER)



MR WALTER MACFARLANE



MAY 2, 1890.



*W. M. Dumb*

(MURKE & CO LONDON)



*Thos. Peard*

MR THOS. PEARD (MESSRS HART SON PEARD & CO LONDON)



*Walter Macfarlane*

(MACFARLANE & CO GLASGOW)



*J. Holroyd*

MR JAMES HOLROYD (THE BURMANTOFTS WORKS LEEDS)

"PHOTO-TINT" by James Akerman 6 Queen Square London W.

PHOTOGRAPHERS AND ART-WORKERS.







Langham, and some more. Mr. Basil Champneys is the author of the design we illustrate from his drawing here shown to-day, giving a view of Stonehills, Hampshire—a large house of considerable merit. Mr. Langham's drawing of the Inner Court, Houghton Tower, is also shown in this gallery, and printed among our plates to-day.

## THE PICTURES AT THE ROYAL ACADEMY.

[FIRST NOTICE.]

OF the 2,000 and odd pictures on view this year we can only glance now at a few of the more conspicuous. Landscape, classical composition, historical, and domestic *genre* are fairly represented. The old school is, of course, pretty strong in "tradition," and commonplace. The essential principles of the art of painting of Reynolds, Gainsborough, of Wilson, Crome, and Constable, are to be found in strange contrast with the teachings of the "new school," in which more or less of the French and "Impressionist" methods are to be observed, in close proximity to the "Naturalistic." In these eleven galleries we meet with some marvellous imitations of the realistic kind in form, texture, and colour, in which the painter has sought to reproduce nature in the most literal manner, but has lost sight of the modifying effects of light and atmosphere. These, after all, form the most popular class of pictures. A crowd gathers round some picture of incident in which every object is depicted with minute exactness, in which the lights and shadows are most carefully rendered, the sheen of a lady's silk or satin dress, the glistening brightness of a piece of brass or bronze, the polish of mahogany, the texture of marble, of carpet or curtain, each exhibited as individual objects or studies, but without awakening any further idea than that the artist is an expert as a realist, and has studied each sensible object with the eye of a physicist. The more minute and dexterous the manipulative skill, the greater the illusion, the more perfect is the picture supposed to be. It is hard to make the public understand that these qualities are not the highest, that they are merely mechanical expedients, and entitle the painter to rank as a manipulator only. The highest aim of a picture should be to reveal nature, if it be a landscape, or to awaken some emotion of human passion, or of sympathy, if it be one of incident. If we take these rules as our guide in estimating the pictures on the Academy walls, we must come away with a far lower idea of their artistic worth. We can yet see the poetry of nature, sympathy, and power, in such works as those of G. F. Watts (437), F. Brangwyn, Frank Dicksee, T. W. Allen, J. C. Hook, T. B. Kennington, H. Herkomer, Clayton Adams, and some others.

But we now merely scan the first principal galleries. In Gallery No. I. we see a clever study, by Seymour Lucas, "The Loving Cup" (4). The picture represents a civic banquet; the dessert is laid; a sycophantic guest presents a silver cup to the master of the feast. Good humour and quiet merriment are written on the faces of the company, who are attired in the long curly wigs of the 17th century. The countenances, the silver plate, and accessories are masterly. G. A. Storey's "Hungry Messenger" is an incident of less interest and merit than we have been accustomed to see from the hands of this painter. Two of the principal pictures in this gallery are Charles Gregory's "Dinah Morris Preaching in Stonyshire," and T. B. Kennington's "Homeless." Both are works in which the painters have embodied sentiment pure and noble. Mr. Gregory's picture represents the heroine in "Adam Bede." The scene is a hilly landscape, a summer haze hanging over

it; a large group of women and children and sturdy toilers are listening to the young Derbyshire Methodist. The message she is delivering is earnest, and comes home to the hearts of the villagers who have congregated round her. The surroundings and grouping, the child who is eager to catch the attention of the evangelist, are painted with much pathetic power and feeling. T. B. Kennington's "Homeless" depicts a grey, cheerless, damp morning; a young widow stooping down, talking to and tenderly supporting in her arms a poor neglected boy—a waif—her bundle of clothes being beside her on the pavement. The scene is apparently laid in the Thames Embankment. The painter powerfully tells the tale of the young mother's tender solicitude towards the little urchin who is lying on the wet flagstones. No. 19, "The Cast Shoe," by Robert W. Macbeth, is a brightly-painted landscape representing a grey horse before the village smithy. The figures and wayside inn are true to nature. Near this Luke Fildes (20) has one of his beautiful sentimental maidens, "A Daughter of the Ghetto," this time, also, like his "Flower Girl" in a previous exhibition, dark—an Italian market girl of sallow complexion and fascinating eyes; clad in a pink frock, with a red shawl over her head and shoulders. The figure is charmingly drawn, and the tone rich, but subdued. Edwin Long's "La Pia de' Tolomei," from Dante's "Purgatorio" (26), is a figure study illustrating a stanza of the poem—a lady attired in a black dress, with a crucifix and other sacred symbols on her breast, holding a rosary; the background a wall adorned with pictures of the Virgin and Child and other sacred subjects. Minute in its accessorial details, and scholarly in its attention to practical description, this work is almost equal to Mr. Long's Egyptian subjects; but it is too incidental—we do not at once realise the painter's meaning. J. C. Hook's "Last Night's Disaster" (75), with its freshness and sandy beach; and Frank Brangwyn's "All Hands Shorten Sail" (76)—the deck of a sailing vessel during a heavy sea, the ship lurching and in a position of peril, admirable in its handling and tone of grey, are pictures which compensate for many others of mediocre quality. Amongst the pictures we can only name in this gallery is Sir J. E. Millais's grand moonlit forest (25), Frederic S. Richardson's tender and subtly-painted "The Fringe of the Forest" (86), Val C. Prinsep's "Among the Brambles," pretty and sentimental; and Furse's portrait of Sir A. W. Blomfield, A.R.A., representing that architect applying his compasses to a drawing, the head turned away as if in thought. C. H. H. Macartney has also a fine piece of "Moorland" (57) mellow and rich in colour. Gallery II. has several works of interest. "A May Day Morning" (109), by E. A. Abbey, is a piece of impressionism—a shadowless picture of an early May morning observance, the figure of maiden and her tempting suitor are well drawn; the misty, early light is cleverly rendered. B. W. Leader's "Sandy Margin of the Sea" (131), is a notable piece of coast-painting—hillocks of sand and dark, thundery-looking clouds, a breezy ripple on the sea, are the main elements of this masterly performance. Sir F. Leighton has here a figure of "Solitude"—a beautiful and pensive maiden, at the foot of a rock, or in a cavern lighted from above. She sits, in a pale blue chiton; over her seat hangs a light, amber-coloured drapery. She leans her head, bound with a scarf, on her right hand, and casts her saddened eyes into the pool of brackish water. Hubert Herkomer's "Our Village" is a very large canvas—we may venture to say needlessly large for the depiction of the scene. The village church under the shade of the trees, and the calm, summer sunset, the labourers returning after

their day's toil, make up a landscape of much power and sentiment. The children in the foreground, and gossiping groups near the cottages, are painted with both strength and tenderness. The tranquillity of the whole scene is captivating, but the foreground has rather an unfinished look. J. L. Pickering's "A March Gloaming," a ploughed field, is clever in execution and colour. F. D. Millet, in his "How the Gossip Grew" (151), is, as usual, delightfully realistic; a luminous light blue interior, two young ladies in tea gowns in 18th century costume, have just sat down to (let us imagine) a 5-o'clock tea. They are wonderfully painted; the technique is masterly, the Chippendale furniture and decorations correct to almost a fault. There is a look of expectancy on the face of one young lady, who holds her tea-cup of choice Worcester china and listens to her companion, who is reading a letter, with large-crowned hat. W. A. Mackworth's "Cloud Chariots," a cloud reflection on sea, is luminous and clever as a study (156); we must note also the excellent portrait of the Bishop of Durham (124), who, in spite of the intense black of his robes, shows a fine, thoughtful head, in which the expression of the deep-set eyes has been forcibly rendered by W. B. Richmond.

In Gallery III., one of the principal pictures is the "Redemption of Tannhäuser" (203), by Frank Dicksee, a German legend of the Middle Ages. Here the central feature is the dead body of Elizabeth on the bier, beautiful in its calmness and repose, surrounded by the bishop and funeral procession. Tannhäuser, who sees her on his return, cries, and falls dead before the bier, while the vision of Venus, on whom he has set his affections, fades away. The Pope's staff, "brought by hurrying messengers from Rome as a token of Divine forgiveness, blossoms into leaf." Mr. Dicksee has depicted the incident with true feeling and in the spirit of romance; the handling and attention to details are those of a painter fully imbued with the spirit of the legend. Sir John Gilbert's "Warrior," a warrior on horse holding a banner, is a forcibly-painted subject—we cannot say more. Sir F. Leighton has in his usual position in this gallery "The Bath of Psyche" (243), purchased by the President and Council of the Royal Academy under the terms of the Chantrey Bequest. Although not an important classical legend such as we have seen in other Academy shows, there is considerable beauty in the refined drawing of the figure, the luminous painting, colour, and handling of this study. Psyche stands undraped before the bath taking off a diaphanous chiton of pure white, which sets off her beautiful figure. At her feet lie the amber-coloured peplum that has been thrown off, which partly hangs over and falls into the placid water. Behind, a colonnade of Greek Ionic columns with gilded capitals and bases and dark purple hangings form the background. Subtle delicacy of line and colour, sweetness and softness of expression and tone mark the composition.

"Tragic Poetess" (310) is in another key of colour. The sea is a dark sea illuminated by golden clouds of light; the Tragic Muse sits buried in deep reflection on a marble terrace, by her side rolls of parchment. The soft and mellow light, the opulence of rich, subdued colour, the expression of awe on the face, make this a powerful contrast to the Psyche. L. Alma Tadema's chief picture this year is a small one, and that of a favourite subject. The painter represents the interior of a Roman Bath, "The Frigidarium" (324), in which is seen a lady, attended by a maiden, who is completing her toilet, and beyond is seen a lighted court with a large bath in the centre; round it on marble benches ladies are seated, cooling themselves before the limpid water. Between the two apartments a dark curtain of a



rich textile reveals another portion of the establishment. The marble, the reflection of sky on the polished floor, the amber necklace and bracelets of the lady finishing her toilet, are, of course, as usual, painted with all the subtle technique and knowledge of classical details which Mr. Alma Tadema can command.

The work of J. C. Hook is pleasing, honest, and natural. We may compare its intense naturalness and reality, for example, with Sir F. Leighton's "Venus," the poetic imagery and luminous colour and delicate handling of which contrast strangely with the fresh ruddy faces of fishermen in the garden overlooking the bay in "A Jib for the New Smack" (249). Nos. 309 and 317 are also in the same healthful colour and tone, and the freshness of the sea is everywhere apparent. Edward J. Poynter has a very charming and delicate study of poetic portraiture; "Pea Blossom" (212), pretty in conception, the girl's face in true keeping with the pea blossom she holds. Ernest Croft's "Whitehall, January 30, 1649" (216), is a reminiscence of the execution of Charles I. before the Banqueting House. "Meeting of the Thame and Isis at Dorchester," by Vicat Cole (234), is a finely-painted piece of whirling waters and meadows full of freshness, &c. Fred Culver's "Across the Common," the majestic portrait of Miss North, by W. W. Oulless, and of Mr. Thewles Johnson, by Henry T. Wells; Peter Graham's "Departing Day" (190), Kenneth MacKenzie's "Wind-swept Hill" (194), John MacWhirter's pictures of "Loch Katrine and Old Shearwood" (271 and 279), autumn and winter scenes, H. W. B. Davis's "Picardy Domes" (242) are a few other of the leading landscapes to which we must return. W. Q. Orchardson has no great work. His "Portraits" (235) is a drawing-room interior of warm reds and amber tones; the portraits evidently are those of a family.

#### DESIGNS FOR THE GREAT TOWER IN LONDON.

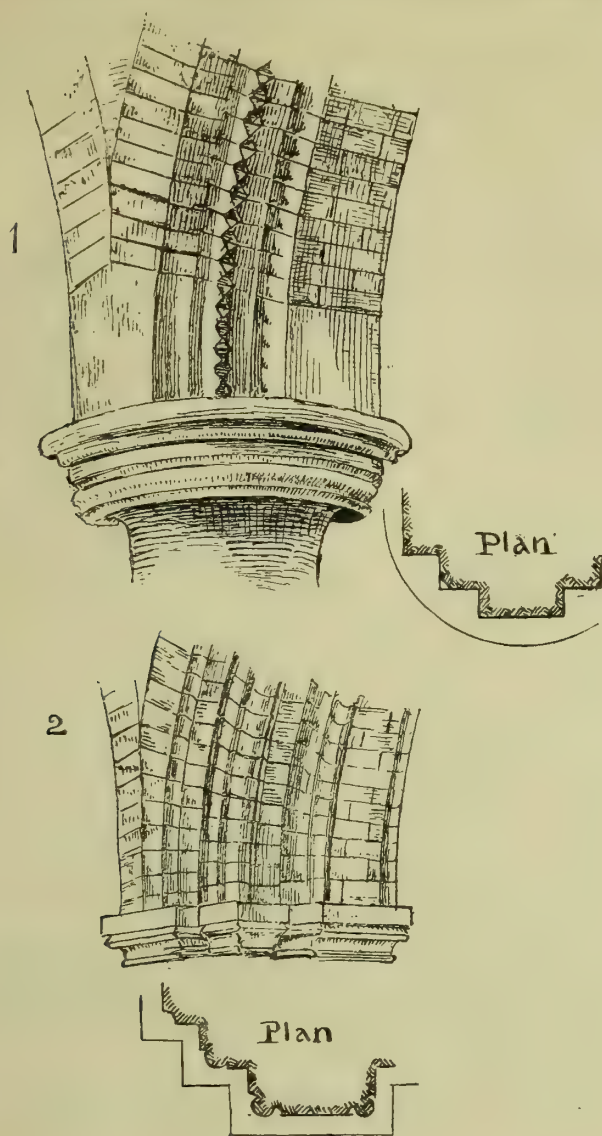
THESE drawings are now open to inspection in the Drapers' Hall, Throgmorton-street. Designs of all kinds have been received from all parts of Europe and America, numbering in all nearly ninety separate proposals. Five hundred guineas are to be paid to the author of the chosen design, and half that sum to the author of the design placed second. The minimum height specified for was 1,200ft. The judges are Sir Fredk. Bramwell, Bart., F.R.S., M.Inst.C.E.; Sir Benjamin Baker, M.Inst.C.E.; Sir Edward Harland, Bart., M.P.; Mr. E. H. Carbutt, M.Inst.C.E.; Professor A. B. W. Kennedy, M.Inst.C.E.; Mr. C. Liddell, C.E.; Mr. J. F. Moulton, Q.C., Assoc.Inst.C.E.; and Mr. Thomas Verity, F.R.I.B.A.

Many of the designs are, of course, childish, and bear evidence of a want of elementary knowledge in construction, to say nothing of any artistic ability on the part of their authors. Without pretending to follow the several schemes in any order of merit, or attempting to work out the designs in detail, we propose to offer a few remarks on the leading characteristics of some of them, taking these as they occur in the catalogue. "Circumferentially, Radially, and Diagonally Bound," is the motto of one tower (No. 5), some 1,600ft. high, designed in a series of drums, made up of endless colonnades, emphasising the horizontal construction adopted. The merit claimed for this scheme is that "the tower may be completely taken to pieces." This is a peculiar proposal. The columns are mainly of cast iron. Messrs. Kinkel and Pohl, of Washington, U.S.A., send a skeleton tower (No. 7), 1,250ft. high, and 192ft. diameter at base. The frame contains 16 lattice legs and a central tube carried up as a central shaft over a great domed winter garden, above

which is a second hall, domed in a similar manner. "My Tower" (No. 10) is an advertisement of too funny a type to describe; but the author says he has invented 1,000 improvements, and "N.B. Inventions designed to order and patented." No. 13 is a lattice design, 1,267ft. high, with a base of 400ft. diameter, and constructed of steel. The first really serious design is by Mr. J. I. Thornycroft, of Chiswick (No. 14), and although we do not like the proportions of the composition, the upper part being much too thin, it is evident that much thought has been given to the details. The total height is 1,760ft., composing a triangular skeleton, each principal member of which is a steel tube. Special balanced air-pressure lifts serve the tower, two being worked to the top at high speed, and one at a lower speed to serve the whole of the platforms. Mr. J. Horton, of Halifax, Yorks, sends a design exactly like a screw in general appearance. It is a corrugated steel tower, 1,200ft. high, with a spiral promenade provided round the outside face from bottom to top. This gives the effect just named. Lifts are also used. Another screw-like design is "The Century Tower" 1,900ft. high, with Otis lifts. "Light, Health, Rest, Pleasure," is the next design we note (No. 21) for its vastly high central hall, with pointed Gothic ribs for the structural lines and circular forms for tracery and decorative features. There are six circular staircases and four avenues of approach. The general scheme of this design is a circular column resting on a hollow hexagonal plinth with radiating wings. "Altiora Peto" is a laminated octagonal steel tower 470ft. in diameter at the base and 1,274ft. high, with a two-track spiral electrical railway up it to the village-like buildings located on the several stages of the structure. "Ajax" is only 2,000ft. high and covers just about some 64 acres. Mr. P. Campanakis, of Constantinople, has designed a triangular skeleton 365m. high of elegant outline, with arches connecting the main columns, which curve outward towards the bottom. A colonnade stage forms a balcony or belvedere, and there are vertical uprights at the angles of the base. Another tripod design, more Gothic in style, is marked by the motto "Time is Money." It is said to be an allegorical design and it carries a clock. "A. P. B." marks a French stone-built copy, in the Renaissance mode, of the leaning tower at Pisa, only that it stands upright. It has an inclined roadway up inside, and living apartments provided all the way up raking with the incline. Mr. O. C. D. Ross, M.Inst.C.E., sends a Gothic design, conceived "to differ as much as possible from the Eiffel Tower." This he has managed, but not much more. Bow Church steeple supplies Mr. W. P. Gibson with the outline for his tower, done to the height of 1,232ft. What would Sir Christopher say to this? Sir Bradford Leslie, of Willesden, is the author of a quadrangular skeleton with intermediate platforms placed at vertical intervals of 300ft., having vertical and inclined cast-iron columns trussed up into stages in-and-in all the way up. The effect is very ugly. No. 37, by Messrs. Stewart, M.I.C.E., J. M. Maclaren, and W. Dunn, A.R.I.B.A., has a good outline, treated somewhat in an Oriental style as far as the architecture goes. The square inclosure outside the octagonal base has a dome-capped pavilion at the four angles. This is certainly one of the best designs shown in the hall. It is an octagonal skeleton 1,200ft. high, and stands on a base 300ft. in diameter, all done in steel. Mr. A. F. Hills, of the Thames Iron Works, and president of the London Vegetarian Society, sends No. 38, a square, gigantic obelisk, 2,007ft. in height, and 644ft. wide at base, all in framed steel, with breeches belts, and called "Ye Vegetarian Tower." A diagram showing the "Eiffel" tower

inside this one, and all the other lofty buildings in the world alongside, is exhibited by the author. Mr. John Heath's plan assumes the form of a cross with a big hall in the centre 100ft. wide. Mr. Tertius Wood, F.G.S., of Rochdale, contributes a remarkable design, consisting of a cylindrical shaft growing out of a series of dome-like forms, rising one over the other, like three tea-cups supported by a basin. This form is made by a system of curved lattice girders used to stiffen the main upright, which incloses a spiral roadway. "Utility" (No. 42) reminds one of the Crystal Palace style of building. No. 44, marked "Ad Coelum Jusseris Ibit," is a steel mast 1,200ft. high, stayed by steel ropes. It is square on plan, and has an octagonal lift-house at the base, built between the legs of the tower. An exceedingly fine model is shown of this ingenious design, which is marked by good taste and architectural skill in its details. Mr. R. Wylie, of Liverpool, has secured only a poor outline, though he has made much of his great halls and promenade, domed floral hall and concert-rooms. It covers  $8\frac{1}{2}$  acres at the base, and would be 1,470ft. in height, standing on a masonry base 60ft. high. "Acme" is 1,300ft. high, stiffened with four radial trussed buttresses. On plan it is cruciform, with circular ends to the arms, and four lifts, one in each angle of the cross. The theatre is in one transept, and the concert-hall in the other. "Max am Ende" is too much like a French cathedral spire, done in steel 1,550ft. high. The principal platform is 1,000ft. from the ground. Messrs. Webster and Haigh, of Liverpool, contribute one of the most likely designs, 1,300ft. high; but the residential buildings at the base are no attraction in such a scheme, mixed up with cafés and eight pavilions. The sweep of the curved uprights is rather well proportioned. We cannot say we like the general outline of the very clever design contributed by Messrs. W. S. Rendel, M.I.C.E., Halsey Ricardo, and C. F. Findlay, M.I.C.E., No. 52. The lower part of the tower is covered with glass and laid out as a winter garden. The drawing of the interior is capitally done, showing this from the mezzanine floor. Above the dome is a spiral shaft 1,260ft. high. Messrs. Francis Fox, M.I.C.E., and G. E. Grayson, F.R.I.B.A., of Liverpool, are the authors of No. 53, a double octagonal steel lattice-framed tower arched between, and made up of 16 columns, each 20ft. square. On the ground floor is an octagonal concert-hall, with a carriage-drive round it between the legs of the main structure. About half-way up is a housed stage of several floors treated with turrets, and the general proportions of the composition are very pleasing and graceful. One of the most reasonable designs is by Mr. Davey, of Westminster. It is a hexagonal skeleton, built massively of tubular uprights. Mr. R. J. Gifford Read, of Ealing, and Mr. L. A. Shuffrey, of Welbeck-street, have united forces, and sent in a design of some merit, though there is not much to be said for it architecturally. The tower of steel is square on plan up to the upper platform, above which it is octagonal, and this level is 800ft. above the ground. The top stage has eight circular balconies at the ends of the arms of the diagonals. About 200ft. above the base are a concert hall, café, and restaurant, which are inclosed in a structure looking like a floating bath. The construction of the tower itself is unmasked, and the main outline is good. The promenade gallery is 940ft. above the ground. "Equilateral Triangle" is a very bold design covering a base area of 266,000sq.ft. It is a hexagonal skeleton sustained by six curved spurs connected with it at two levels of arches. Professor R. H. Smith and W. Henman, A.R.I.B.A., send a tripod tower of tapered steel tube, but we do not like the design, which is curious. Mr.





three concentric whole-brick rings, and each ring may be composed of headers and stretchers, as in a single 9in. arch, or in heading bond entirely, in which case the arch presents, at end or in section, three concentric 9in. arches; or the three rings may have the two outer worked header-and-stretcher, and the inner one in heading bond—a mixture of the two former descriptions. Colonel Pasley prefers the three rings to be worked in either of the last described methods, because “heading-bond at the intrados of the lower 9in. arch produces large voussoirs at that part where the arch-like form is of most importance.” He is speaking of segmental arches, but the same reasoning applies to pointed arches, for a Gothic arch is composed of two such segments. If we imagine these three concentric rings moulded one set within the other, we shall obtain a good idea of a moulded brick arch of large span. The intrados or heading course would be formed with its angles moulded as shown in sketch 2, p. 507, the next or header-and-stretcher course would also have moulded edges, and the outer or extrados course the same. There is more bond and coherence in the header-and-stretcher than the all-header arch, for every other brick which forms the header on the outer face bonds into the work behind, but in the all-heading arrangement the bond is more broken.

#### EXAMPLES.

Our sketches represent brick archivolt formed of moulded brickwork, in which either kind of bond can be introduced. One thing to observe is that the radiating joints break at each ring, as the outer rings contain a larger number of bricks than the inner ring. The greater the number of rings, the thinner the joints, and the more perfect the arch theoretically, though, on the other hand, we have known the independent concentric centres tend to separate—a fault which cannot, however, occur if the arch is properly constructed.

#### THE PLUMBERS' REGISTRATION MOVEMENT.

A QUARTERLY Court of the Plumbers' Company was held on Friday last at the City Guildhall, the Master, Mr. W. H. Bishop, presiding. The Chairman reported that during the past three months meetings in connection with the Registration movement had been held in that building, in Edinburgh, Glasgow, Dundee, Aberdeen, Dublin, and Cork, and in thirteen English county towns. The districts now forming plumbing classes were very numerous, and nearly all of them were preparing for a second course of a higher grade. The necessity for a special course of instruction for masters was being discussed in many places, it being recognised that employers should possess a higher degree of scientific knowledge than their men. The clerk, Mr. W. R. E. Coles, reported that during the quarter examinations for Registration had been held at Bristol, Glasgow, Manchester, Brighton, Dublin, and Leicester. The lowest passed in any of the examinations was 15 per cent. of the candidates, and the highest 70 per cent., the average being 45·8 per cent. During the quarter 444 applications for registration had been received from masters, and 849 from journeymen, making a total of 1,293. Mr. Coles further mentioned that some European and some native residents in Rangoon had adopted the English system of sanitation, and had sent a requisition to England for a number of registered plumbers to be sent out, and that several had already gone. Sir Philip Magnus stated that since the last meeting of the Court some of the members, with the assistance of expert advisers, had drawn up a graded syllabus of instruction specially adapted to apprentices in the plumbing trade, the aim being to provide for such youths a continuous course of study, which should occupy three or four years of their apprenticeship. It would consist of three parts, distinguished as preliminary, intermediate, and final courses, the syllabus being one of instruction rather than of examination. The

Lamont Young, of Naples, is more curious still in his design, placing on the top of it a large terrestrial globe and four secondary ones. “British Lion” is the motto of No. 68, which is one of the few designs worthy of study, although its quiet, ineffective outline drawings are likely to be overlooked. It shows a steel tower 1,200ft. high, having a hexagonal skeleton of latticed-webbed radial struts, and standing on eight legs supported by piers of masonry 228ft. apart, with lions on the outside faces. The maximum pressure on any abutment is calculated at 4,810,000lb. The general outline is admirable, and the detail is good, with clever points besides in the design itself. The first housing is occupied as an octagonal concert-hall. There are several other sketches too numerous to mention. We shall illustrate some next week.

#### ARCHITECTURAL BRICKWORK.—XXXIII.

##### GOTHIC ARCHES.

ONLY since the revival of brick architecture have architects given much attention to the construction of moulded brick arches, and therefore we find that, for church arcades, stone does duty in the large number of instances, even where brickwork is otherwise introduced into the plain wall surfaces. The improved manufacture of moulded brick and terra-cotta has led a few of those of the more advanced to step out of the beaten track and employ moulded brick for their arches, carrying out in a more complete and satisfactory manner the idea of

brick architecture. Stone for pillars and arches, and brick for spandrels and walls, is a combination that does not accord with any principle or system of construction. The Romans employed brick, but they used it in arches as well as in walls in numerous instances; the bricks were used often as a facing, the remainder or backing of the wall being of concrete—a material that goes with brick even better than with stone.

In North Germany, Belgium, and Italy, the brick architecture did not confine itself to walls and surface, but entered largely into complicated details. The moulded arch asserted itself in all the principal buildings. The English examples attest the same thoroughness. Lollards' Tower, Lambeth Palace; Hampton Court Palace, St. Alban's Abbey, Layer-Marney, Essex, and other buildings in the Eastern Counties, exhibit moulded brick archwork. However pleasing the mixture of brick and stone, there are objections to the combination, especially if the stone is in large blocks, and an inequality of settlement arises in consequence. Brick spandrels on stone arches have the same tendency to separate and produce fractures.

##### ARCH BOND.

We have already alluded to the importance of concentric rings in plain arches of great thickness, and this is of importance in brick-moulded arches, which are built in members one within the other. In an arch of large span, say of 10ft. or more, it is desirable to produce the required appearance of strength by having two or three concentric arches or rings, and these may be worked in different ways. One plan is to form the arch by



preliminary course took up those branches of science having a direct bearing on the plumbing trade, such as geometry, drawing, mechanics, hydrostatics, heat, chemistry, and even workshop architecture. The intermediate course carried the same subjects a little further, and the final course introduced the more advanced parts of hydraulics, building construction, the principles of sanitation, and of general plumbing. It was understood that in the future masters would be required to pass the last-named examination in order to obtain a certificate. A graded course of practical instruction in the workshop would be arranged to be carried on simultaneously with these theoretical courses. Mr. John Smeaton referred with approval to the regulations regarding house drainage which have recently been drawn up by Mr. Tomkins, surveyor to the Marylebone Vestry, and also to the regulations issued by the Wandsworth District Board of Works as to water supply and house drainage.

#### THE SURVEYORS' INSTITUTION.

THE following Professional Associates have passed the Examination for the Fellowship:

Beniah Whitley Adkin, 33, Walbrook, E.C.; John Darch, 74, Sarsfield-road, Balham, S.W.; William Cooper Dendy, 46, Fordwych-road, Brondesbury, N.W.; Herbert Moates Ellis, 29, Fleet-street, E.; Ralph Staples Ellis, 69, Palace Gardens-terrace, Kensington, W.; William Lionel Eves, Milton House, Uxbridge; Frank Foster, 37, Gower-street, W.C.; Temple Hardy, "Glenhurst," Trinity-road, Tulse Hill, S.W.; Dryland Haslam, jun., Warren House, Caversham, Reading; Frederick Herbert Jones, 35, The Broadway, Ealing, W.; Frank Melrose, 4, Whitehall, S.W.; Edward Mixer, 80, Cheapside, E.C.; Richard Parry, 22, Dagmar-road, Camberwell, S.E.

#### MASONRY AND STONE-CUTTING.\*

By LAWRENCE HARVEY.

[TWENTY-NINTH LESSON.]

CORBEL-ARCH UNDER SEMICIRCULAR PROJECTING TURRET.

LET the plan of the turret (Fig. 191) be the arc ADB projecting beyond the face of the wall; let it be supported by a corbel arch formed as follows:—In the vertical plane AC perpendicular to the face of the wall, draw the arc of a circle, as shown in Fig. 192, on which the plane AC has been turned down. Let the delineated arc of circle be the section of a horizontal cylinder parallel to the wall; then the soffit of the corbel arch will be the portion of that horizontal cylinder comprised within its intersection with the vertical cylinder of the turret. The outline of the corbel arch will have for projections the lines (AFEDFEB, A'F'E'D'E'F'B'). The elevation of that outline is constructed by observing that the generator of the soffit which passes through the point F' (Fig. 192) has for projections F'F' and FF'; and as the horizontal projection of this line meets the base ADB of the vertical cylinder in the point F, we have only to draw the elevation of that point in F' on the line F'F'.

*Points to be Noticed.*—The radius A'C' of the horizontal cylinder should be larger than the projection of the turret; otherwise the keystone would have a tendency to fall forwards. Here the radius A'C' is taken equal to OD, the radius of the arc ADB, so that the upper part of the face arch may be tangent to a circle inscribed therein of diameter AB, as it gives the neatest drawing. 2. Instead of adopting the section A'D' of the horizontal cylinder, we might take for outline of the corbel-arch the curve projected on plan in ADB and on the elevation on the semicircle A'D'B'; then let this line be the directing line of a cylinder, the horizontal generator of which would slide along the outline of the face arch, and draw from this the section by the reverse process used for drawing the face arch.

The bed-joints are taken through points found by dividing the semicircle A'D'B' in an odd number of parts, and through the line YY' perpendicular to the wall. Each of these joint-planes, such as F'Y'Y, cuts the cylindrical soffit of the arch along an elliptical line, FnfY, of which any point, such as n, is found at the meeting of a generator of the horizontal cylinder with the plane of the joint; then the bed-joint cuts the vertical cylinder from F' to K' on right-hand side of Fig. 193, and afterwards it cuts the face of the wall from K' to G', where it meets

the horizontal bed-joint of the first course of stones.

The eye of the corbel-arch has for joint line a curve, *a c d e b*, *a' e' d' e' b'*, formed by delineating the arc *a d b* concentric with ADB, then taking the intersection of a vertical cylinder of base *a d b* with the soffit of the arch. The surface of this joint should be normal to the soffit of the face arch. Therefore, if to cut that eye stone a prism be selected of which the side elevation on section is the rectangular V'Z'U', then the point (*e, e'*) will have to be found where a normal C'e' to the soffit pierces the upper face of the eye-stone. By a series of such points the intersection  $\omega \lambda \epsilon \delta \epsilon \lambda \omega$  of the upper face by the surface of the joint will be delineated. In the same way the intersections *a' e' o' w'* and *b' e' o' w'* of the joint with the back of the stone will be also delineated. The surface of that joint is a conoid.

Hence the bed joint (Ee E'e') of an arch stone will stop at the point (*e, e'*) of the soffit of the arch; then cut the conoid of the eye along a line *c l*, and then the upper face of the eye-stone along the line  $\lambda L$  parallel to YY'. Turn down the plane of that joint, and you get the bed-mould H<sub>1</sub>E<sub>2</sub>e<sub>2</sub>L<sub>1</sub>L<sub>2</sub>. By similar operations we get the lower bed-mould G<sub>2</sub>K<sub>2</sub>F<sub>2</sub>f<sub>2</sub>.

To cut the arch-stone we require the intersection of the cylindrical soffit with the operation plane taken through the chord *e' f'* perpendicular to the wall. This operation plane is turned down round its horizontal trace, which gives the mould *g e f p*. Then develop the cylindrical soffit of the arch (Fig. 194), taking the distances from AB equal to the arcs on Fig. 192  $Y_1 f_1 = A' f'_1$ ,  $Y_1 e_1 = A' e'_1$ ,  $Y_1 f_1 = A' f'_1$ ,  $Y_1 e_1 = A' e'_1$ ,  $Y_1 d_1 = A' d'_1$ , and the distances from the centre line  $Y_1 d_1$  equal to the distances from centre line on the plan (Fig. 191), and you will obtain on the development the curve of the face-arch and the joint of the eye-stone.

Now to cut the arch-stone shaded in Fig. 193, produce a stone prism, the base of which will be the polygon comprising the elevation; then place the upper and lower bed moulds on their respective planes; place also the mould of the operation plane *e' f'*, and guided by the curves delineated and guiding marks thereon, work the cylindrical soffit, the part above the line F'F' will have to be worked with a set square guided solely by the outline of the upper bed. Then squeeze on to the cylindrical part just worked the soffit mould, and delineate the curves *e o f* and EF (Fig. 195), and guided by the last line and the upper edge HR of the stone-work, the cylindrical face belonging to the turret. Lastly, after having worked progressively, the small plane  $L \lambda \omega$ , the mould of which is given on plan (Fig. 191), the entire outline of the conoid joint will be known, and can be worked with the help of a few guiding marks. I shall add that it will be safer to develop also the cylindrical face of the turret, and get thereby a face-mould by which the curve E'F' will be exactly delineated; then afterwards work the soffit, of which all the outlines will then be known.

I beg to say that I have given the construction of the eye-joint as shown by a former instructor at the Paris Ecole Polytechnique, but that I consider his construction impractical, especially when applied to other joints parallel to the eye-joint which have to be used in dividing the courses of stones of large corbel arches supporting circular apses projecting 10ft. or 15ft. beyond the face of the wall. The construction I propose is as follows:—Draw on Fig. 192 the section of a second cylinder with a radius 3in. longer than that of the section of the soffit; then draw the intersection *a' z' b'* of that cylinder with the conoid forming the joint of the eye; take this latter curve as the base of a cylinder which will form the eye-stone; draw the development of this cylinder, and place that development on the surface of the cylinder worked; then draw the curve of intersection of the base cylinder with conoid joint. By means of the soffit mould draw the inner curve of that same joint, and work the conoid with a straight edge laid from one curve to the other through guiding marks. With my construction there will be no more small plane  $L \lambda \omega$ , but a conoid joint only about 3in. wide, followed by a cylindrical surface easy to work.

In Fig. 196 is shown how a similar corbel-arch can be used at the angle of two walls. Often a spherical niche is used for the same purpose, and gives an elegant solution of the problem.

In using these corbel-arches considerable

attention must be given to studying the equilibrium of forces, so as to make sure that the corbel-arch and what it supports will not over-balance the weight of the main wall. In large corbel-arches the key-stone should always be connected by a metal tie-rod to other parts of the building, or to reversed and inverted arches constructed on purpose.

#### CHIPS.

A special service was held in the parish church of West Bromwich in connection with the dedication of an ancient chancel screen, formerly in Tewkesbury Abbey Church, but which was removed at its restoration in 1877. The screen was discovered by the vicar in the show-room of a dealer, where it had lain since its removal from Tewkesbury Abbey, and was purchased and presented by him to St. Peter's Church. The panel-work is an addition, and has been made out of old oak beams formerly in the monastery of the Black Friars, Worcester.

In accordance with the terms of the Midland Railway Act of last year, the Midland Railway Company has paid to the London County Council the sum of £12,000, to be expended on open spaces in St. Pancras. The General Purposes Committee recommended to the vestry that £1,000 be expended on a lodge for the caretaker and a greenhouse in the St. Pancras Gardens Extension, and that the London County Council be asked to acquire Munster-square and Clarence-gardens as public open spaces and children's playgrounds; to throw open Lismore-circus as a children's playground, and to purchase from the New River Company a piece of land in the Highgate-road, so as to form an improved approach to Parliament Hill-fields.

Two of the lights and the tracery of the east window of Litton Church were some little time since filled in with stained glass; the third has now been added, thus completing the window. Our Lord, as the Good Shepherd, is represented in the central compartment. On the one side is a figure of St. Mary the Virgin, and on the other of St. John the Evangelist. The window has been designed and executed by Messrs. Joseph Bell and Sons, of College Green, Bristol.

A new mission chapel is about to be erected at Kington, Herefordshire. It will accommodate 165 adults. It will be built of local stone with hard stone dressings of fine colour. The roof timbers are all of large size, and the covering will be the best North of England heavy green slates. The floors of the nave will be of wood blocks, those in the chancel of tiles. The screen will be of oak, as will also the chancel fittings. The contract has been intrusted to Mr. Wislade, builder, of Kington. The designs are by Messrs. Kempson and Fowler, of Llandaff and Hereford.

The nine-sided Jacobean oak font cover in the church of St. Mary's Steps, Exeter, has just been restored by Mr. H. Hems, of that city.

A new wing for women is being added to the Suffolk Convalescent Home at Felixstowe, together with a block of baths and lavatories. The works, which will cost about £3,000, will be completed in August next, and are being carried out from plans by Mr. E. Fearnley Bishopp, of Ipswich.

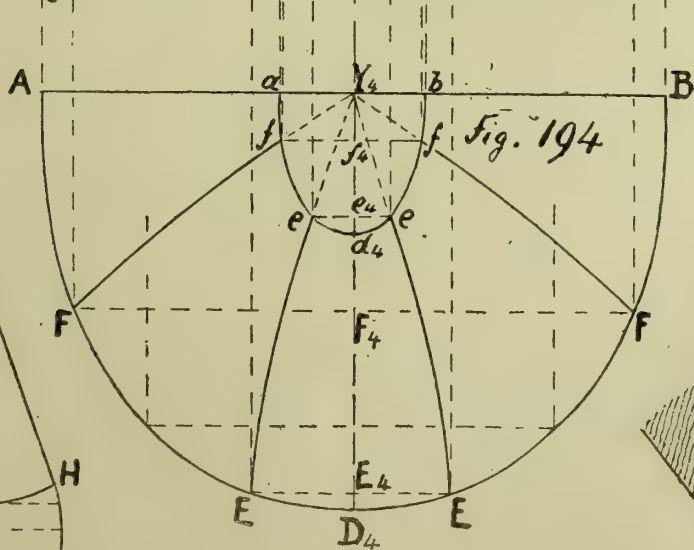
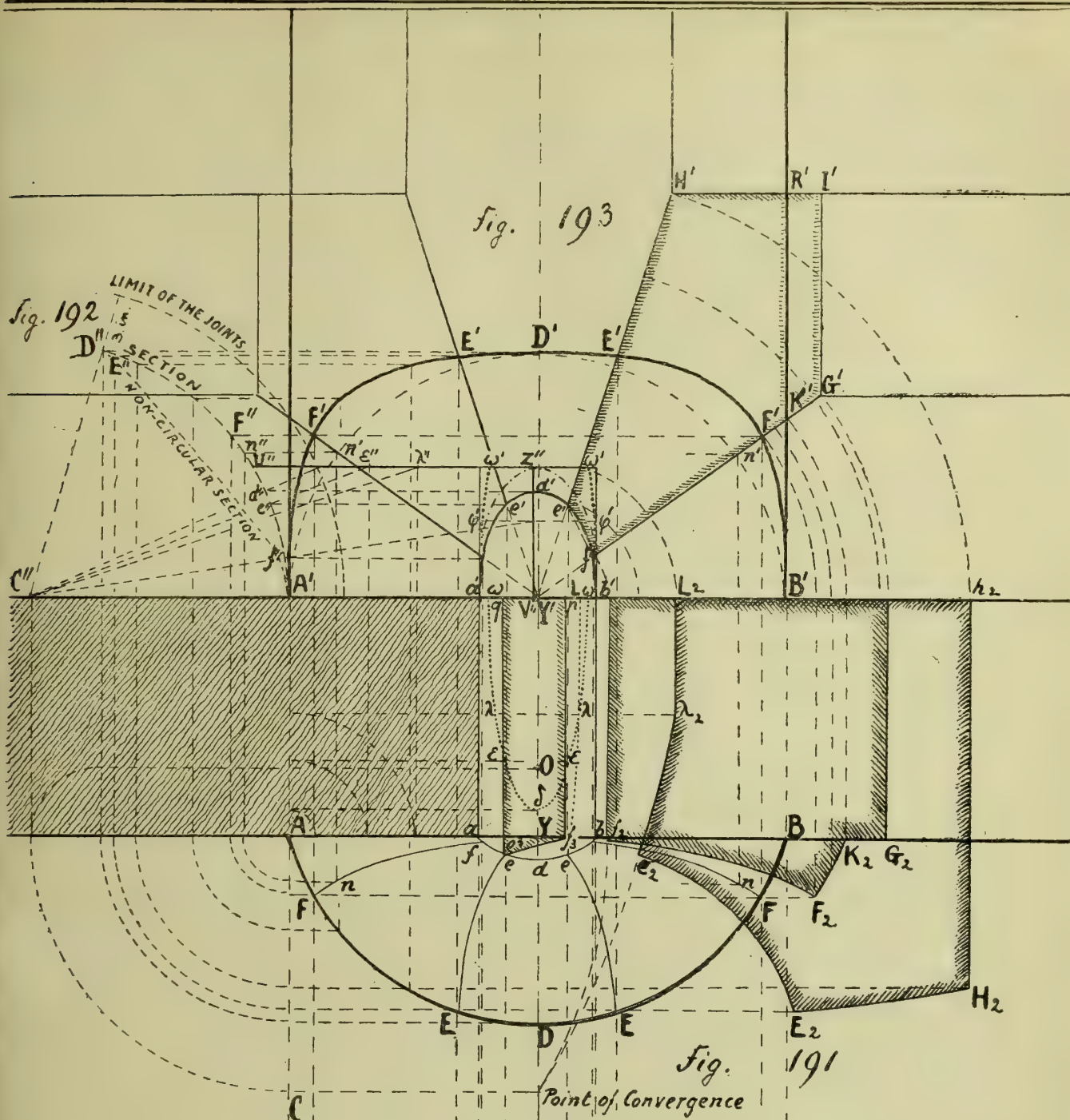
Between three and four acres of land near Avonmouth Dock, Bristol, have been covered with buildings for a petroleum supply association. Conspicuous objects on the works are four tanks, for the storage of petroleum. The two principal tanks are each capable of holding 2,200 tons, and the two others will hold 1,000 tons each. The dimensions of the former two are 64ft. in diameter and 30ft. in height, and of the latter two, 47ft. in diameter and 26ft. in height. The tanks are made of thick steel plates all through, and riveted with steel. Messrs. John Lysaght and Co., of Bristol, are the builders.

The County Council for Warwickshire have decided only to employ registered plumbers on all building works carried out under their direction.

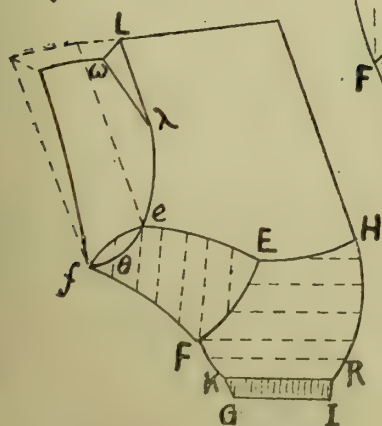
The Turners' Company have offered their silver medal, the freedom of the company, and the freedom of the City, for any workman, whether master, journeyman, or apprentice, in the trade in the United Kingdom, who may send in the best specimen of turning in pottery, stone, and glass. The specimens are to be sent in during the week ending October 25.

The County Council of Durham decided last week that the salary of Mr. W. Crozier, the county architect and surveyor, be advanced to £600 per annum, with £150 for clerks, and £150 for travelling expenses on account of his increased duties, resulting from the main roads coming under the responsibility of the County Council, and also on his relinquishing private practice. Mr. Crozier was appointed on the 31st December, 1888, at a salary of £400 a year, with similar additional allowances to those now granted, but was allowed to retain his private practice.

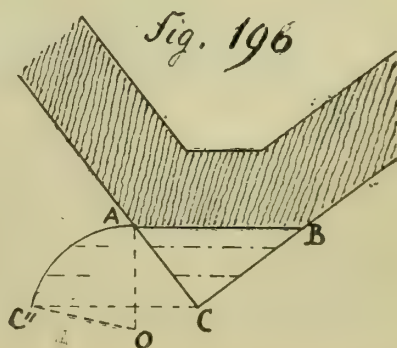




*Fig. 195*



*Fig. 196*





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CONTEMPORARY BRITISH MANUFACTURERS AND ART WORKERS.—THE CHURCH HOUSE.—STONEHILLS, HANTS.  
—L'ANGE DE LA MORT.—HOUGHTON TOWER, LANCASHIRE.  
—MARPLE HALL, CHESHIRE.—JAPANESE ART OBJECTS FROM MESSRS. ROTTMANN, STROME, AND CO.

## Our Illustrations.

CONTEMPORARY BRITISH MANUFACTURERS AND ART WORKERS.

(See description on p. 639.)

## THE CHURCH HOUSE, WESTMINSTER.

THESE drawings are on view in the Architectural Room of the Royal Academy, and are briefly alluded to in our accompanying notes descriptive of some of the principal exhibits. The plans which are drawn on the double-page plate show the chief arrangements. The block will have elevations on all four sides, with a large quadrangle in the centre, rising from the middle of which will be the chapel, standing on a vaulted open crypt. Beyond, along Little Smith-street, is the Great Hall for meetings, 118ft. long by 50ft. wide, having galleries all round. This is on the first-floor level, like the chapel, and the main entrance to it is from Great Smith-street. Archways leading to the quadrangle are situated in Dean's-yard and in Tufton-street. Overlooking the latter thoroughfare is the big library. The Upper House of Convocation, like the Lower House, is situated in the Dean's yard. The former has stalls for fifty, and the latter is arranged with benches. It measures 64ft. by 40ft. The House of Laymen, also on the principal floor, is of similar dimensions, and forms the central feature in the Great Smith-street elevation. There are robing-rooms and other conveniences between these main apartments, and the ground-floor is occupied by committee-rooms, offices, and a large refreshment-room. Bedrooms are provided on the upper floor. Red brick and stone are the materials intended. Sir Arthur Blomfield, A.R.A., is the architect. A portion of the buildings is to be forthwith commenced.

## STONEHILL, HANTS.

THIS seaside house, by Mr. Basil Champneys, B.A., needs but little description, the bird's-eye view given in conjunction with the plan printed on the same sheet readily explaining the general arrangements. Tile-hanging is largely used, and red brick walls with stone jambs and copings. The drawing is on view at the Royal Academy Exhibition, the private view to which is held to-day.

## L'ANGE DE LA MORT.

THIS splendid figure, by Mr. Geo. Frampton, the R.A. Gold Medal Student, is now on view in the Lecture Theatre at the Royal Academy Exhibition, and it is unquestionably one of the principal works of the year. It was shown last season at the Salon in Paris. In some of its best points the work reminds us of Mr. Alfred Gilbert's greater efforts, though the originality

of the statue is unquestioned. The Angel of Death carries the lamp and scythe. Our plate is from a photograph sent in by the artist.

## THE INNER COURT, HOUGHTON TOWER.

THIS fine old Lancashire house, standing on the top of a well-wooded hill, has of late years been put in repair, and it is the seat of the De Hoghtons, who have held the property, they say, since the days of Henry II. The present mansion was built by Sir Thomas Hoghton in the reign of Elizabeth. Here it was that King James knighted the beef and called it Sir Loin, and other convivial records go to make up the history of this interesting old place. The view overlooking the valley of the Ribble is very extensive, with the Welsh mountains in the distance. The drawing, by Mr. J. Langham, is now at the Royal Academy.

## MARPLE HALL, CHESHIRE.

MR. H. HARRINGTON's sketch of this house, given to-day, shows the north front. The Hall was long the property of the Vernons of the Peak, and builders of Haddon Hall, Derbyshire. In 1606 it went to the Bradshaws, of Bradshaw Hall. The building is built in the form of the letter *m*, in honour of Queen Bess, then on the throne. The entrance hall has a low, massive roof, and the long window lighting it has some old stained glass in the quarries. Over the fireplace are the arms of the family and the date 1666. Judge Bradshaw's bed, in solid oak, is here, in the room where, it is said, he was born. There is much old furniture also in the house.

## SKETCHES OF JAPANESE ART.

THE sketches given this week under the above title are of objects from the show-rooms of Messrs. Rottmann, Strome and Co., of St. Mary Axe, City. There is not much that can be said concerning them, more than that they are good specimens of the modern art-work of Japan. The cabinet of lacquer work is nicely made, and is a useful, as well as an ornamental, addition to a drawing-room, especially where the owner is a connoisseur of vases, &c., as few backgrounds show off pottery to a greater advantage than one of bright lacquer. The panels of the cabinet are richly inlaid with decorative subjects—birds, in the use of which the Japs excel—figuring in all three. Perhaps the most striking object represented on our sheet is the Bronze Lamp, which stands some 6ft. or 7ft. high, nearly every part of which is enriched. There is great force in the monster which sustains the lamp pillar—a kind of demon tortoise—with an elaborately wicked face. No animal lends itself more to artistic treatment than the tortoise, while its strength makes it a suitable beast to be chosen to sustain the superincumbent metal-work, and is a truthfulness of art which is always gratifying. There is also much character in the fish and the two pigmies: the half-supplicating and half-struggling gestures of the former are well represented, and the skilful way in which its own tail, and the feet of one of the pigmies do duty for a stand, is deserving of all commendation. The Koro, or vessel for burning incense in, is likewise bronze. It is made with a lid which is perforated for the escape of the perfume, with a grotesque animal forming the handle. Like the other two bronzes it is of good workmanship, and is decorated with raised ornamentation, beautiful Taizan work, and good shape. The Pilgrim Bottle is adapted for carrying purposes, by means of the hole in the centre, through which a strap can be passed, to be slung over the shoulders of a traveller. The ornament is of a delicate design and harmonious colouring.

On Wednesday week the memorial stones of a new Bible Christian Chapel were laid in Llanbleddian Gardens, Cathays, Cardiff. The style is Gothic, freely treated in Newbridge stone, with Bath stone facings. The cost is £2,000, and when completed the chapel will seat 700 persons. Messrs. Habershon and Fawcner are the architects, and Mr. Leonard Purnell is the builder.

At a meeting held at Christchurch, Hants, on Thursday, the 24th ult., to consider the desirability of continuing the restoration of the Priory Church, it was stated that about £20,000 would be needed to complete the undertaking, towards which there was £1,700 in hand. During the past five years £4,500 has been expended on the church, and within half a century no less than £18,000 has been laid out. It was decided to make a public appeal for aid, and a restoration committee was appointed.

## PROPOSED ARCHITECTURAL STUDIO.

THE special committee of the Architectural Association, appointed in June last to inquire into the educational methods of the Association, have just made their report. They are convinced that the mutual and voluntary system of teaching which has grown with the progress of the Association now presents great disadvantages and difficulties. Adopting the Institute programme of progressive examinations as the basis, but not the limit, of the proposed systematic course of instruction to be established by the Association, they recommend the provision of an architectural studio and the arrangement of a definite curriculum of study with a paid staff of teachers. A combination of lectures and classes is recommended as preferable to either of these methods taken separately, the system of visitors being regarded as preferable in the case of advanced students. It is further proposed to establish day classes; but, for the present at any rate, not to make these part of the regular course. The committee map out, in their suggestions for a curriculum, a four years' course, adapted for students who have passed the Preliminary Examination of the Institute, equally divided into periods of two years each for preparation for the Intermediate and Advanced Examinations, but they add: It cannot be too strongly impressed on the student that his studies should not be confined simply to those subjects included in the Institute examination. The curriculum, which seems of a comprehensive and well-balanced character, is based on a season of 32 weeks' work in each year, the attendance to be one evening each week at lectures and classes, and two evenings in the studio, in the first two years, with an additional evening for lectures and classes once a fortnight in the third and fourth years. The committee recommend that the "other existing methods" of the Association—the ordinary meetings, the sessional and vacation visits, the annual excursion, and the publications should be continued as at present, with the extension that the library be opened in the day time. The total cost of the scheme is estimated at a little over £900 a year, made up of lecturers' fees, £504; instructors, £150; and cost of increased accommodation, £250; and this, it is thought, could be met by fees to students, calculated on a scale of 10 guineas per annum for entire curriculum, or 5 guineas cash for lectures and classes, or the use of the studio. The proposal, rejected in the scheme of some years since, is revived—that the subscriptions of town members be raised to one guinea, that of country members remaining at half-a-guinea as at present, and this appeal to the pocket will probably arouse much discussion. It is also suggested that a guarantee fund be formed for a limited period to defray any deficit which may arise at the inception of the scheme, and that a permanent endowment fund be established, the present financial state of the Association, with no capital at its back, not being satisfactory.

This important report, which, if adopted, involves a new departure in the working of the Association which cannot fail to have a beneficial influence on architectural students of the future, is to be considered at a special business meeting of the Association to be held on Friday, the 16th inst. (this day fortnight) at 7.45 p.m.

A group of artisans' dwellings is about to be built in Wassail-street, Swansea, from plans by Mr. Edward Bath, of that town. The area is about 300ft. by 200ft. The buildings will be divided into 150 tenements, on the "flat" system of two and three rooms each; the ground floor being utilised for shops and business premises. There will be two main entrances, and these will communicate with a corridor 6ft. wide running round at the back. The w.c.'s and lavatories will be entirely isolated from the main building. The whole of the floors and roofs will be of fireproof construction.

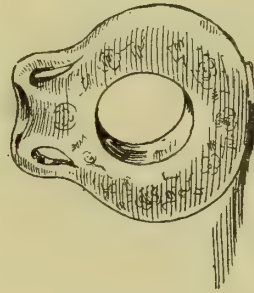
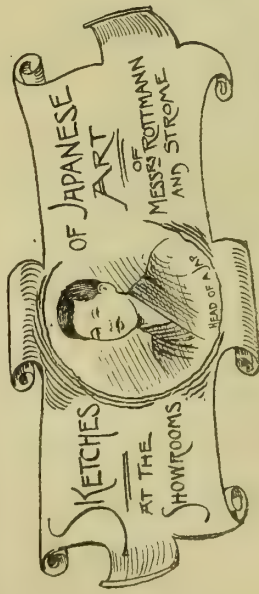
The committee for providing a memorial in London of the late Field-Marshal Lord Napier of Magdala have commissioned Sir Edgar Boehm, R.A., to erect a replica in bronze of the equestrian statue of that distinguished soldier at Calcutta, with the exception that the statue should be bareheaded. The committee are also in communication with the Office of Woods and Forests as to obtaining a site for the statue in Waterloo-place, Pall-mall, between the Guards' statue and the Duke of York's column.

The Duke of Newcastle, who has given the site, will lay the foundation-stone of the St. Cuthbert's College, at Workop, on September 4.

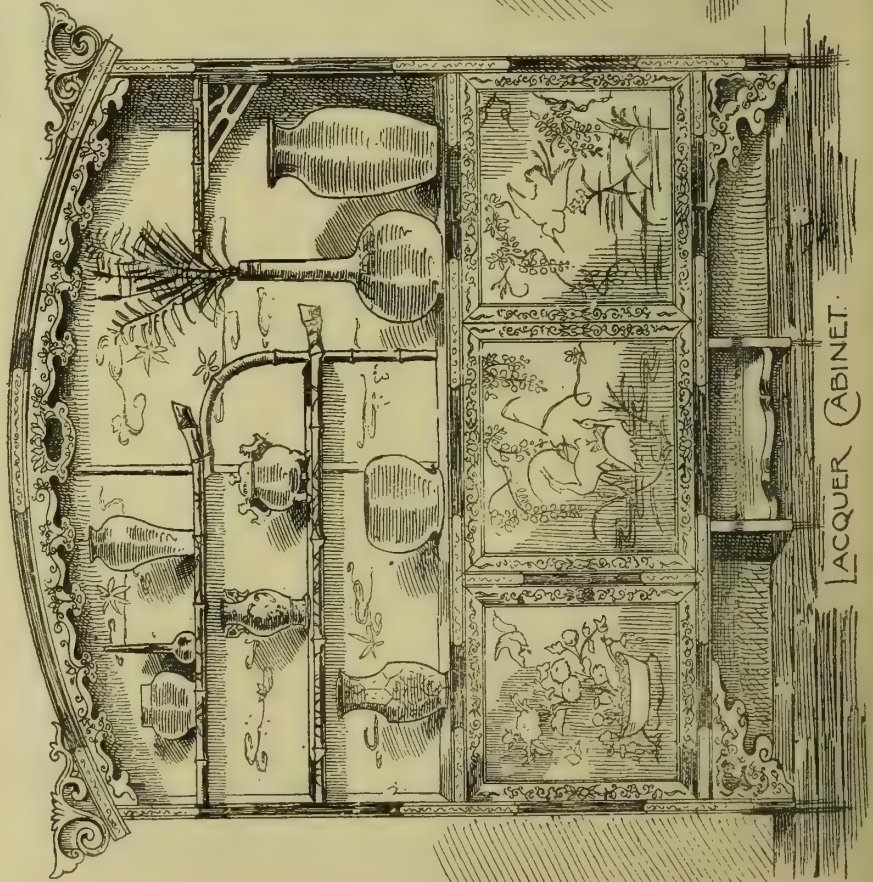




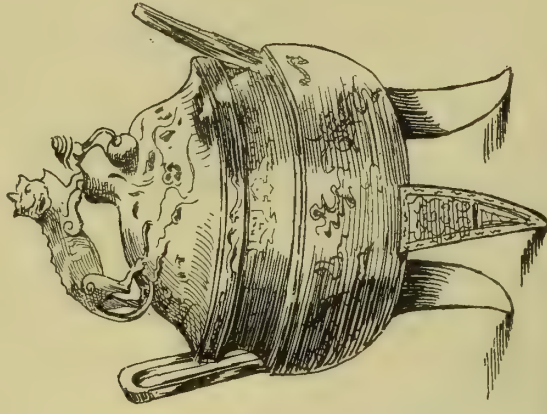




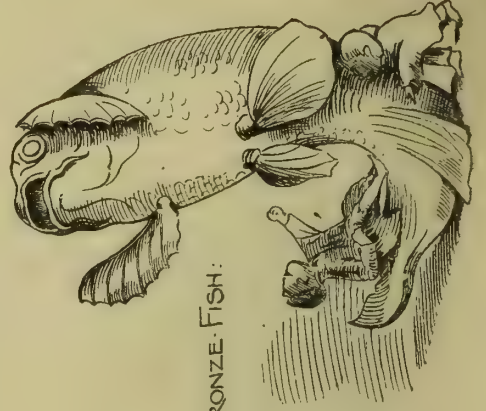
PIGRIM BOTTLE OF TAIZAN WARE



LACQUER CABINET



KORO OR INCENSE BURNER

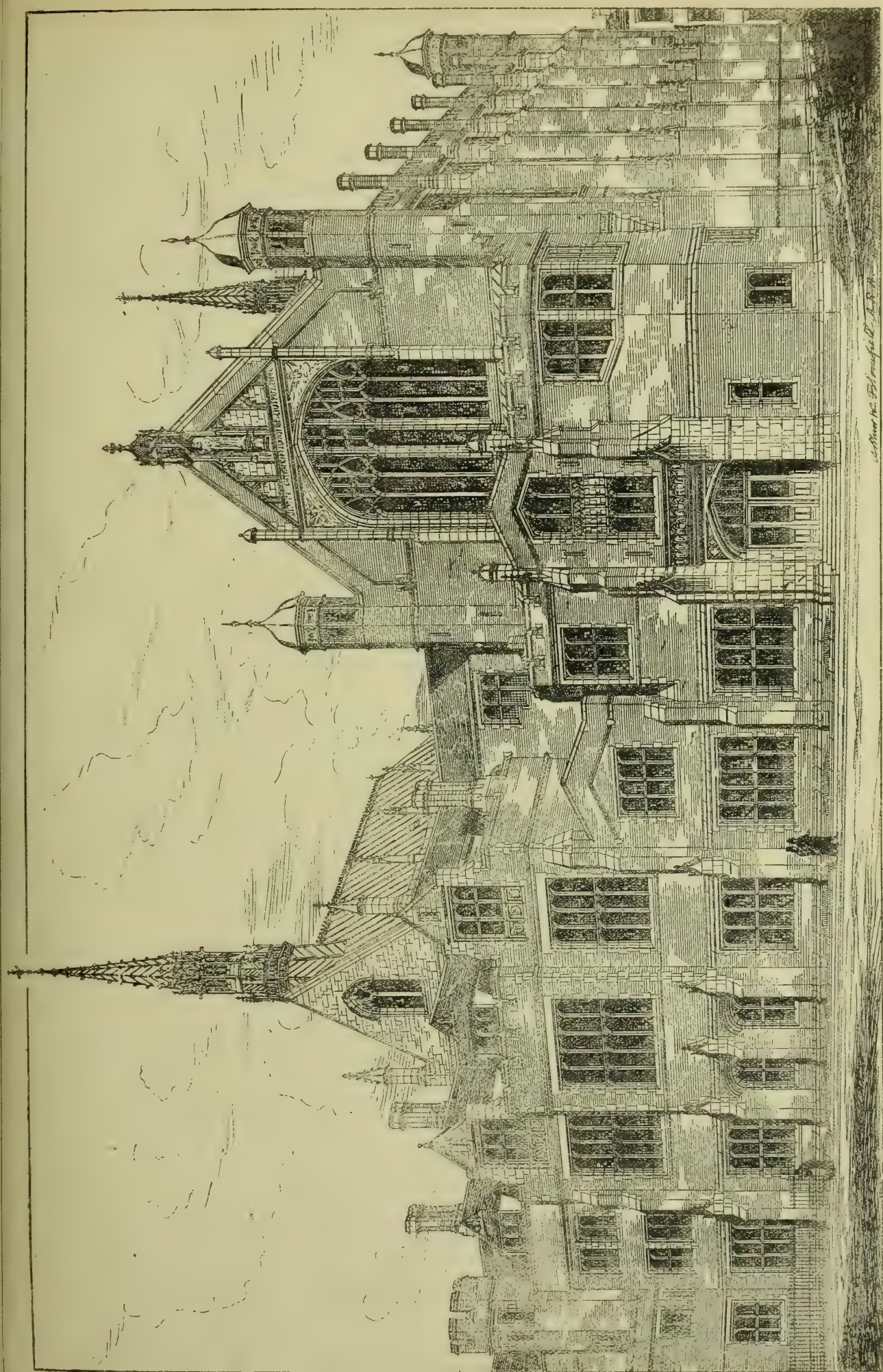


BRONZE FISH



GROTESQUE BRONZE LAMP





THE CHURCH HOUSE, WESTMINSTER. VIEW OF GREAT SMITH STREET FRONT.  
SIR ARTHUR BLOMFIELD, A.R.A., Architect.







## WAYSIDE NOTES.

THE exhibition of the designs for the "Watkin" tower is certainly something to be seen. To miss it will be to neglect an opportunity that will surely not occur again. It is not venturing overmuch to declare that another scheme of such an extravagant character will never be promoted in this country. Those persons, then, who may be girt about the loins in anticipation of the exhibition season, might well commence their labours with an inspection of the designs exhibited at the Drapers' Hall in Throgmorton-street. A clear eight days are yet available for those who have delayed seeing the drawings. I can promise the architect and engineer plenty of diversion, for the competition is as unlike the ordinary run as can possibly be; and, although little instruction will be gained from the inspection, those with some sense of the fitness of things may obtain, from the abortions on view, not a little amusement. The designs are worth visiting if only to see how energy and talent may be wasted and misapplied.

In the ordinary, everyday competition there is not a great scope for startling novelties. Churches and town-halls bear a strong family likeness, the general effect of which we all know. The circumstances of "The Tower" competition, however, warranted our expecting an exhibition of designs that would have great novelty in character. We have not been disappointed, and ought, at least, to feel grateful to Sir Edward Watkin in that his wild scheme has afforded us a little uncommon diversion.

It was with a feeling of pleasant anticipation that, on Tuesday afternoon, I ascended by the gorgeous staircase to the still more gorgeous Hall of the Worshipful Company of Drapers, and commenced an inspection of the designs. As I anticipated months ago, Eiffelism was rampant on every side. A very large number of the designs submitted to the promoters of the Tower Company evidence a reliance—flattering in its degree—upon the principle embodied in the Parisian structure; and considering that the modifications introduced by the competitors scarcely exhibit improvement in the prototype, the feminine criticism that caught my ear, to the effect that the designs in general were "horrid copies of the Eiffel," was by no means ill-timed. Some may be said to give one the idea that their designers had a nightmare after an ascent of M. Eiffel's monster, for not a few of the compositions are positively frightful in their extravagance and deformities that outrage every principle of art and science. Considered either architecturally, or from an engineering standpoint, they fail ignominiously. Among the miscellaneous designs there are, indeed, some terrible and ghastly productions. And how their authors would construct them is best known to themselves! Of the whole set it may be said that it is all very well to draw up elevations and make up pictures; but how about the working drawings? I rather fancy that the majority of schemes couldn't be made to work anyhow, and in very many of the designs that took the popular fancy on Tuesday—because in this case the public hadn't a ghost of an idea of the practical problems involved—collapse would inevitably result before a third of the structure was erected.

One of the most practical designs would seem to me to be No. 55, prepared, I believe, by Mr. Henry Davey. If modified in several points, it would be a suitable design. The simplicity of its construction contrasts well with the complication of others. It gives an effect of its vast height, and it is only a few of the designs that show a composition likely to give an observer any idea of extreme loftiness. In the coloured elevation of this design there is a certain impressiveness not observable in any other. Whether the same effect would be observable in reality is uncertain; but the fact that it results from simplicity of composition would warrant our supposing that it would. It is an engineer's design, evidently, and while putting it forward as a practical scheme, and as likely to possess a certain dignity and impressiveness, I am, at the same time, bound to confess that it is frightfully ugly. But we did not expect material loveliness in this proposed steel and iron monstrosity, and one does not expect it now after seeing the designs. I maintain, moreover, that the work is an engineer's work, and that the problem is to be solved

in a scientific manner. The iron fretworks and Gothic tracery and arcading that characterise many of the designs would look simply barbarous in execution. The vanity of introducing "architectural" embellishments may be seen by critically examining some of the more fanciful and elaborated designs, and endeavouring to realise what each feature would appear like in hard reality.

One of the best of those essaying a more architectural treatment is undoubtedly No. 54, a design by Mr. J. Sinclair Fairfax. It is of an exactly opposite character to No. 55, being composed of a multiplicity of parts, and is undoubtedly a work of high merit. Although I prefer an engineering solution of the problem, this design is certainly as artistic as any, more so, perhaps. Its chief fault may be said to be that its composition and outline imitates, or suggests, that of a building in solid materials; but it has the merit of looking practical and eminently stable. Mr. Fairfax's design will probably be the favourite.

In the whole collection there is but one design, I believe, showing solid construction, and that is No. 43, an architectural composition, intended to be realised in blocks of cement concrete, and strengthened with tie-rods, &c., of Bessemer steel. The design is impracticable for many reasons; but it is none the less remarkable. Judging, however, by the appearance of the colossal superimposed mass, the crushing-weight of the lower layers of material must be reached. No. 51 is a fine design, having a clearly-defined, graceful outline to the main structure, which is pleasing, after the extraordinary excrescences that are appended to some of the compositions. No. 44, illustrated by a model, would be cheap, and is a sensible enough design, if height, with economy, is to be the chief consideration. One might have expected to have seen one design, at least, on this principle, where a vast lattice-work structure of the signal-post type is stayed round with many wire-ropes.

What next? Having got the designs together, and arranged for an early adjudication as to their merits, is the execution of one of them to be proceeded with as soon as possible? If so, then may the new monster be removed as far as possible from our midst! The designs certainly do not make one think any more favourably of this mad, purposeless adventure. If there were any use in the tower when constructed, it would be a different thing. As it is, I can see none, except the amusement of a few people by taking them up to a breezy elevation in the lifts. An idea has got abroad that the tower will be useful for observatory purposes, which is a ridiculous notion, since on the calmest day, or night rather, an object seen through a telescope would, by reason of never-ceasing vibration, appear to jump about the field of the instrument like a parched pea on a drum. Better urge no excuse than one so feeble as this.

The Central London Railway Bill incites a larger amount of opposition than the majority of new railway Bills. Ignoring a large number of small fry, there are opposed to this railway the Ecclesiastical Commissioners, the owners of the Paddington Estate, the Gas, Light, and Coke Company, the Metropolitan, and the London, Chatham, and Dover Railway Companies. Counsel for the opposition must be rather hard pressed for valid excuses when it descends to urging because a lady might find herself descending the lift to the stations with a sweep on one side of her and a dusty miller on the other! If that were all, there might be first and third-class lifts, without incurring a vast expense. On the other hand, the opposers of the railway may reasonably question the need for the new means of communication. This plea has been largely urged by those representing the vested interests at stake, which, in this case, are unusually formidable, and disposed to give trouble to the promoters of the proposed undertaking. As to the relative merits and demerits of the railway, I have no authority to speak. That being the case, I rely on a safe and professional argument, and that is, that the new line would mean so much work in the hands of the engineering, architectural, and building trades, and, as such, is welcome. On this principle, one may even reconcile oneself to the idea of a realised Watkin tower. All is grist to the mill.

I rather fancy that the railway will be made

sooner or later. Vested interests are always strong, and in the Metropolis there is never a new work proposed, but what the vested interest bogey makes its appearance. In the least instance it is light and air, and we know how often owners of "ancient lights" seek to extort compensation for imaginary wrongs. If all the undertakings that are commenced during the year were killed by "ancient lights" or "ancient rights," viz., vested interests, the architect, engineer, and contractor might shut up shop, and business generally become sluggish, in sympathy with that of the constructing trades, and in harmony with a saying of the French that "when building goes, all goes." Actual damage to property should be, and always is, respected in England; but vested interests want careful sifting to find out whether the harm is real or imaginary. How far this is the case with respect to the opponents of the Central London Railway Bill, we shall learn when the Select Committee of the House of Commons has concluded its labour and made its report.

"Many a mickle makes a muckle," said the Scotch architect as he poured back a few drops of the black sludge that remained in the saucer when his day's work was done. He doubtless referred to the muck he had made of the good Indian ink. Who would have thought that the County Council would have had to consider in one year, two thousand nine hundred and seventy cases of dangerous structures? The few we hear of in this quarter, and the few more in other quarters, as days go by, evidently make the "muckle" at the year's end. So in the case of new streets. Lord Rosebery, in reviewing the year's labour of the Council, stated that the Building Acts Committee had sanctioned the opening of eight miles of new streets. This looks encouraging on the face of things, but in reality means little; for whole miles of streets in outlying neighbourhoods are yearly laid out only to remain unfringed by buildings of any sort. Within the last few years an enormous length of street and road has thus been made, and as yet for the most part without buildings abutting upon them. A return of the number of miles of streets thus lying half-deserted would be interesting, and, to many persons, astounding.

GOTH.

## CONTEMPORARY BRITISH MANUFACTURERS AND ART WORKERS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS is the second sheet of portraits in this series, the date of the first plate being April 11th, 1890.

Mr. William H. Godwin is sole proprietor of the well-known firm of Messrs. William Godwin and Son, Lugwardine Works, Withington, near Hereford, encaustic and art-tile manufacturers. The business was founded by his late father, Mr. William Godwin, in 1848, who soon obtained considerable reputation as a masterful manufacturer of ecclesiastical tiles, and as he paid particular attention to the reproduction of Mediaeval patterns in their entirety, both as to fac-simile of form and ornament, and antique appearance of surface, and in other essentials to artistic effect. He thereby attracted the attention of the late Sir Gilbert Scott, R.A., who was so well satisfied with his productions that he invariably specified Mr. Godwin's tiles to be used in the many ecclesiastical works with which he was connected. When we mention that Mr. Godwin's tiles have been used to pave no less than ten English, one Scotch, three Welsh, and two Colonial cathedrals, besides many thousands of churches and secular buildings, both at home and abroad, it will be easy to understand how highly they are appreciated. Mr. William H. Godwin entered the service of his father after completing his education, and in 1883 was taken into partnership. In that same year his father died, and Mr. W. H. Godwin became sole proprietor, and has since carried on the business; and has lately brought out several specialties, notably patent tile chimney pieces, patent tile fenders, and patent tile angle panels for sides of grates and dog-grate interiors. We observe Mr. Godwin secured First Order of Merit, Adelaide Jubilee Exhibition; Gold Medal, Sydney, 1888; Highest Award, Ceramic Art, Melbourne, 1888-9. Among the secular buildings in which Mr. Godwin's tiles have been used we may mention the following:—Windsor Castle, Eaton Hall (seat of the Duke of Westminster), Manchester Town Hall, Hove Town



Hall; Albert Institute, Dundee; Assize Courts, Manchester; Bedford Town Hall; Baliol College, Oxford; Cardiff Castle; Kildangan Mansion, Ireland; and Wigan Hall, Lancashire. The productions of this firm may be seen in Tewkesbury Abbey; the Priory, Great Malvern; Bolton Abbey, Yorks; Catholic Apostolic Church, Edinburgh; Crimean Memorial Church, Constantinople; Hughenden Church (historical as the home church of the late Lord Beaconsfield), Dorchester Abbey, Ewenny Abbey, and Military College, Oxford; whilst in town, among other churches, his work may be seen at the following:—St. Mary Magdalene, Paddington; St. John the Divine, Kennington; St. Mary Abbots, Kensington; St. Paul's Church, Paddington, and St. John's Church, Chelsea. Mr. Godwin is County Councillor for the Withington division of Herefordshire, and his portrait is the work of Mr. Norman May, of Malvern.

Mr. W. H. Burke's connection with the marble trade commenced in 1860, when he joined his brother-in-law, Mr. Alfred Edwardes, who had been connected with the London Marble Company, which had an early influence in the extension of this particular trade. For many years Messrs. Burke and Co. had a large establishment in Regent-street. Among the earliest works with which Mr. Burke was connected was the Liverpool Exchange, under the late Mr. Thomas Henry Wyatt, where marble work to the extent of several thousand pounds was fixed in the large room of the Exchange; and the doorways in the Royal Academy, under the late Mr. Sydney Smirke, R.A. A very beautiful chimney-piece was designed and carried out by the firm for Mr. Holford, at Dorchester House; the marble work and chimney-pieces at Marton Hall, for the late Mr. H. W. F. Bolckow, M.P., amounting to about £10,000; some very elaborate chimney-pieces, one of which took the prize at the Paris Exhibition, 1867, for Kylemore Castle, Galway, for Mr. Mitchell Henry. The pulpit in Buckingham Palace Chapel, under the late Sir James Pennethorne, for H.M. the Queen; large works at Marlborough House, and also at Sandringham, for H.R.H. the Prince of Wales; the grand hall and staircase at the Goldsmiths' Hall; the hall, staircase, and grand saloon at the Grand Hotel, Charing Cross; the marble decoration at the Holborn Restaurant, which constitutes the most extensive undertaking in this material in modern times; marble balustrade and staircase, and marble mosaic pavements at Clumber, for the Duke of Newcastle, under Mr. Charles Barry; the entrance hall, grand staircase, and grand salle at the Hotel Métropole; the marble and mosaic work at the Junior Carlton Club, under Mr. J. Macvicar Anderson; the Constitutional and the Badminton Clubs, under Mr. R. W. Edis, F.S.A.; the marble and mosaic work at St. Marylebone Church, under Mr. Thomas Harris. The revival of marble mosaic for pavements and the introduction of marble mosaic for wall decorations in this country is largely due to Mr. Burke. In the early part of 1870 Mr. Burke engaged the services of a large staff of Italian workmen, and has since then carried out some of the largest marble mosaic works on record, among which may be specified the Manchester Town-hall, the Natural History Museum, Eaton Hall (for the Duke of Westminster), all under Mr. Alfred Waterhouse, R.A. The firm has just carried out, under the same architect, in the chapel of Eaton Hall, twenty-six pictures in marble mosaic, representing figure subjects from the Old Testament, from the cartoons designed by Mr. Frederic Shields; the mosaic pictures both at the Guards' Chapel, Wellington Barracks, and at Chester Cathedral, in each case from cartoons designed by Messrs. Clayton and Bell; the marble mosaic pavement in Cork Cathedral, under the late Mr. W. Burges, A.R.A.; the pavement in the chancel and the dado round the church of St. Mary, Portsea, under Sir A. W. Blomfield, A.R.A.; and, under the same architect, the pavement in the chancel and chapel of St. George's Church, Cannes (the latter was to the memory of the late Duke of Albany). In 1875 the firm restored and added to a fine old mosaic pavement at Clarence House, for H.R.H. the Duke of Edinburgh. The photograph of Mr. Burke is by Messrs. Fradelle and Young, of Regent-street.

Mr. Thomas Peard is the senior active partner in the firm of Hart, Son, Peard, and Co., London and Birmingham, the other active members being Mr. Frederick Jackson and Mr. C. J. Hart. The

subject of this notice is a native of a rural parish in North Devon, whose education was first at the village school, and afterwards at the "Bridge" Commercial School, Bideford. At the early age of 13 he became an indoor apprentice to an ironmonger of that town, who was not only a shopkeeper, but also an employer of workmen in several trades—smiths, brass and iron founders, plumbers, tinplate workers, and braziers. Of a mechanical and constructive turn of mind, he availed himself of every opportunity he could take during the seven years of knowing "how the thing was done," and for which he got more serious scoldings than from a widowed mother when caught at the village smithy, where he first acquired a love of the blacksmith's art, and from which the choice of a trade resulted. Having made himself tolerably proficient as an ironmonger, he received, before the completion of his term, an invitation from his master to remain with him, and almost simultaneously, through a mutual friend, an offer from the late Mr. Charles Hart of a situation in the establishment of Hart and Son, and the autumn of 1853 found him behind the counter in Wych-street, where his acquaintance with manufacturing was soon utilised in the production of Mediaeval art metal-work upon which the firm was just entering, in addition to the specialties for which it had a wide reputation. Here he remained for six years, compiling catalogues, organising the "Gothic" department, and otherwise assisting in the development of the manufacturing branch of the business. Having learnt something of elementary drawing at school, he now studied designing, in which from previous knowledge of the metal-worker's arts and construction, his success in that line was greatly facilitated. A disagreement caused him to retire from the employ of Hart and Sons, and in 1860 he commenced business in High Holborn, where he was shortly afterwards joined in partnership by Mr. Fredk. Jackson. Here they together worked for, and substantially secured the recognition so essential to a new departure, issued catalogues of their manufactures, with the outlines of the principle on which they were produced, set forth in clear terms and well illustrated by examples. Eventually the two firms, Hart and Son, and Peard and Jackson, were amalgamated, and became Hart, Son, Peard and Co., Mr. Hart giving special attention to the works recently established at Birmingham (where he resided); Mr. Peard, the general oversight of the London establishments, and Mr. Jackson that of finance. Mr. Peard delivered in March, 1873, two of the Saturday afternoon lectures to the students of the Architectural Museum on "The Production of Artistic Ironwork," reported fully in this Journal, and all the firm's catalogues have been the work of his hands. All the most important works of the firm have been executed under his supervision, as well as the erection of their extensive factories in Drury-lane, as well as the adaptation and arrangement of the Regent-street galleries. The firm has a large combination of manufacturing departments. The great variety of their work precludes any detailed notice; but a few of the more important may be mentioned: the brass work in the chancel and Lady-chapel, Exeter Cathedral, under the late Sir Gilbert Scott; the iron-work and gas-fittings of Manchester Town Hall; of St. Paul's School; and the great gates and screen facing the entrance to the Natural History Museum, under Mr. Alfred Waterhouse, R.A.; the lighting, screens, lecterns, and furniture of numerous churches, under Sir Arthur Blomfield, A.R.A.; also similar works under the late Mr. Wm. Burges, A.R.A.; Messrs. Paley and Austin; James Brooks; Goldie, Child, and Goldie, &c.; and the extensive wrought-iron balcony framing, with its elaborately filled foliation and scroll work in cantilevers (the largest work of the kind), for the examination hall of the University of Bombay. Mr. Peard's portrait was produced specially for our series by Mr. T. Fall, of Baker-street, W.

The firm of Messrs. Gillow, of which Mr. Samuel J. Harris is a partner, was established at Lancaster, then the only port in the North, as far back as the 17th century, and possesses an unbroken record of books from the year 1730; those preceding this date were unfortunately destroyed. In the early portion of the career of this interesting house Messrs. Gillow exported furniture largely to the West Indies, receiving the value in produce. In the middle of the last century the firm opened a branch in London, and the transactions in reference to this

extension of their business in their Lancaster books are referred to under the heading of "Adventure to London." It will thus be seen that the Gillows were co-temporary with the Brothers Adam, Chippendale, and Sheraton. Although a house of great antiquity, Messrs. Gillow keep abreast of the times, thus forming an interesting link between the furniture of the past and the present. They are large builders, and employ a vast number of hands. Their decorative designs and works of furnishing are too numerous to mention. Mr. Harris's portrait was produced by Mr. Bassano, of Bond-street.

Mr. Walter Macfarlane was born in Glasgow in 1853, and succeeded to the headship of Messrs. Walter Macfarlane and Co. on the death of his late uncle, Walter Macfarlane, who was the founder of the business, and who died in 1885. Educated in Glasgow, and going through the usual curriculum of the University here, he entered the works about 19 years ago, and became partner in 1880. The works of the firm embrace the largest area of any in the same way of business in or around Glasgow, covering thirteen acres. Their castings are world-wide known, and have secured the highest awards wherever exhibited as being "sharp, clean, and full of character." Their works are surrounded by the suburb of Possil Park, which has sprung up entirely within the last fifteen years. Possil Park has now a population of nearly 7,000 inhabitants; when the firm secured the ground there was a population of ten persons.

The late Mr. James Holroyd, who died only a week or so since, was managing director of the Burmantofts Works, recently incorporated with the Leeds Fireclay Co., Limited. Under Mr. Holroyd's care the extensive works at Burmantofts have developed and established their reputation for terracotta, faience, pottery, glazed bricks, &c. Amongst the numerous works carried out by him may be mentioned the National Liberal Club, London—interior decoration in tiles and faience; National Provincial Bank, Manchester—interior decoration in tiles and faience; Free Library, Edinburgh—constructional faience; Café Monico, London—terracotta; Piccadilly House, London—terracotta; Church-street Premises, Liverpool—terracotta and faience; Royal Infirmary, Liverpool—glazed bricks and faience; Liverpool University, Liverpool—glazed bricks; Menstone Asylum, Menstone—glazed bricks and faience. Mr. Holroyd's portrait, taken for our series, was done by Messrs. Donald and MacIver, of Leeds.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

MOULDING AND PRESSING SAND-FACED BRICKS, ETC.

IN districts where hand-moulding is pursued or in plastic machine moulding, where it is desired to have a very clean and well finished brick, after the brick is moulded it is pressed either in a hand or steam-power press. Various attempts have been made from time to time to mould and press at the same time the sand-faced bricks made in the London district by mechanical means. No difficulty, of course, exists in pressing the brick by a separate machine after it has been moulded by hand; but owing to the mixed nature of the materials, the combination of the two operations of moulding and pressing in the same machine has proved itself not by any means an easy problem to solve; consequently, many failures have occurred—variation in size, sand flaws, and other imperfections resulting. This doubtless arose in some cases from the very divergent nature of the clays and materials, and in the composition of the bricks, rendering it difficult to fill the dies properly, and to regulate the amount of pressure most desirable.

We illustrate herewith, Fig. 17, a steam-power machine for moulding and pressing sand faced bricks, lately introduced by Mr. W. Johnson, Castleton Foundry, Leeds, who has for some time devoted considerable attention to machinery designed to improve the quality of sand-faced bricks, such as those made in the London fields. The circulating table shown in sketch is fitted with five moulds, and is arranged with an intermittent motion, which is impelled by a pawl and ratchet disc worked from the main shaft by a connecting-rod. These moulds consist of loose slides hung by hinges. The brick is fed



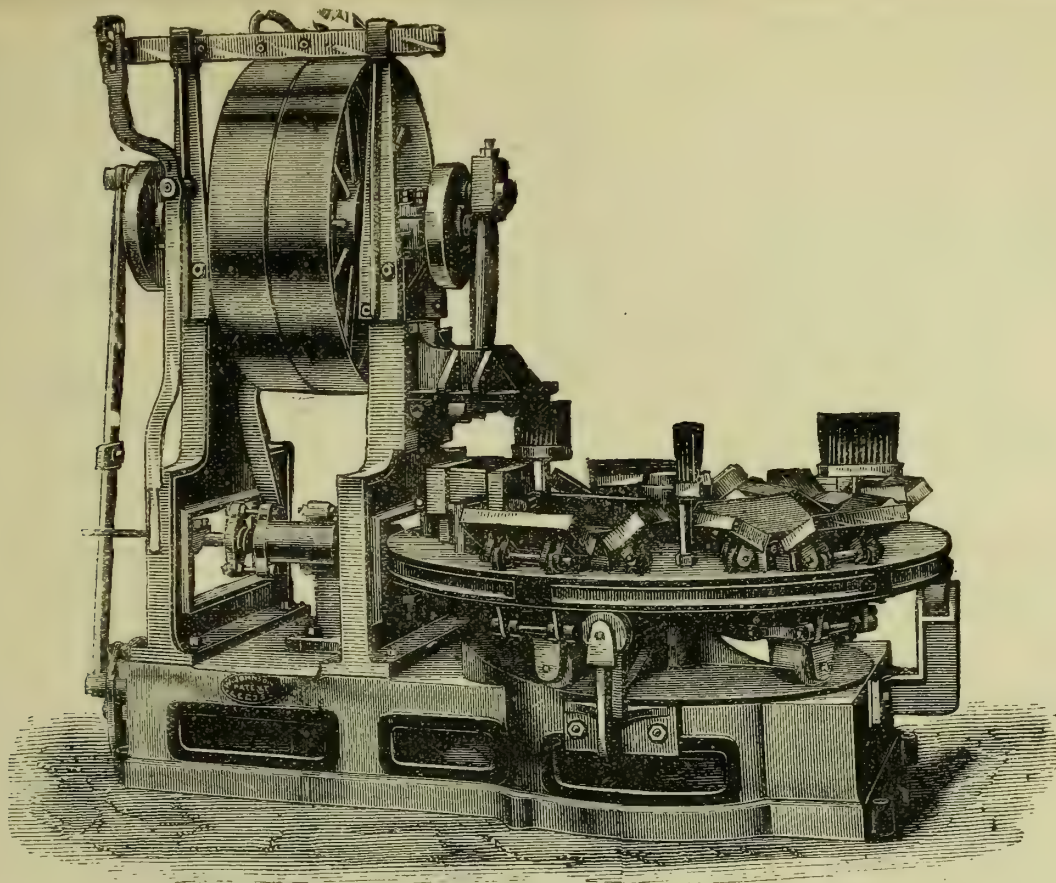


FIG. 17.

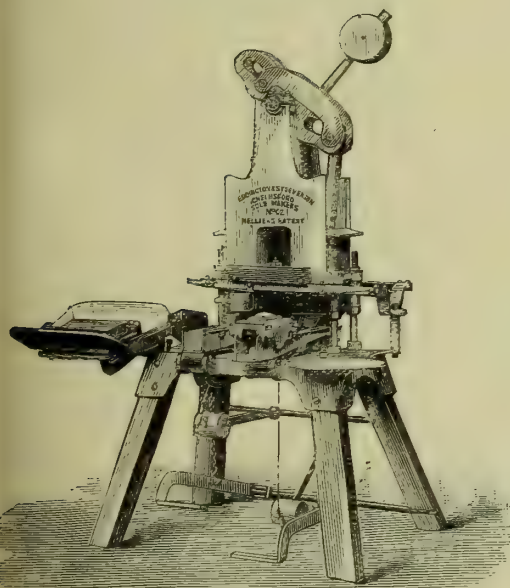


FIG. 18.

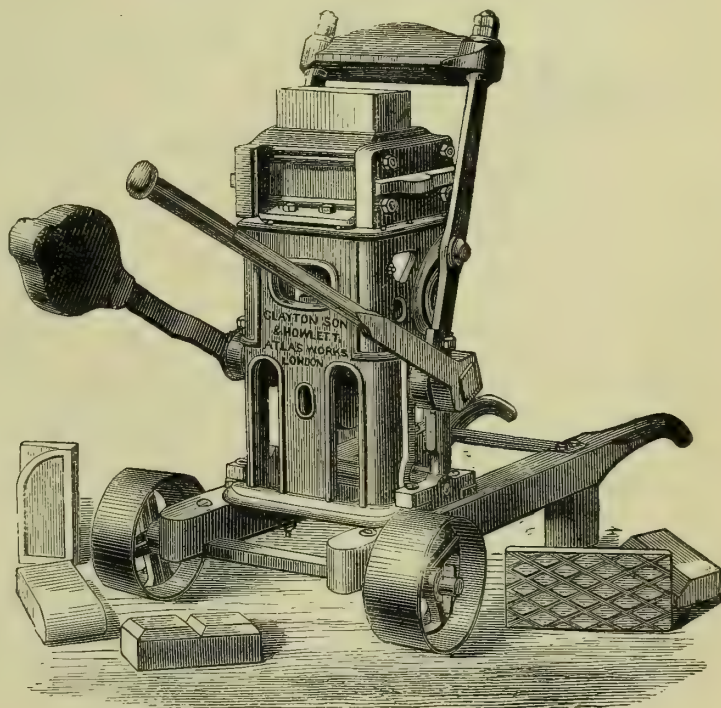


FIG. 19.

on to an iron pallet while the table is stationary. With the slow movement of the table, which immediately begins, the loose sides of the mould gradually close tight. This motion is obtained from a runner with which they are connected travelling along an inclined plane. The mould is brought into position, and the brick is pressed by a descending presser worked in a slide actuated from a rotating disc-plate by a connecting-rod and pin. The brick being pressed, the mould table again begins to move, and the runner descending, the plane actuates the sides of the mould, and causes it to open on all sides. Thus the pressed brick can be removed, and the mould cleaned for the receipt of another brick. It is stated that the brick all over its surfaces is thoroughly imbedded in the sand, and that it is

finished in perfect form. One press will turn out 10,000 bricks per day. It is desirable that the bricks to be pressed be made as stiff as possible, so that they can be readily handled without injuring their form. We have seen one of these machines working, with excellent results, and Mr. Johnson has undoubtedly made a step forward in its construction, and has apparently successfully overcome no inconsiderable difficulties.

In the manufacture of hand-made bricks with a sand face, the great difficulty has been to secure a good face without sand flaws, and several machines designed to obviate these defects have latterly been introduced. We illustrate a hand-power moulding machine (Hellier's patent), Fig. 18, manufactured by Messrs. Eddington and Stevenson, of Chelmsford. In this machine the

clay is placed alternately in a chamber on each side of the column, and pressed through a smaller die into the mould. It is then cut off with a wire, struck off, and delivered on the pallet boards. An ingenious opening mould is used with this machine, which we have already noticed.

Hand or machine-moulded bricks are greatly improved in appearance and selling price by being subsequently pressed in a separate machine, and where the bricks are required for facing and similar purposes this process is largely pursued. Where large quantities of bricks are required to be pressed, engines are sometimes fitted to, and combined with, the press.

Fig. 19 represents a hand-power portable brick-pressing machine, from the designs of Messrs. Clayton, Howlett, and Venables, Harrow-



road, London. It is of simple construction, and is designed to press the bricks after they have been moulded, is worked by means of a hand-lever, which closes the moulding-box and presses the brick, and the reverse motion of the lever opens the box and delivers the brick. It is fitted with a self-lubricating piston, which presses the brick and at the same time prevents it adhering to the mould. With a single-chamber machine, worked by a man and a boy, 5,000 bricks may be pressed per day, and their appearance and quality are thereby greatly improved. Paving tiles can also be pressed in a like way, and, by the addition of adjustable pistons to the chamber of the press, bricks and tiles of various thicknesses and forms may be readily treated. Altogether, it is a very useful machine.

#### CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—V.

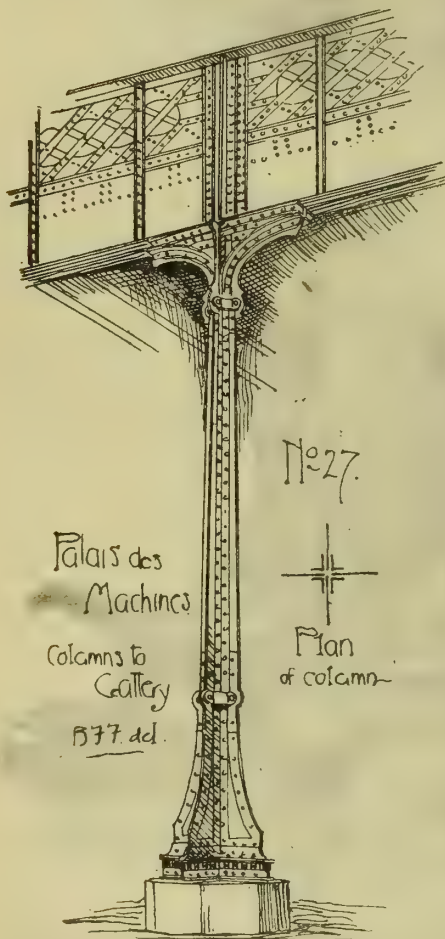
By BANISTER FLETCHER, JUN., A.R.I.B.A.

INTERIOR AND EXTERIOR DECORATION.

THE painting of the great trusses and roof generally is performed in a dark yellow, mixed in the manner following:—

White lead..	2 kilogrammes or 4·40lb.	avordupois
Red ochre ..	45	" 99·20 "
Yellow ochre	155	" 341·71 "
Oil .....	800	" 1763·68 "
Turpentine..	400	" 881·84 "

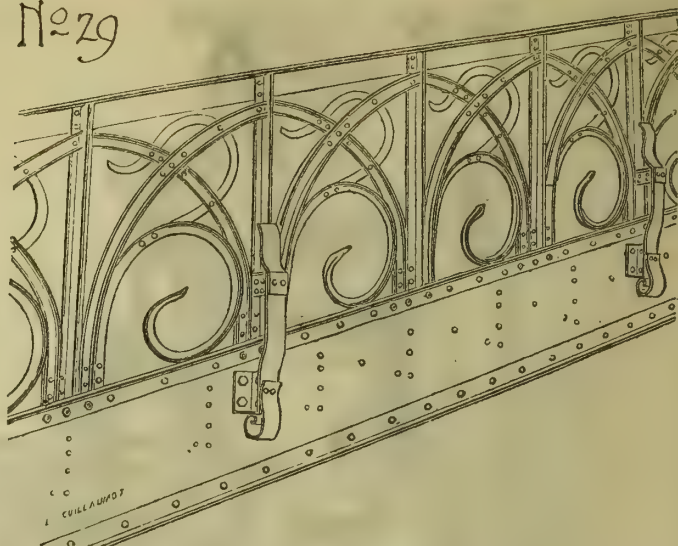
It may be interesting to state that M. Alphand wished the great trusses to be painted blue; but



M. Dutert wished it to be dark yellow, in order, as he thought, not to destroy the constructive lines, and M. Dutert's advice was carried out.

Each of the bays to the main roof at its lower extremity is filled with painted canvas, with the arms of the different countries exhibiting, and over the "arms" is a "motif" of the principal products of the same countries. Each main bay is divided into four panels by the intermediate iron rafters running down the whole length of the bay. The canvases, as explained above, are nailed and glued to the wood boarding behind, and form a most effective decoration. In the end and central bays these canvases are enriched by reliefs in "staff."

No. 29



The Exterior Decoration.—The side façades at the bottom have a filling of glazed bricks worked in patterns of red and white. These bricks are made by the heating and compression at high temperature of sands used in the manufacture of glass.

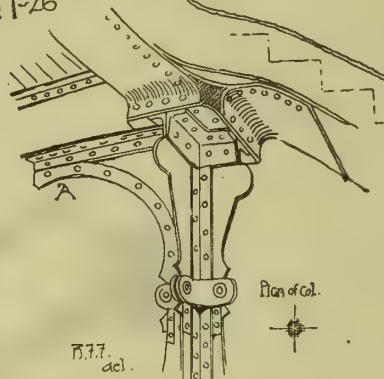
General Remarks.—The "Galerie des Machines" has been awarded the prize of 100,000fr. by the press committee, given for the most useful work; but one is inclined to think it combines utility with beauty and architectural

we notice especially its characteristics, which at those mentioned above, of the treatment of ordinary sections of iron; for instance, the caps Nos. 26 and 27, are constructed entirely on the principle. One sees no attempted imitation of the Grecian Doric, no architrave, frieze, and cornice carefully worked out in iron to represent stone, but failing miserably in its object; none of the iron Corinthian columns which one meets so often.

The architectural world has been waiting for years for an application of iron, as this building shows; a building which will have infinitely more power in influencing architects and the treatment of iron construction than all the lectures or papers on the subject that were ever written. An opportunity for its introduction on so large a scale was probably unexpected; but the most that we can say for M. Dutert is, that when the opportunity presented itself, he was, like Wren, in an entirely different path, found equal to the occasion.

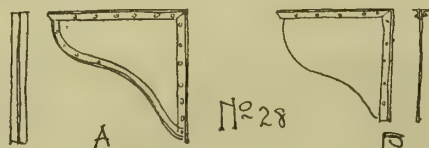
The galleries in the entrance vestibule are supported on columns of simple sheet and angle

No. 26 Palais des Machines

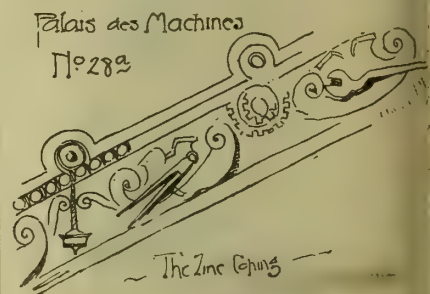


Sketch of cap or column to staircase leading to gallery in Machinery Hall. The caps in this vestibule when they have to carry a girder, run longitudinally along the girder, one side as at A: Irons about 1/4" thick.

grandeur. It is a great thing that an architect should have conceived a building of this sort. It is not generally so. The Crystal Palace, which formed the English Exhibition of 1851, was not designed by an architect, but by a man who was practically a landscape gardener, and that such a bold step should be taken by an



architect is a matter of congratulation to architects all over the world. Iron has been the architect's watchword, and M. Dutert has attempted as much as possible to take iron, ordinary sections of iron, or *fer courant*, and by using the iron in artistic shapes, Nos. 26 and 27, and showing the construction to produce a building which shall be as characteristic of the material in which it is built as a building in any other building material, be it in stone, wood, brick, or terracotta. It is in the inside of this hall that



iron, with its projecting plate at the top, are bound together by plate-irons by the aid of rivets (No. 27), with the base spreading out as much to strengthen it as to satisfy the eye. The treatment is something so new, and yet so simple, that one is inclined to think why some architects has not tried it before.

The balustrading to the side galleries is composed of an open and close part, the lower part of which is sheet-iron, the upper part of lattice work of the design shown, and it is by combinations such as these that M. Dutert has sought to add effect to the decorative duties of the ironwork.

One comes across two different forms of corner-irons in the "Palais," the one formed of angle-irons and sheet-iron, presenting a very bold appearance (this type is used to carry the gutters of the nave, as at A); the other description, at B, of angle-irons at the back and top, and only sheet-iron forming the bracket, may be mentioned as different modes of obtaining effect the last-named (B) having only to carry the light ornamental zinc coping to the gable (No. 28A).

The brackets formed in U-irons, ornamentally, at the foot of the staircase, to the electric lighters, are also noticeable as having nothing that is not supplied by the ordinary plant of an iron factory. In the recesses of the U-irons are the electric wires; these being thus easily inspected, besides being not readily visible. T



pushions at the bottom of the great trusses are the only cast iron, with the one or two small exceptions named, used in the building.

In conclusion, I have to acknowledge my indebtedness to M. Dutert for much of the information contained in this article, and also M. Eugene Hénard, architecte diplômé par le Gouvernement, who, being M. Dutert's chief

Palais des Machines  
Balustrade of stamped sheet-iron  
à angle-irons



inspector, has written a most exhaustive article on the "Palais des Machines" in *l'Architecture*, to which article, which M. Dutert, with very great kindness, had bound up for me and presented to me, much of the information given herein was obtained, as also some of the constructive sketches.

#### CHIPS.

St. Michael's Church, Workington, which was destroyed by fire in January, 1887, and which has been rebuilt, was opened on Thursday, the 24th ult., by the Bishop of Carlisle. The work of rebuilding was commenced in August, 1888, the contractors being Messrs. Lister and McCartney, of Cockermouth and Workington, and the architects Mr. Bassett Smith, of London, and Mr. James Howes, of Workington. The cost has been upwards of £7,000.

On Tuesday week a special service was held in St. Mary's Church, High Crompton, near Manchester, for the purpose of unveiling the Clegg memorial marble pulpit, which has cost upwards of £800. There are four front panels, with subjects in white marble representing the birth of our Lord, blessing little children, disputing with the doctors, and the presentation in the Temple; and between each of these stands a figure of one of the Evangelists, also in white marble. The pulpit was designed and executed by Mr. William Forsyth, sculptor, of Worcester.

Memorial stones were laid on Saturday, the 26th ult., of the new Wesleyan chapel at Amble, Northumberland, which is being erected from the designs of Mr. George Reavell, jun., of Alnwick.

At Huntsmoor Park, Iver, near West Drayton, Messrs. C. Isler and Co., of London, have recently completed an artesian bored tube well 200ft. deep in just over four weeks. After passing through the various beds of clay and sand which form part of the London basin, as soon as the chalk was reached the water rose 14ft. above the surface, and at 5ft. the overflow was at the rate of 200,000 gallons per day. The water is very pure.

Brunswick Chapel, Leek, Staffs, is closed for alterations and decoration. The improvements are being carried out by Messrs. Matthews, to the designs and under the superintendence of Messrs. W. Sugden and Son, of Leek. The galleries are being lowered, the old-fashioned pulpit is being remodelled into a rostrum, a panelled wood ceiling is being formed over the orchestra, decorative wood-work added to the main roof and gallery fronts, and the heating and ventilating arrangements concentrated.

The foundation stone of a National School was laid at Terrington, near York, on the 24th ult., by the Dean of York. The school will accommodate 100 children at a cost of £600, but, in addition to this, the stone and cartage have been given, as well as the site. Messrs. Monson and Worsley, of York, are the architects, and Mr. H. Stevens, of Burythorpe, is the contractor.

## Building Intelligence.

CLAUGHTON.—The foundation-stone of the new church of St. Mark, Cloughton, was laid on Friday by the Bishop of Chester. The church will consist of a nave with north and south aisles, morning chapel on the south, and parish room, priest's and choir vestries on the north side. The style is Late Pointed. The walls are built with white Storeton stone, with dressings of red Run-corn stone. The church will seat 700 persons. The contractor is Mr. W. H. Forde, Cloughton-road, Birkenhead, and the architects Mr. C. W. Harvey, in conjunction with Messrs. Pennington and Bridgen, Liverpool. The cost is about £7,000.

CONGLETON.—The improvements and renovations at the Town Hall of Congleton, built from the designs of the late E. W. Godwin, are now completed, and the building was reopened on Wednesday week. The promenade galleries have been lowered 3ft. or 4ft., and now rest on steel cantilevers cased with wood, so that all danger from decay is removed. An end gallery at the same level, containing six seats in depth, has also been introduced. By the improvement of the galleries, sitting accommodation has been provided for 210 persons. The decayed and noisy wood floor of the great hall has been removed, and substituted by an oak block floor on a concrete bed, by Mr. R. Lowe. The entrance-hall and vestibule have been rearranged, a glazed screen and swing doors have been introduced in the vestibule, and additional and improved outlets have been provided. The building has been reheated throughout by low-pressure hot-water pipes and radiators. The drainage has been amended, some main walls have been under-built, and the great hall has been re-decorated. The works have been carried out under the direction of Messrs. W. Sugden and Son, of Leek, architects, whose plans were successful in the original competition for the heating and ventilating section of the works. Mr. Thos. Brown and Mr. Kennerley were the contractors for the builder's and decorator's work.

FALMOUTH.—The new church of All Saints', at the top of Killigrew-road, was consecrated last week. The architect is Mr. J. D. Sedding. The church is 30ft. wide from end to end, with wide arches to the arcades, the aisles being narrow. The plan consists of a parallelogram, 50ft. by about 120ft., with shallow transepts. On the north and south sides of sanctuary are the vestries for clergy and choir, which are connected by an ambulatory behind the altar. The north transept is to be used for the morning chapel. A baptistry is at the west end of the nave, and above the north transept rises an octagonal bell turret. The aisles are 35ft. high to the wall plate, and the nave is about 60ft. to the ridge. The floor of nave is of wood blocks laid on concrete, and the chancel and sacrum steps are of Hopton Wood stone, and the chancel is paved with coloured marbles. The screen wall surrounding the chancel is of Hopton stone with horizontal courses of blue Pennant. The church will accommodate nearly 800 people. The contract price of the building was £4,451; but there have been many extras, and special gifts have been received to the value of about £500. The contractor was Mr. J. S. Kelway, of Falmouth; clerk of works, Mr. W. H. Dunstan. The choir stalls are the work of Messrs. Trask, of Norton, Ilminster.

KNOTTY ASH.—The new chancel of the Church of St. John the Evangelist, Knotty Ash, was consecrated by Bishop Ryle on Saturday. During the past five years the nave has been rearranged, with new seating, flooring, and warming apparatus. The additions now completed consist of a chancel, 29ft. long and the full width of the old nave, and a chancel aisle to accommodate sixty worshippers. Advantage has been taken of the eastward fall of the ground to construct under these the clergy and choir vestries, an additional vestry being placed on the ground level. The exterior is faced with Woolton stone. The total cost is about £2,000. The contractors for the work generally, including the choir-stalls, were Messrs. Brown and Backhouse, of Liverpool, the architects being Messrs. Aldridge and Deacon, also of that city. The chancel fittings are of wainscot oak. The reredos and screens are of oak, executed by Mr. Harry Hems, of Exeter, who also carved the pulpit presented to the church

at the time of the reseating of nave, and likewise designed by Messrs. Aldridge and Deacon. The reredos extends the full width of the east end, and, like the other fittings, is in the 14th-century style of Gothic art. The stained-glass east window, representing the Descent of the Holy Spirit, was designed by Mr. H. W. Lonsdale, of London.

NEW KILPATRICK, GLASGOW.—Archbishop Eyre laid, last week, the memorial-stone of an edifice at New Kilpatrick, intended as a college for the education in philosophy and theology of advanced students who are being trained for the ministry. The building is in the Domestic Gothic style of the 15th century, and is designed to accommodate fifty students, each of whom will have a separate room. The length of the main building is 176ft. by 54ft. broad. For both dressings and facings Dumfries red stone is employed, and the roof will be covered with green slates. A chapel and other buildings are provided for in the plans, and will be added in due course. The architects are Messrs. Pugin and Pugin, Westminster, and the work is being carried out by Mr. John Devlin, Glasgow.

## Engineering Notes.

EDINBURGH.—Extensive alterations and improvements are about to be carried out at the Caledonian Railway Company's Princes-street Station. Messrs. Cunningham, Blyth, and Westwood, C.E., have completed plans for the work necessitated by the rearrangement of the lines at the terminus and the rebuilding of the station. The new station will be between 700ft. and 800ft. long, with a clear span of 180ft., the roof being of iron girders and glass and slate work. The outside walls will be of ornamental masonry. It is intended to erect buildings facing Rutland-street and Lothian-road, to be used respectively as offices and waiting-rooms, but the plans for these, which are in the hands of Messrs. Kinnear and Peddie, architects, are not yet completed. The new station will have six platforms in lieu of the existing three platforms. A large portion of the present principal entrance for passengers and vehicles will be taken up by the new station, the frontage of which will be brought forward to Princes-street. The work has been planned so that, in the event of powers being granted to proceed with an underground railway scheme, the new station and that for the underground railway may be worked as one, although their levels would be different.

GLENFARG RAILWAY, N.B.—This undertaking, which has been 2½ years in course of construction, is now practically completed. It is only ten miles long, but has necessitated a great deal of heavy cutting. At the head of the Glen 60,000 yards of excavation had to be undertaken in order to divert the course of the Farg river, and 30,000 yards of excavation were necessitated by the diversion of the Great North Road. The line runs through a series of deep rock cuttings, the material being hard whinstone. One of them is 60ft. in depth and 50 chains in length. Throughout the whole line 25 rock and earth cuttings have had to be made, and of these 15 lie in the four miles north of Damhead; while about a million cubic yards of rock and earth have been excavated. There are two tunnels, each 500 yards long, and also a couple of viaducts, and three embankments, one of them a mile in length, and containing 280,000 cubic yards of material. The construction of the line also included the building of 22 bridges and numerous culverts. Throughout its whole course from Mawcarse, where it leaves the present line, to Bridge of Earn, where it rejoins that line, a double line of rails has been laid down. The only station on the line, that at Damhead (Glenfarg Station), is approaching completion. Messrs. C. Brand and Son, of Glasgow, have been the contractors.

#### COMPETITIONS.

SALFORD.—The Baths Committee of the Salford Council met on Wednesday week and selected the plans of Messrs. Mangnall and Littlewoods for the new baths, Regent-road, Salford, which were submitted in competition under the nom de plume "The Regent." The same architects were successful in the recent competition for the Broughton Baths, which we illustrated a fortnight since.



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All Situation Advertisements must be prepaid. Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLV., XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—H. Bros. and E.—C. L.—A. R. and Co.—E. B.—E. L. and Co.—A. Co.—M. R. Co.—J. C. E.

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Fiddler," "Menelaus," "North Star," "S. C. D.," "West Anglian," "Bohemian," "Wallaby," "Dot," "Syak," "Renaissance," "Glaucus," "Y" in a circle, "Tyne."

## Correspondence.

## REGISTRATION AND THE R.I.B.A.

To the Editor of the BUILDING NEWS.

SIR,—As one of those who voted in the minority in the poll recently taken by the R.I.B.A. on a resolution dealing with the Registration question, I should like, if you will allow me, to explain my reasons for doing so, especially as I think I may at the same time be expressing the views of others who voted in the same way.

I opposed the resolution in the first place, then, because although strongly in favour of Registration, I can see no valid reason for postponing its consideration.

Secondly, because I believed that, if the resolution were defeated (which was certainly the result I hoped for), it would have been competent to have brought forward the original one, and taken a vote upon it, which would have been most desirable; whereas, as the matter now stands, the question remains practically *in statu quo*, and is likely to remain so for some time at least; for the Institute, having given a definite decision on it, cannot stultify itself by immediately reversing that decision in whatever form it may be put, and I think this is very much to be regretted, for there is no doubt that Registration will have to come sooner or later, and nothing can be gained by putting off its consideration.

The involved nature of the resolution, as you point out in your comments on the poll, no doubt caused much confusion in the minds of members as to what they were really voting on; but I cannot help thinking that if every one had carefully followed the report of the meeting furnished by the Institute, the result would have been very different.—I am, &c., A.R.I.B.A.

## THE INSTITUTE, GREAT SEAL.

SIR,—Your correspondent, Mr. Chas. Guy Hall, of Kensington, is too bad talking about the Diploma being mistaken for a symbolical sign intended for a piccalilli jar. Had this been its object, no doubt some eminent R. A. would have been engaged to design the advertisement, some copies of which would sell as "proofs," if only signed in the proper corner. As it was, I am correct in saying that the Institute's new seal was designed by a Mr. Mitchell, who only charged £25 for his design, and this was paid by the President as a present to the Institute. I do not know what it cost the members to have this precious design cut. The price is not registered, but the design is, I believe, thank Heaven.—I am, &c.,

AN ODD FARTHING.

## PROVISIONS IN QUANTITIES.

SIR,—I am much obliged for the space afforded my last and also for the replies it elicited. Mr. Lovegrove naively remarks: "Does he ('Twice Charged') actually state, and is he prepared to prove, that for the sake of a pound or two commission any respectable surveyor writes down provisional sums or quantities?" He can easily read what I state; but surely the surveyors' motives for inserting these provisions are best known to themselves.

It appears (I do not say that it is so, but it appears at present) that the reasons for inserting these provisional items in quantities are either to guard against any mistakes or else to swell the amount of the commission. If any tangible excuse can be advanced for their insertion, I shall be glad to know it. Perhaps Mr. L., as a surveyor, can enlighten us, and give the desired information.

The provisional items alluded to are what are customarily known as "surveyor's provisions," and there is a vast difference between them and the provisional amounts inserted by the architect, these latter being usually for special works or fittings, and to give him more scope and freedom of choice in the selection of articles, &c., to harmonise with the style of building as the work proceeds; also, an architect's provision for any extras is generally worded thus: "Provide the sum of £— for contingencies or extra works, to be expended as will be directed, or deducted in whole or part as may be required." This is an architect's provision, although the surveyor still obtains 2 per cent. commission for simply writing the amount down, and does not earn the money by actually taking out any quantities of work to the specified value.

"A Disgusted Surveyor's" innocent remark as to few, if any, surveyors getting 2 per cent. commission for taking out quantities is novel, to say the least of it, and quite refreshing. Poor man, how it must startle and astonish him to learn from a "Builder's Manager" that there is actually a surveyor who obtains even 2½ per cent. for this.

My original inquiries were intended simply to ventilate the matter, and if a "D. S." can throw any light on the subject, instead of indulging in vituperation, he may possibly benefit those interested in it.—I am, &c.,

TWICE CHARGED.

SIR,—Emboldened by your kindness in publishing my last letter on the above interesting question, I beg to trouble you with the following few remarks. It seems to me a very simple matter, and is very much confused by "Builder's Manager," from, I imagine, very interested motives. If, instead of expending his genius and time in blackening the character of surveyors, whose lives are made a perfect misery by passing their time in trying to satisfy the rapacious greed of the full-fledged contractor, and at the same time acting honestly by the architect and his client—if, I say, he were to write honestly in answer to "Fairation's" query, I have no doubt this matter could be easily cleared up. I beg to ask when a surveyor states in his quantities that, say, a kitchen range is to cost £20 prime cost, or as some surveyors add, "nett prime cost," and the surveyor then states that the contractor is to add his profit to this sum, can there be any possible question as to what the item means? Does "B. M." think that surveyors are such overgrown schoolgirls as to swallow his argument that the P. C. price means the very fine and large quotation given in the highly-coloured and very artistic catalogues of the stove mer-

chant? If so, instead of his dubbing surveyors knaves for charging 2 per cent. on an omitted item, he should rather call them fools. Of course, "B. M." knows better, perhaps, than I that these coloured catalogues were designed and printed 10 years or so ago, and rather than alter and reprint them every six months or year, the said merchant sends out to the trade interesting little red-ink slips, in which he states that the discount, instead of being 30 per cent. as last issued, will now be perhaps 35 per cent. Of course, I would not hurt "B. M.'s" feelings by supposing for a moment that this is done for the purpose of playing into the hands of the contractor; but the result is that this catalogue is shown by the contractor to the client or his surveyor without the red-ink slip being produced, the said contractor being proportionately disgusted when either or both seem rather to doubt that he is paying the sum shown under the before-mentioned highly-coloured plates, and he will not allow, forsooth, that the figures are not nett prime cost. If I chose to follow "B. M.'s" bad example, I could fairly call this system by a very ugly name. I happen to know a big tradesman who issued a catalogue with "nett" prices under the plates, and, strangely enough, he was at once boycotted by the trade. If you will permit me, I should like to continue this subject.—I am, &c.,

A DISGUSTED SURVEYOR.

## Intercommunication.

## QUESTIONS.

[10273].—**Fire Regulations.**—Is there any Act of Parliament making it imperative that the doors of all public buildings, such as mission-halls, should open outwards in case of panic? Have the Ecclesiastical Commissioners, or any other bodies, any control over the erection of these buildings in the suburbs, if the churches with which they are connected are not under their jurisdiction? Are there any rules, other than the ordinary local by-laws, to which such buildings have to conform?—H. E. W.

[10274].—**Hot-Water Apparatus.**—I wish information regarding the connection of an expansion tank to a hot-water heating apparatus. Should the feed from tank connect with flow or return pipes of boiler? Kindly also give reasons for and against connecting with either pipe. If you could give a diagram along with the answer, it might prove valuable information.—CANADIAN ARCHITECT.

[10275].—**Cleaning Cement.**—The houses here are mostly built of rough stone, coated outside with Lias lime, and painted every few years, which is a heavy expense. To avoid that I had my house covered with Portland cement, which now wants cleaning down. Will some of your numerous readers kindly tell me the best method of doing so?—KINGSWEAR.

## REPLIES.

[10271].—**Nuisance from Saw-Mill.**—If A. could not remove his saw and planing mill, he could see whether the beds of same are sound and solid, and whether the machines are firmly fixed on same.—R. WATSON.

## CHIPS.

A handsome brass eagle lectern has been presented to the parish church of St. Thomas, Birmingham. The work was entrusted to Messrs. Jones and Willis, of Birmingham and London.

The chapel of ease at Washwood Heath, Warwickshire, which has been built by Lord Norton was opened on Saturday. It is a branch of St. Saviour's, Saltley. Accommodation is now provided for 70 people, but the chapel at present consists of what will in time to come be the chance of a commodious church. The interior of the building is of glazed red brick with a plain wood roof. Mr. J. A. Chatwin, of Birmingham, was the architect, and Messrs. Sapote and Sons the builders.

A cross upon the steps and a platform have been erected in Southampton Cemetery as a public memorial to the late Timothy Falvey, a local journalist and orator. The memorial is executed in Sicilian marble, and has been carried out by Messrs. Baker and Grace, of Southampton.

It has been decided to build an entirely new organ in Exeter Cathedral, at a cost of about £3,000. The present instrument since its alteration and supposed amendment has never given satisfaction. The order for the new organ has been given to Messrs. Willis, of London.

The Lancashire County Council have appointed, out of 37 candidates for the post of county medical officer of health, at £800 per annum, Dr. Edward Sergeant, at present medical officer of health for Bolton.

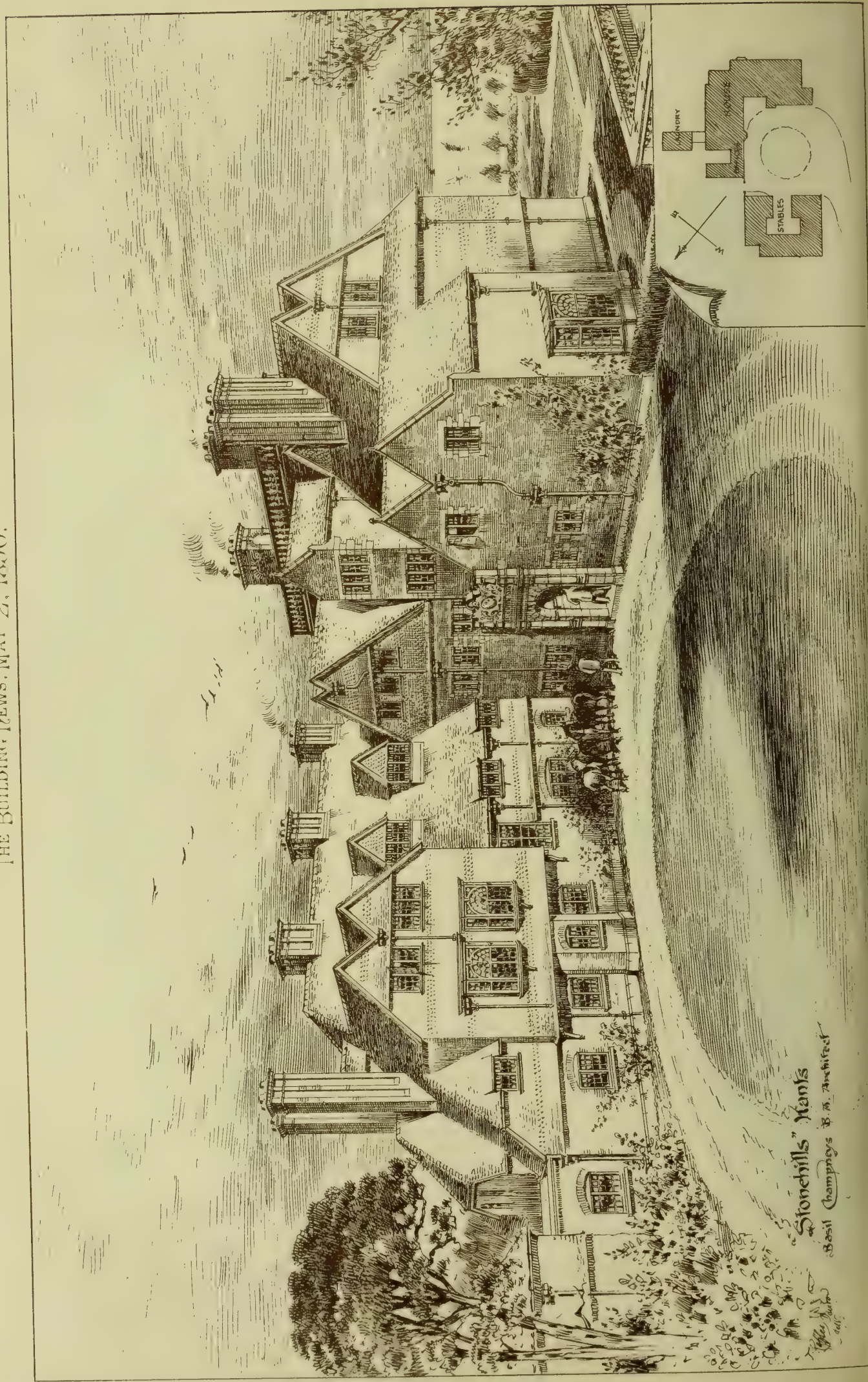
Major Forster, architect and surveyor to the Marquis of Londonderry, at Seaham Harbour, met with a serious accident on Monday week, when he was thrown from a trap and injured.







THE BUILDING PEWS, MAY 2, 1890.

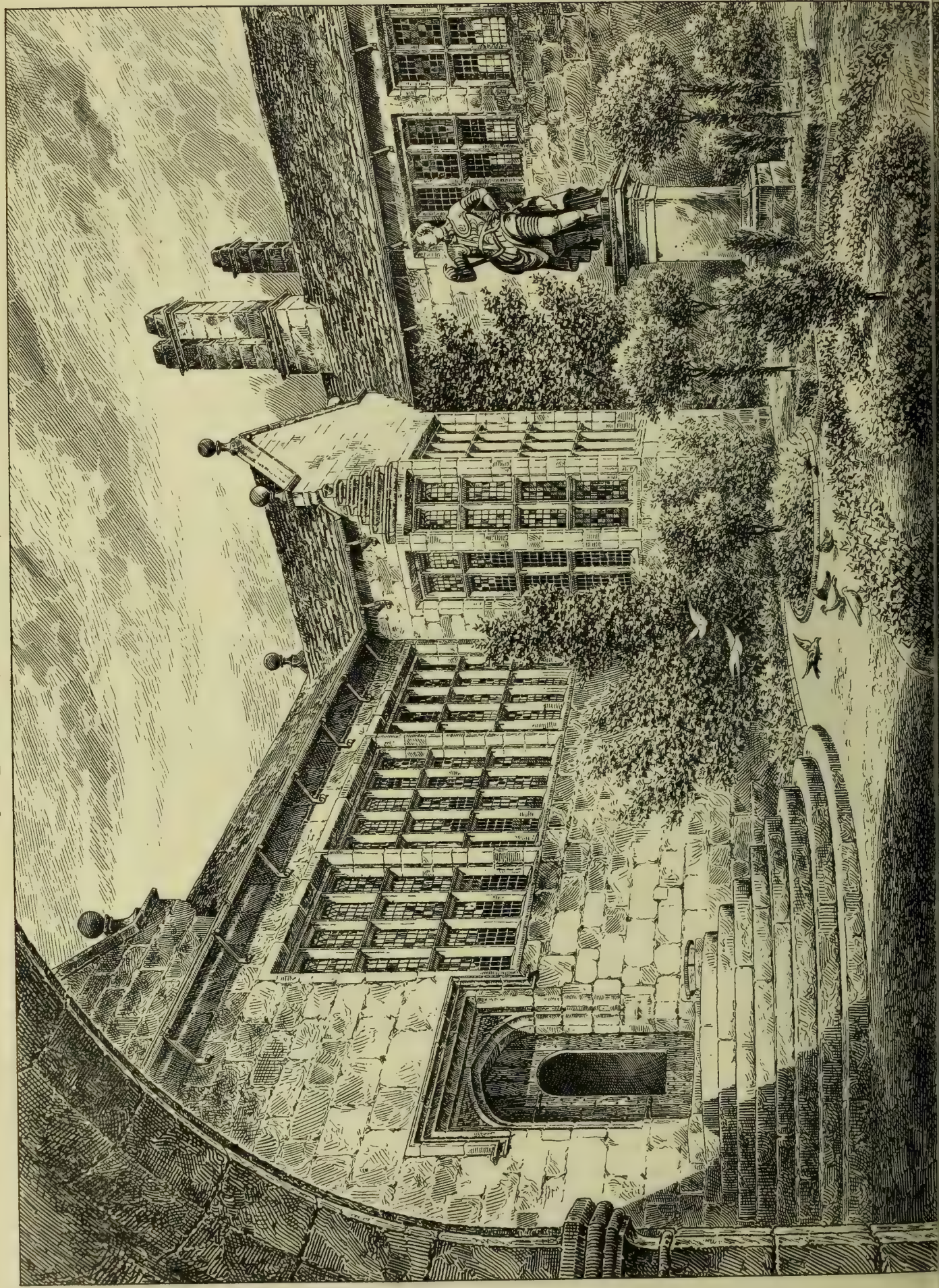




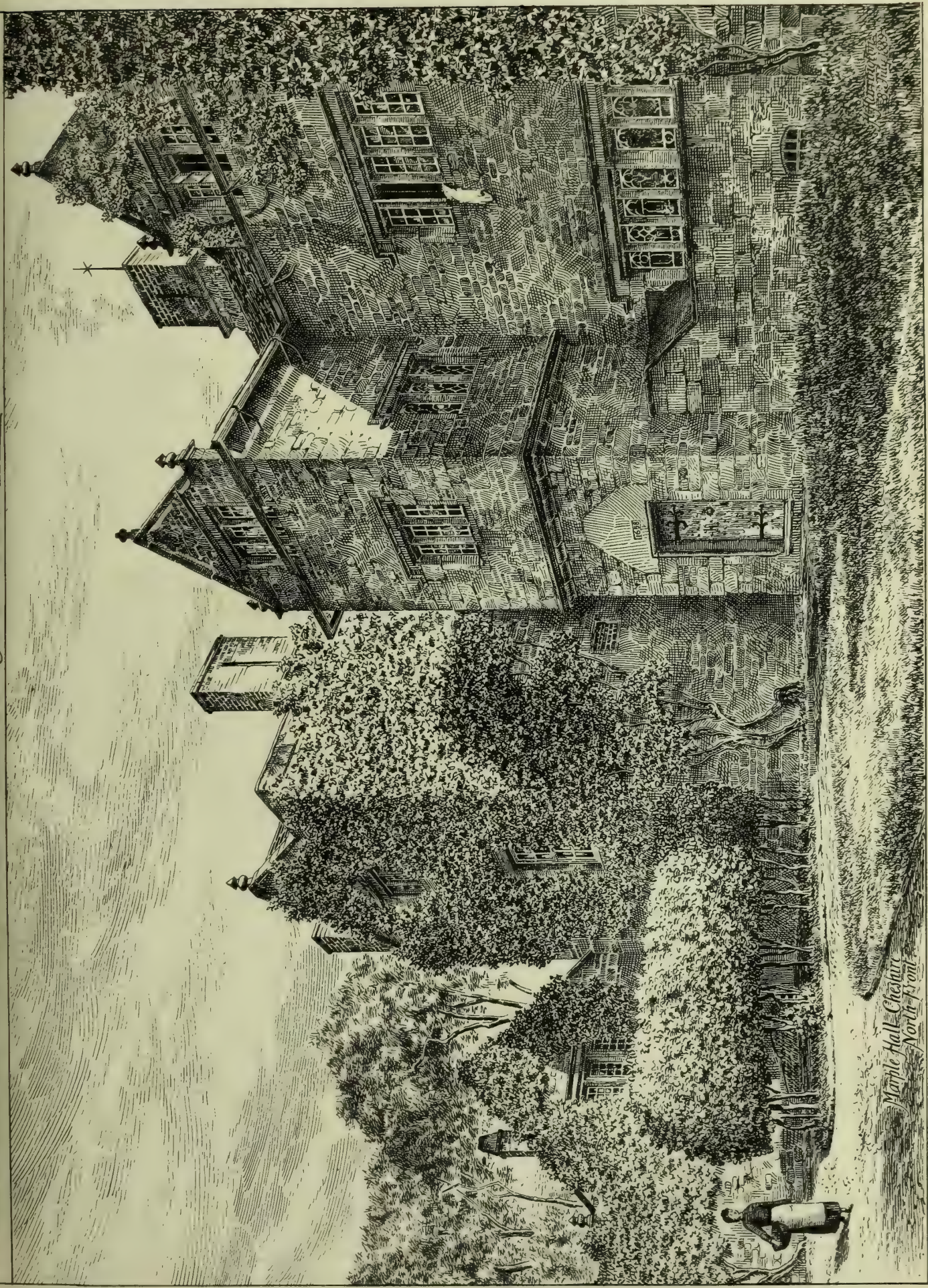




THE BUILDING DEWS, MAY 2, 1890.





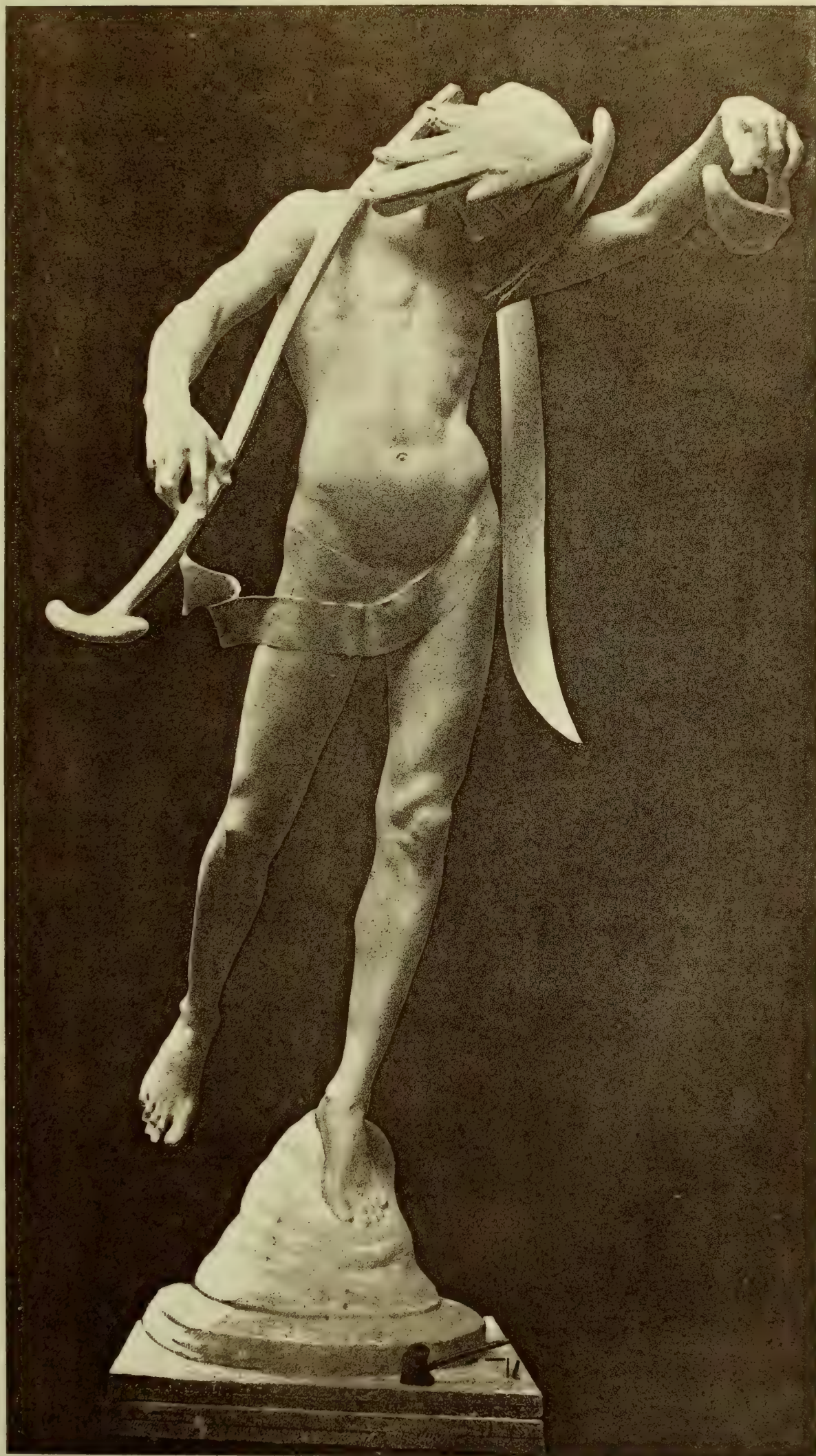


Marple Hall, Cheshire  
North Point









"PHOTO-TINT" by James Akerman 6, Queen Square London W.

L'ANGE DE LA MORT FROM THE SALON PARIS  
BY GEO. FRAMPTON R. ACADEMY GOLD MEDAL STUDENT

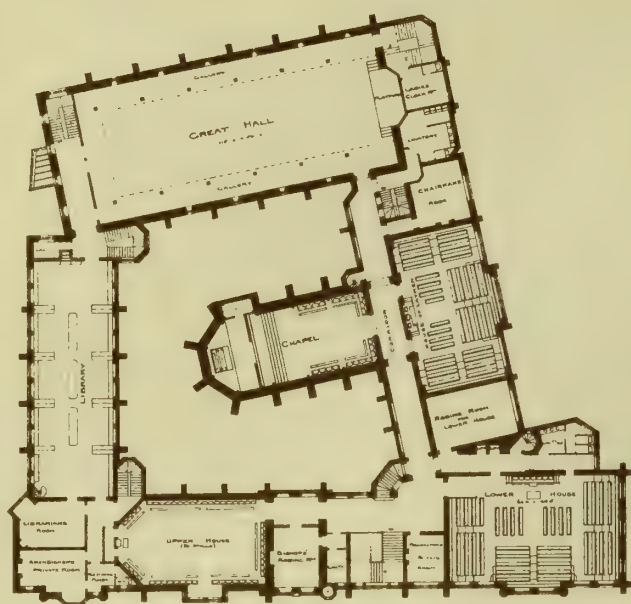




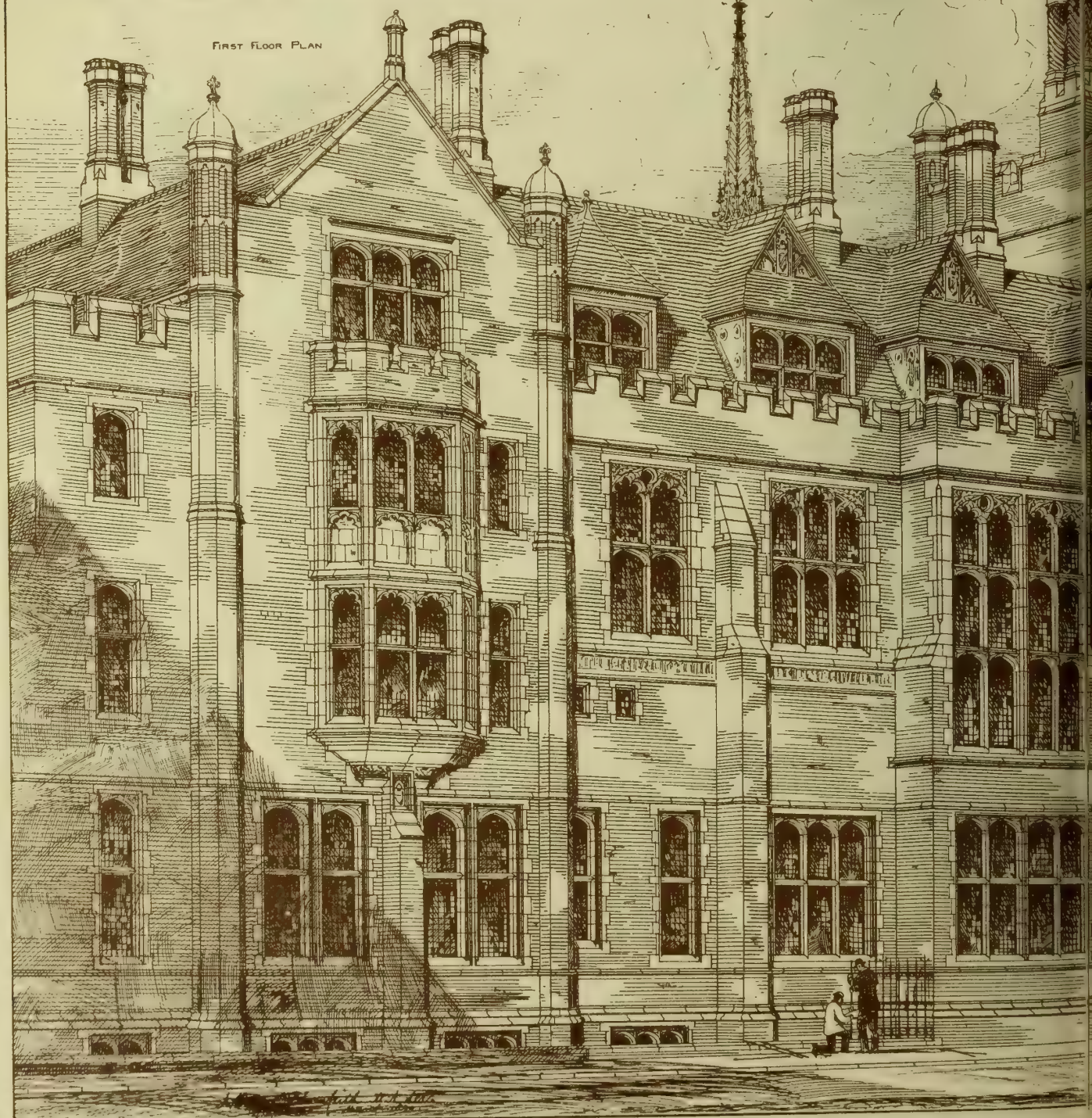








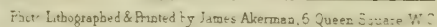
FIRST FLOOR PLAN



THE CHURCH  
VIEW OF FRONT  
WEST



CH HOUSE  
N DEANS YARD  
TEB









# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1844.

FRIDAY, MAY 9, 1890.

## TENANTABLE REPAIR.

ONE of those legal phrases which are continually exposed to misinterpretation and conflicting opinion is that which binds a tenant to deliver up his premises at the expiration of the term "in good tenantable repair." The definitions that have been made by lawyers and surveyors of eminence have been found to admit of more than one meaning according as to which of the contending parties is interested, the landlord or the tenant. Naturally a landlord desires his property to be reinstated in as perfect a manner as possible, and it is equally reasonable to expect that the tenant will endeavour to do as little as possible; and, therefore, as human nature is likely to remain as it has always been in matters of business, there will always exist two meanings to any verbal definition that may be framed. We may, therefore, take it for granted that the term "tenantable repair" will constantly be liable to be construed in two different ways, and that the best thing to do to meet the difficulty is to try and limit the definition in some way—to narrow the compass of its application.

The Court of Appeal has recently heard a case of an appeal from the decision of a Divisional Court which involves an important but ever-recurring question. The facts are given as reported in the *Times*. The action was brought for a breach of a covenant on an agreement to deliver up the house at the expiration of term in good tenantable repair. The official referee before whom the action was tried gave the plaintiff the costs of painting and papering, with new paper similar to the old paper, some of the rooms, and whitewashing some of the ceilings. The Divisional Court held that the tenant, though liable for commissive and permissive waste, is not bound to repair anything worn out by age, and that, therefore, he was not compelled to repaper or repaint where such painting or papering was only decorative. While he must patch as long as patching was reasonable, he is not required to renew, nor need he clean or scour the wall-paper or whitewash the ceilings. The plaintiff appealed, and his counsel submitted the decision of the Court was wrong. "Tenantable repair," it was alleged, meant fit for a tenant, having regard to the state of the premises when the tenancy commenced. If the paper was so worn that it could not be restored, the tenant was bound to repaper. On the other hand, the defendant contended that the tenant was not bound to repaper and repaint decoratively. A question arose as to what decorative painting meant. The Master of the Rolls, referring to the Court in which he was presiding, said it was a disgrace to H.M. Board of Works, but although it might be improved, its state was, nevertheless, consistent with reasonable comfort. The appeal was dismissed. The Master said the Court agreed with the Divisional Court, that the matter must be sent back to the official referee since the principle of his decision was not correct. "Tenantable repair" did not mean that the tenant must repaper the walls with similar paper to that which was upon the walls when the tenancy commenced. If the house was not in tenantable repair when the tenant took it, the authorities showed that if he covenanted to keep and deliver it up in tenantable repair, he must put it into such repair and deliver it up so; but he was not bound to do more, and need not do anything in the nature of decorative

repair." He concurred in the definition of Lord Justice Lopes given of "tenantable repair" in the cases of "Belcher v. Mackintosh," "Moody v. Robinson," "Payne v. Hayne," and others, that "it is such repair as, taking into account the age, the character, and the locality of the house, would make it reasonably fit for the occupation of a reasonable-minded tenant of the class who would be likely to want the house." The Master said the definition was an expansion of those given in the old cases, and it appeared the right principle to apply. "Different degrees of repair would be required, according as the house was a cottage or palace, was situated in Spitalfields or in Grosvenor-square, and was 200 years old or just built." Lord Justice Lopes gave judgment to the same effect.

This decision is not only of interest and instruction to tenants in general as showing the sense in which the Court interprets the meaning of "tenantable repair," but also to landlords who are disposed to think that a tenant ought to leave a house in a better condition than he found it. This opinion has been fostered and encouraged by the common law, which has favoured the landlord by attaching responsibility to occupiers. The "age, character, and locality of the house" are the narrowing circumstances which ought to determine the liability of the tenant; for unless these are taken into consideration, it would not be hard to interpret tenantable repair to mean the general restoration of the premises, and putting them into a better condition than they were before. The liability of a tenant to do repairs is more reasonably made contingent upon his neglect, though it is very easy to say that a tenant has allowed his premises to fall into a state of dilapidation, by omitting to take reasonable precautions and to do timely repairs. "Reasonable wear and tear" is a phrase that has been very differently construed by landlords and tenants. The former frequently does not allow for age, nor for character—two essential conditions of wear and tear. Thus the age of a building determines an ever-increasing liability to fall into ruin; the timber gradually decays, the mortar gets loose and drops, plastering cracks through settlement; the character of the house and its tenant, the use to which it has been put necessarily also make it less easy or practicable to keep the premises in repair as time goes on, and every subsequent tenant ought therefore to have less to do, instead of more, than his predecessors. We are, of course, not speaking of what is called "commissive" waste—that is, voluntary acts of destruction and alteration—nor of "permissive" waste—that caused by the omission of ordinary and necessary repairs; but simply of wear caused from age. A common-sense definition has been made by one authority that "fair wear without accident is not a dilapidation; but wherever there is any degree of accident, it is one." Accident takes place suddenly and perceptibly; wear takes place gradually and insensibly; and a good example is given of the difference between the two kinds of deterioration. The nosing of a step may be quite worn away by wear, and it is no dilapidation; but if it be broken away it is a dilapidation. Neglect or permissive waste may allow a roof to fall, and thereby to cause an internal injury, and this would be held to be a dilapidation. The last is an instance of permissive waste; so any decay arising from neglect of painting is a dilapidation.

The Court of Appeal has confirmed the principle that tenantable repair does not mean a reinstatement of the class and description of materials originally found on the walls, such as the same kind of painting and the same class of paper as that on walls when the tenancy began. The tenant is not bound to do anything in the nature of decorative repair. But what does "decorative

repair" mean? Here it is evident some contention may arise. Where is the line to be drawn between plain and decorative repair? Can repapering, painting, and whitewashing be called decorative? When there are no covenants in the lease, the common covenants to repair, maintain, and uphold are generally implied. Other legal authorities maintain that the tenant is only bound to preserve the premises from occasional and accidental dilapidation. On the whole, legal dicta are conflicting as to the extent of a tenant's liabilities, and even the definition given by the Court of Appeal may be open to differences of opinion. Covenants to repair ought to be clearly understood by both parties, and the state of the premises before entering ascertained by a careful survey.

## ARCHITECTURE AT THE ROYAL ACADEMY.—II.

FOLLOWING the order of the catalogue, we may now briefly refer to a few of the other exhibits, having already in our previous notice alluded to some of the more important drawings shown in this gallery. Mr. Kingsley Oliphant's elevation for a shop premises at Dover is in good taste, and the Free Library at Notting Hill, by Messrs. Figgis and Wilson, is also a picturesque piece of work, though somewhat curious in detail, with quasi-towers at the entrance, and a sort of wall-paper scroll design spread over the front at the base of the gable, and carved in stone. Mr. W. R. Lethaby sends a strange-looking font-cover for Benthams Church, Lancashire, with open fret-carved German stall-looking uprights set diagonally on plan, and supporting a thin disc, which again carries some sparse-looking finials. Anyway, it is novel in idea, if neither solid nor good. Messrs. Pugin and Pugin's Church of the English Martyrs, Preston, is characteristic of their florid style, and Mr. Swinden Barber's square tower for St. Jude's Church, Halifax, is a bold "correct" example in good proportions. The Clock Tower designed for Newmarket by Messrs. Gordon and Brown is in a Renaissance style, worked out in red brick, with a stone spire capping it. The chancel of Holy Trinity, Reading, by Mr. G. W. Webb, is but poor and commonplace as an example of Early English 19th-century church building. Mr. Leonard Stokes, unlike the last, at all risks intends to be original, and his sketch design for the circular Church of Corpus Christi Priory, Manchester, deserves this description. Lofty pointed arched windows light the interior all round, and below these is a dwarf arcade massively treated, while above there is a semicircular wall arcading, serving as a kind of frieze in effect, below the flat segment-curved ceiling, or dome, which is enriched with plaster ornamentation in low relief. An apse for the high altar is placed facing the entrance wing, and there are chapels on either side of the chancel. Another Roman Catholic church is St. Luke's, Richmond, by Messrs. Goldie, Child, and Goldie, who show likewise St. Mary's Chapel, Mill Hill. No. 6, Carlton House Terrace (staircase and hall), by Messrs. Ernest George and Peto, shows a work limited evidently by the uncompromising lines of the existing interior which these architects have endeavoured to recast and modify. The coffered ceiling is uninteresting, and the cornice is of poor form and scale. The chimney piece seems to be a less fettered performance, and it is characteristic of Mr. George's clever pencil. Boys holding swags have, however, been introduced before in similar works, as at Craigside, by Mr. Norman Shaw, where we saw them dividing the frieze: here they stand on the face of the hooded mantel. The new organ case, filling two arches over the stalls of St. John's College



Chapel, Cambridge, is a richly-treated good piece of work by Mr. John Oldrid Scott, and another instance of unaffected and suitable design is shown by Mr. J. Belcher in the little stable buildings at Holcombe, Chatham. Mr. Gerald Horsley's Academy study for a County Museum and Institute is broadly treated, and very clever; but Mr. Wm. Alford's prize design of a like subject, published by us March 9, 1888, was somewhat similar in idea. The Gamekeeper's Lodge, Sidbury, by Mr. W. F. Cave; a Royal Yacht Club House, Hunter's Quay, Scotland, by Messrs. John Burnet, Son, and Campbell; and a house near Hampton Court, by Mr. T. P. Figgis, are all simple and effective examples of Domestic work. Mr. T. Garner exhibits his first design for the Reredos of St. Paul's Cathedral, without the wings or side screens. Blue Hart-court Offices, by Mr. Basil Champneys, show an odd piece of design with a florid turret at the corner, and a high-shouldered upper floor with Mansard roofs. The Church of Our Lady and the English Martyrs, Cambridge, is exhibited by Messrs. Dunn, Hansom, and Dunn, of Newcastle. This interior illustrates the choir and crossing of this grand church looking into the apse, which is groined, having interlacing ribs boldly treated with massively-carved bosses. A gabled baldachin incloses the high altar, and rich screens divide off the aisles. Northington Church, by Mr. T. G. Jackson, M.A., is a further notable specimen of ecclesiastical building designed in strict accord with the spirit of true Gothic work. Here the apse is in English work of Late type, with a vestry under the choir. The tower is square, and fashioned after the Somersetshire model. We illustrated it last year (*BUILDING NEWS*, Feb. 1, 1889). Mr. F. M. Simpson and Mr. T. Garratt send two staircases—the first from Renishaw Hall, Derbyshire, and the second from a house at Windsor; but fate has relegated the frames to such a height as to be quite beyond the range of inspection. No doubt both are equally clever. Trinity Hall, Cambridge, by Messrs. Grayson and Ould, is represented by a capital drawing showing two views of the new buildings, now in course of construction. The Tudor-treated cusped windows of the projecting oriels combine with the simple gables very prettily, and the Renaissance-like doorways give piquancy to the general composition. We miss Mr. John Douglas's work this year in this gallery. The new Salisbury Estate Hotel which Messrs. Tavenor Perry and Reed are erecting on the commanding site near the Savoy overlooking the Thames Embankment (1781), is represented by a pen-and-ink view drawn by Mr. Perry. The bold proportions of this work will crush the scale of the iron colonnades of the Savoy Hotel adjoining, which already begins to look like a toy by the side of it. As to the Medical Examination Buildings, they always did look poor, characterless, and paltry. The Church of the Sacred Heart at Wimbledon, by Mr. Fredk. A. Waters, has a bold and lofty Late Decorated interior, with a German-Gothic sort of baldacchino over the altar, and a curiously cusped rood and beam, overdone in detail and very heavy looking. Mr. James Cubitt sends a view from the rear, illustrating Union Chapel tower and spire, Islington, as completed last year—a work of much merit. The Central Library, Chelsea, by Mr. J. M. Brydon, is a common-sense building well planned, and won in competition. We illustrated it when the award was made (see *BUILDING NEWS*, June 7th, 1889). Armagh Cathedral is represented by Messrs. Carpenter and Ingelow, showing the interior from the high-altar steps looking west. The work is archæologically rendered without offence to good taste; but its lack of interest is self-evident. The Hall, Shiplake Court, by Messrs. George and Peto, hangs near, drawn in brown outline, showing an open-timbered

massive roof over a stone faced interior, designed in an Old English manner, calling to memory such old places as Penshurst, Kent. Brasenose College Building, Oxford, by Mr. T. G. Jackson, M.A., has some remarkably good detail about it, and here we have in No. 1794 a thoroughly good working drawing, showing one bay of the new front drawn in sepia, with a plan below the elevation. The crisply-treated carving of Tudor character over the oriel bay-window is especially worthy of note, and as a good piece of architectural drawing we commend this exhibit to student readers. The Interior of Halifax Cathedral, Nova Scotia, by Mr. Arthur E. Street, M.A., is not done justice to in his dull grey water-colour perspective. The style is pure; but if this view is correctly delineated the proportions surely must be unfortunate; at any rate, they look so. His other frame of drawings comprise new Infant Schools, St. James-the-Less, Westminster; the Thring Memorial Chapel, Uppingham; and the Guest House, St. Margaret's, E. Grinstead. Of Domestic work grouped round these last-mentioned subjects, we may name a fancy sketch of an entrance to an old house, by Mr. C. E. Mallows (1808); a house at Weybridge, by Mr. Ernest Newton, which is quiet and simple; and additions to Broxwood Court, Hereford, by Mr. Stokes, whose drawing makes too much of the gardens, leaving the house as a minor feature in the picture. The Junior Constitutional Club, Piccadilly, follows the delicately elaborated Renaissance mode adopted in some of the later works from the hand of the architect, Col. R. W. Edis, F.S.A. The façade is distinguished by three large bay windows and gables marking the skyline over them, with dormers ranging between. On the ground-floor additional richness is secured by the introduction of marble columns at the angles of these bays. The detail is refined, and the building will look like a first-class club-house. Next to it is Mr. Francis W. Bedford's prize school design, illustrated in our pages for March 7 last, "Sauchieburn," a big mansion in Stirlingshire, by Messrs. Sydney Mitchell and Wilson, is a work of some importance in the Scotch Baronial style; but the drawing is too high for careful study. Messrs. Ernest George and Peto's chief work shown this year is a country house called "Poles," Herts, for Mr. E. S. Hanbury, shown by a washed drawing in sepia. The building is sternly plain, with lofty projecting oriels running up to the eaves and dividing the front, with some Dutch-like gables interspersed. The composition is distinctly the work of a capable artist, and if not very fresh in manner, it is eminently picturesque and worthy of Mr. Ernest George's undoubted ability. Another good, well-balanced house is Barnsdale Hill, Rutlandshire, by Mr. E. J. May, who sends a roughly-drawn pencil-and-red-chalk sketch of the garden front. Mr. Beresford Pite's Marylebone Dispensary in Welbeck-street, shown by a sloppy water-colour drawing, is also worthy of commendation, though the bays do not harmonise in the least with the upper part, and the turret over seems equally out of place. St. Swithun's, Hither Green, Kent, by Mr. E. Newton, we published last year (Aug. 16th, 1889), and we likewise gave (Aug. 9th, 1889) the Valley of Rocks Hotel, Lynton, North Devon, by Mr. Rowland Plumble. Both are exhibited here. Hertford College, New Hall, Oxford, by Mr. T. G. Jackson, M.A., is here represented by a view of the staircase tower, built in stone, with raking windows following the internal arrangement. Mr. E. W. Mountford's East-end Mission House is a capital piece of plain Gothic work cleverly treated, with a squat tower and an external pulpit giving interest to the main front. An Irvingite Church is proposed to be built in Westminster, and Mr. J. Belcher has made a queer design for it in a truly

"Late and flat" style, of the type made familiar by St. Dunstan's, Fleet-street. The plan is octagonal, covered with a flattened dome, round which squat, thin dormers are ranged, filled with bald traceried lights. The four-centred arches supporting the lantern are very ugly, and the whole thing, we must confess, is beyond our comprehension from the hand of such a man as the author of this design. The altar is situated at the street end of the site, with the entrances to the right of it. The organ is on the left side, set square in the corner, under one bay of the octagon. Hereabouts there are several excellent studies of old work, amongst which we may mention Mr. H. Wilson's Church of St. Wulfran, Abbeville; the Bishop's Door, Lincoln, by Mr. John Begg; the Meat Market, Ypres, by Mr. A. E. Perkins; a Norman Doorway, Glastonbury, by Mr. A. B. Bamford; Lichfield Cathedral, West Front, by Mr. A. B. Mitchell; and Mr. J. Langham's sketch, which we gave last week, of the Inner Court, Hoghton Tower. The Garden Front Central Entrance of Hatfield House, by Mr. Maurice B. Adams, hangs next to it in the centre of the room. The British and Foreign Marine Insurance Offices, Liverpool, by Messrs. Grayson and Ould, are solid and rich, well-treated examples of street architecture, and the same may be said of Mr. J. L. Watson's clever building for the *Glasgow Evening Citizen*. Barnwell Castle, an ugly old house in Northamptonshire (1858), is shown here, with some additions by Messrs. Gotch and Saunders; but the original building is unworthy of the enlargements, which are in good taste. The Mappin Art Gallery, by Messrs. Flockton and Gibbs, hangs near, below Messrs. Somers Clarke and Micklethwaite's monumental design for the Church House, a work in true English Gothic, of grand proportions, almost too cathedral-like in scale. A square tower emphasises the entrance. Mr. T. E. Colcutt sends but one drawing, some New Music Premises in Wigmore-street, W. The recessed treatment of the first-floor windows in a sort of loggia gives an interest to the façade. The great gable is characteristic, and the round arches are so managed as to harmonise with the Renaissance style which this architect has skilfully made his own. Mr. Edward S. Prior, M.A., has gone out of his way to design a veritably ugly music-room for Harrow School in a red-brick Georgian sort of building. Nothing could be worse at the instance of a clever man than this. Fancy the vast mass of bald, heavy brickwork of the canted end carried up into a bastard gable, only supported by thin piers between the big windows at the back of the orchestra! Then imagine the flood of light coming from behind the performers right into the faces of the audience, with nothing, too, to reflect the sound but glass! What could be worse every way? The building is hideous enough in all conscience. Broughton Baths, Manchester, illustrated by us a week or two since, are shown by Messrs. Mangnall and Littlewoods, and Claybury Asylum by Mr. G. T. Hine, both utilitarian buildings. The Leeds and County Liberal Club, by Messrs. Chorley and Connon, is a creditable example of commercial architecture sensibly worked out, and the Hotel Scheveningen, by Mr. T. W. Aldwinckle, is a striking instance of a modern building illustrating the old methods of the Belgian brick style with Dutch features cleverly introduced in the main gable and tower. Mr. Somers Clarke's "Reid's Hotel," Madeira, is as simple as it is quite suitable for its site. We illustrated it in the *BUILDING NEWS* for Jan. 3rd last from this same admirable drawing. Messrs. Wimperis and Arber, still busy in adding to the architecture of West London, send a view of a block of premises in Davies-street, Berkeley-square. The Great Organ in the Library, Blenheim Palace, is a Classical treatment of



a vast instrument, by Messrs. Romaine-Walker and Tanner, and another fine organ is also shown from Paignton Parish Church, by Mr. A. Mardon Mowbray. Livesay Hall, Lancashire, is a simple old house, well drawn by Mr. H. Harrington, and Crosscombe Church is shown from a sketch by Mr. T. MacLaren. Mr. Sedding sends a view, in colour, of the Sanctuary of Holy Trinity, Chelsea, very mixed in style, including the florid Rococo. St. Catherine's Church, Melincryddan, is a small Welsh building with a timber arcade, by Messrs. J. P. Seddon and Coates Carter; the latter also contributes All Saints, Moda, Constantinople. Normanton-on-Soar Church has lately been enlarged by Mr. W. S. Weatherley, who has sent a good drawing of the building, and Mr. Ernest Turner exhibits some schools at Herne Bay. Mr. H. W. Brewer's pencil sketches from Germany are always good. Mr. Caroe's buildings in Duke-street, Grosvenor-square, will give great interest to that thoroughfare. Higher Coombe, by Mr. Fredk. Banister, is a good house, illustrated by us last year. We have no room left now to name others, and the rejected designs for Sheffield Municipal Buildings call for no special remark. Most of them are very poor, hybrid attempts at design, and deserved their fate.

#### THE PICTURES AT THE ROYAL ACADEMY.

[SECOND NOTICE.]

WE did very scant justice to the merits of the first two galleries, and we must repair our omission by singling out two or three pictures overlooked in our notice last week. Sir J. E. Millais has once more thrown his efforts into his long-loved branch of painting—landscape. Last year we had "Murthly Water" and "The Old Garden," both engaging pictures, and this time the forest scene, "The Moon is Up and yet it is Not Night" (25), suggests a hearkening back to the earlier sympathies of the painter. The margin of a forest, sparsely wooded with thicket and undergrowth, is painted in the poetic vein in a monochrome of brown. The illumined sky casts a hazy and silvery tone over the forest. Venetian colour and light are charmingly rendered in Henry Wood's "On the Riva of the Giudecca" (49); and much tenderness and beauty of expression and colour are shown in O. E. Perugini's Italian love-making scene. J. C. Dollman (69) selects a less humorous subject than usual. His study, "Polo," represents the horsemen in the game. Considerable adroitness in the players has been depicted by the painter; the horses are, it is needless to say, well drawn, and the subject is cleverly handled. J. T. Nettleship's painful but powerfully painted work "The Abyss" (110), in which a lion, firmly clutching the back of his victim, is leaping a rock, has little to attract us. Marie J. Naylor paints her own portrait, the grey tone and light draped background of which are pleasing. Andrew C. Gow's large picture, "After Waterloo" (123), is a clever painting of retreating but disordered troops, foot and cavalry. The Chasseurs mounted, the pallid countenance of Napoleon, who rides in the midst, the trampling under foot of wounded soldiers, the miry road, and other incidents are painted with much dramatic power and skill.

Gallery III., in which we have only noticed two or three of the leading pictures, contains little that need detain us very long. The green foreground and red, glowing sunset in "Departing Day" (190), in the corner of the gallery, arrests attention for its strength and vivid contrasts. Peter Graham, R.A., is a powerful painter of mountain scenery. His "mist-robed mountain" reflecting the fiery glow of the setting sun is remarkably strong in colour; the dark purple valley and

mists which hang about the heights intensify the rose tint of the reflected light. In a very different key of colour is Kenneth Mackenzie's "Wind-Swept Hill," already noticed. High in a central position, over Frank Dicksee's legendary composition, is Rob Sauber's work, "The Golden Lure" (202). The idea is, of course, symbolically treated. "Ambition" stands on a huge bubble; her laurel wreath falls, while she holds a crown of gold high above her head. The treatment of the subject is decorative, the dark, neutral colouring setting off the attenuated figure of Ambition. The effect is rather that of *tour de force*. The glare on the picture, which is hung high, prevents the visitor from seeing the clutching hands which appear above the golden circlet. "Low Tide" (215), by Peter Graham, is less satisfactory than his picture just mentioned, though it is fresh in colour. No. 242, "The Picardy Dunes," by H. W. B. Davis, is a skilful painting of sunlight on undulating sandhills, realistically treated. As a forcible study of colour, W. T. Dannat's lady in a red dress may be noticed, while, further on, W. Llewellyn has a portrait of Miss Hyacinthe Scott-Kerr (251) in canary costume graceful in pose. "La Promessa Sposa" (278), a cleverly-grouped figure subject of Venetian girls, one of them showing her wedding-ring, is full of colour and brilliancy. In subdued tone Claude Calthrop has a family group (269). J. C. Horsley's "Finishing Touches," a lady in scarlet brocade at her toilet, is garish and lacks repose. Minute execution and brilliancy in a low key of colour characterise T. Sydney Cooper's picture, "A Morning in October," a landscape recalling the work of the older school. Thomas Faed's "Highland Tramp" (285) is forcible, the figures of tramp and his wife admirable in expression and true to life. "Louis XI." is an incident which J. Seymour Lucas tells with much dramatic skill. The King, seated near the spacious fireplace of a cottage interior, is watching, apparently with interest, the child which clings to its mother; the father is engaged at the fire, preparing a meal. The accessories and furniture are carefully studied, the tone and colour pleasing. P. R. Morris's "La Belle Americaine" (292), a full-length portrait of a lady in lavender colour satin, is only of interest as a study of costume; the sheen on the dress and the rich hair are dexterously painted. Another lady, the wife of F. Goodall, R.A., attired in black silk with red moire and green background, is a graceful and dignified figure. Near it J. Pettie, R.A., has a picturesque subject—two young ladies in the 18th century costume, merrily tripping down a country lane gay with the blossoms of hedgerows, a young beau following behind. Fine tone and hazy light characterise T. W. Allen's landscape or common, "When Morn is Grey" (308), the reflection in pool and atmosphere rendered with all the delicacy and poetic charm of a true student of nature. Anna Nordgren's "Grey Day at Newlyn" (311) is also cleverly handled and powerful in tone. Fresh colour of sea and fisher-girl life in the early morning on the Cornish coast, with girls dressing fish, is the subject which J. C. Hook has so felicitously painted in "Breakfasts for the Porth" (317). P. H. Calderon, R.A., has been happy in his scene from Gen. xvi. 6 and 7, where Hagar crouches by a rock in the wilderness, fleeing from the face of her mistress, Sarai. The eyes are full of expression and beauty. J. R. Burgess's "Freedom of the Press," representing a young student reading a newspaper to an old priest who holds up his hands in pious amazement, shocked at what he hears, is a diploma work of interest. W. Q. Orchardson has also a diploma study of his daughter (328), a young girl near the edge of a cliff facing the sea, delightful in drawing and delicate tones of pale reds and green. The breeze from behind is

cleverly expressed in the figure and draperies. The portraits of W. W. Oulless, R.A., of the Bishop of Chichester and Mrs. North, of Mrs. Agnew, by Luke Fildes, R.A., and of Major Burke, by Hubert Herkomer, are good examples of portraiture.

Viewed as the *pièce de résistance* of the artistic effort of the year, the large gallery is somewhat disappointing. There is no one great composition. Sir F. Leighton's "Psyche," though beautiful in drawing and colour, can scarcely compare with his last year's "Greek Girls Playing at Ball," and Mr. Alma-Tadema's "Frigidarium" is more archaeological and descriptive than imaginative. Only in the setting and surroundings do we find any original treatment, but here scholarship has been portrayed with the resources and skill that the painter can bring to his work. We can marvel at the beauty of form of draperies, the subtle colour and gradation of light and tone, the handling of textures and reflection of marbles found in these classical and Græco-Roman studies, with the consummate power of harmonising colours, but they are not works of great invention, nor do they appeal to human sympathies. Mr. Frank Dicksee's romantic subject, "The Redemption of Tannhäuser," is more touching, it strikes a chord in the heart; just as in another way Mr. Orchardson's great picture of "The Young Duke" did last year. But on the whole we must look to the thrilling seafaring themes of Mr. Brangwyn, and the landscapes of A. D. Peppercorn, J. W. Allen, J. MacWhirter, and Vicat Cole, and the sea pieces of J. C. Hook and Henry Moore for the strength of this gallery.

In Gallery IV. the first picture that attracts the eye is Val C. Prinsep's scholarly work, "Diva Theodora Imperatrix, Empress and Comedian" (346). As a study of beautiful faces, rich jewels, and costume, this picture has merit of a high order. The empress has a majestic and dignified look, and wears a jewelled tiara and a bracelet of pearls and jewels, and rests one hand on a bronze lion. Behind stand her maids of honour, while in the background is introduced a saint surrounded by an aureole of apostles and martyrs. The treatment is allegorical and decorative. "Sea Breezes," by Julius Olsson (360), is one of the few impressionistic studies of sea and cloud; the reflection and atmosphere are luminous. F. Goodall's fine landscape, "The Thames from Windsor Castle" (366), the glimmering river like a streak of silver meandering through the distant meadows as seen from a parapet; and Vicat Cole's view of "The Thames at Greenwich," taken from the Park, overlooking the busy river, with its crowd of craft, the masts of the vessels and the *Dreadnought*, with St. Paul's in the distance—are noble examples of the English school of landscape. In the last-named the perspective and the drawing of the hospital, with its wings and palatial features, have been painted with care. A fine sense of colour and gradation of tone pervades the picture. The foreground, with its rich greens and undulating pastures and foliage of chestnuts, gives distance to the river and its grey mist and smoke, which melt into the horizon. Another powerful work is Cecil L. Burns', "The Acre of the Poor" (365), a large canvas representing the waste green at the margin of a country roadside, in the long grass and bushes of which children are playing. Nor in the category of impressive painting that is stirring and pathetic can we omit G. H. Boughton's very touching incident recorded on his large canvas, "The Puritans' First Winter in New England—Watching for the *Fortune Relief Ship*" (396), where two figures, an aged mother and her daughter, are walking on the snowy beach and rocks, within sight of the sea, and another group crouched in a natural hollow are waiting for the relief ship to



bring them provisions. The grey landscape in a low key of colour, the frosty clearness over the scene, are in sympathy with the theme. Colin Hunter's "Hills of Morven" (384), a range of purple hills with the reflection of the evening sky on the waters of silvery hue, its desolation relieved only by the seals on the islets (384); and Charles W. Eaton's "Autumnal Moon," a delightfully soft light through a wood, are two finely-painted subjects. John R. Reid is extremely natural in "The Waterman's Wife" (413); and the same mood of thought and feeling finds utterance in G. F. Watt's nobly sympathetic picture of an old white horse standing against a thick hedgerow. Almost pre-Raphaelite is the detail of leaves and stems, and the conception, simplicity, and handling of the horse suggest the title which Mr. Watts has put to his picture, "A Patient Life of Unrewarded Toil." Sidney S. Morrish (420) has a charming Lynton-like cliff and blue sea, "The Haven under the Hill." John S. Sargent's work (421), a lady in bright mauve satin holding up the folds of her dress, and the delicate steel-colour and white satin in Harry Baldry's portrait of "The Lady Carew" (385), are noticeable examples of portraiture.

A few pictures are worthy of record in Gallery V. B. W. Leader has a fine subject, "Where Sea and River Meet" (458); F. W. Jackson a cleverly-handled landscape (481). John Brett's "Echoes of a Far-off Storm" is a splendid study of a rocky coast in which the stratification is marked; a sandy beach with pools of water are in the foreground; bright and pearly hues pervade the coast, but there is a little hardness in the handling. "Oliver Twist's Walk to London," by James Sant, is a clever pictorial rendering of Dickens's narrative. The little hero looks thin and wan, carrying his bundle along the stony road through a common, a grey mist enveloping the landscape and the flock of sheep which fill up the scene. There is pathos in the treatment, hope and fear written in the face of the poor workhouse lad as he trudges along alone. Albert Moore, in a "Summer Night" (487), is in a decorative scheme and key of colour—a symphony in yellow and grey. Under a loggia adorned by festoons of pale primroses, and facing a moonlit sea, five maidens, half-clad with diaphanous yellow draperies, recline on orange-coloured couches, the figures being set off by the grey moonlit sea of leaden hue. The harmony is indeed a rather trying one, and one figure doubtful in drawing. A pleasing landscape or valley scene, dark blue in tone, a shining river pursuing its winding course through undulating pastures, is by William Pye (494), "The Valley of the Suir." Henry Moore's "Yarmouth" is in delicate silvery tone, and a lovely autumnal wood, with deer, is (491) by Frederic S. Richardson.

The next gallery, VI., has one great picture, "The Death of Cleopatra," by Hon. John Collier. This colossal canvas must be regarded as an archaeological triumph. The Egyptian Queen, who, according to tradition, was stung to death by an asp, lies on a bier of the correct type, clad in white, her faithful Charmian at her head. Prostrate across the marble steps lies Iras, who has also met a similar fate. In the background are colossal sitting deities in black granite, and the massive columns of the court or mausoleum. The work is masterly, and the materials and texture skilfully handled.

We have only space to notice the finely-painted blue sea and cloud study by Henry Moore (544), the grand river-scene in the Highlands, with its winding river and fir-clad hillside (562), by Joseph Farquharson, Arthur S. Nowell's glowing red lake scene, "Lucerne," with its sky reflection (554); Frank Walton's landscape and solitary tree, full of pathetic power (539); C. Martin

Hardie's "Unrecorded Coronation" (599), poetical in sentiment; Norman Garston's clever picture, "A Stranger" (543). A sombre powerful picture is that of John M. Swan, "A Lioness defending her Cubs" (614); and some nice sentiment is seen in E. King's "Prayer." A. Roche's "Shepherdess" (625), and the fine luminous work of Fred. G. Cotman, "Where the Stour and Avon Meet."

The 7th Gallery contains but a few notable works. John R. Reid's fresh fishing village, with boy sailing a small toy boat; Frank W. Topham's admirably-painted "In the Month of Mary" (665), a May Communion, a bevy of girls clad in white, with the Sister, preparing for the celebration under the portico of a church, a blue lake seen between the columns; B. W. Leader's very fine landscape, with its foreground of weeds and thistles—cottages and firs standing out against the evening sky, "The Silent Evening Hour"; Walter Schröder's impressionistic work, "At Break of Day" (681); and not least, the powerful work of Dudley Hardy, "The Dock Strike, 1889," with its motley crowd of labourers listening to a speaker on a grey damp morning (671) are the only pictures of merit; though commonplace incident and some ridiculous portraits abound. Of these, the gaudy portrait of a child (694), and some inharmonious colour (707 and No. 694) may be mentioned.

#### THE GROSVENOR GALLERY.

COMPARING the pictures of the Royal Academy with those of the Grosvenor Gallery, which had their private views on the same day, the critical visitor will be inclined to accord to the latter a stronger personality and freshness of treatment. The new school is more pronounced in the smaller collection; commonplace subjects which find room on the walls of the Academy are fewer in number in the New Bond-street exhibition—a circumstance which itself gives to the latter additional interest. Impressionism is represented by the works of Stanhope A. Forbes, W. Estall, Mark Fisher, W. Stott, H. Muhrman, James Guthrie, and others. Stanhope A. Forbes's "The Road from a Market Town" is a delightful piece of subdued colour. The shadowless, grey reflected light over the village nestling under a hill, with the groups of villagers and boy leading a heifer, are natural and full of sentiment. "Down by the Brook," by W. Estall (9), is equally tender in its fresh cool greens and light of spring, and the cows under the shadow of tree. Mark Fisher's "Orchard" (10) is bright in the strong sunlight which gleams through the young trees, nor need we say the anatomical knowledge in the drawing of cows is unsurpassed. In landscape, too, the "Rush Gathering" of Miss Dora Noyes is a charming piece of colour and drawing. A fine twilight effect of harvesters at work is by Henry Muhrman, whose technique and "loading" are singularly powerful. Mellow and silvery in tone is the "Evening Landscape" (35) by the same author, who delights in the sombre effects of landscape and masses of foliage as seen under the shades of evening. In the same class James Guthrie's "Pastoral" must be described. "Soft Winds," by William Stott, of Oldham, unfavourably presents the weaker qualities of the impressionist school, the bay, or lake, represented by what looks like first washes of colour, has a thin, unfinished effect. Some pleasing portraits and figure subjects are to be noticed in passing, as W. Llewellyn's "Netta" (8), a child in white satin, with a yellow daffodil in her hand, against a tapestry hanging; J. J. Shannon's portrait of a little girl in white, with a doll carelessly hanging by her side (15), and a dark curtain background; W. R. Symonds'

"Queen of the May," symbolical of spring, a prettily-treated figure of a girl, with floral emblems set off by light-green foliage. Edward E. Simmons's "Youth and Age" (31) an old man with child asleep on his lap, the light through cottage window, tender in sentiment and solidly painted. W. Q. Orchardson's portrait of himself at easel in a loose coat of light yellowish brown, in the same rich mellow colour which we see in his pictures, is characteristic and clear. Frank Brangwyn has a masterly water-colour picture of a group of old sailors, one of their number reading a newspaper (45). The painter's acquaintance with the habits and manners of life by the seaside is shown in every figure and face, and he excites our sympathy with their eagerness to know how the world is going. The picture is lifelike and realistic, the open sea and vessels lying at anchor forming an appropriate background. Mr. Brangwyn is as dexterous in water-colour as he is in oils. There is a touching incident by G. E. Harris (46): a sailor looking through casement of his cottage at wife and child in her arms bidding them "good-bye." The child holds out his little arms, but the mother is sad; on a neat little table lie the remains of the breakfast. No finer figure subject can be seen than George Clausen's "Girl at the Gate" (51), a luminous study of a country peasant girl standing resting one hand on the garden fence. The girl's face, which catches the light which is upon her, is not one of those very pretty, sentimental-looking faces found in pictures, but intensely real and natural. The face is that of an everyday working country girl, its very fidelity and life-like expression exciting our sympathy. The dress of light blue, the cottage, and the management of the light are all in keeping. John R. Reid is also a painter-poet of work-o'-day life, like Mr. Clausen, neither indulging in fairyland nor classical legend; he paints the ordinary folk of humble harbours and fishing villages. Let us look, for instance, at his "Trial Trip"—two sailor-lads watching their little toy-boat on the beach. The village and smacks are most cleverly painted, strong in colour, and vigorous in handling; or at the "Coastguard Garden" (64), "Ploughing" next blue sea, "A Busy Quay" (126), and the "Washing Day" (164)—a village with groups of women gossips on the beach—all thoroughly naturalistic in tone and handling. In these subject studies we see no effort to paint symphonies of colour, but the duties and toils of daily life in all their strength and directness. These painters, like George Eliot in her novels, excite our sympathy and admiration for the everyday life in the field, the workshop, or the home, and their pictures are true in this sense. A. Hartley's "Toilers of the Shore" (26) is large and luminous in the reflected light in the shallow waves. "Mary Queen of Scots in the Woods of Rosneath" (41), by I. Lavery, is cleverly painted, dramatic in the incident; the painter has by the dark shadows and handling of the wood given interest to the subject. The early morning light, the smoke which curls through the air from the dying embers of a camp-fire, all throw a spell over the figures of the hapless Queen and her sleeping attendant. Delicate handling and tone is found in James E. Grace's woodland scene (56), also in J. Olson's landscape (50); the spring green and yellow meadow under the cloudy, grey sky is well painted in David Murray's "Doubtful Crop"; we must pay a tribute also to A. Stuart Wortley's portraits, "The Love Birds" (3) and "Lady Hastings," both gracefully painted. Henry Moore's "Sand-laden Surf" (63), with its silvery tone, leads us to John M. Swan's sensational picture of a lioness with her cubs, entitled "Maternity," which occupies the centre position on the long wall. The desolation of the desert and the reposing lioness are



powerfully painted; but the subject is too powerful to meet all tastes; still, it is a noble animal study. "Dimanche des Rameaux" is a pretty study of a French peasant girl with her palm branch, which she devoutly carries in front of her—an incident of Palm Sunday. Henry J. Hudson, seated portrait of a lady in browns and reds, set off by a leopard fur, "Lustra"; J. J. Shannon's full-length portrait of Miss Leach (74), in black, are works of merit; but we pass them to notice A. D. Peppercorn's "Cornfield" (73), and Adrian Stokes's "Breakers," a piece of sea-painting of the impressionistic kind, and the nice broad tone in Claude Haye's "A Scene in Surrey" (81); Mrs. Marianne Stoke's "Light of Light" (82), with its strong sunlight reflection on the face of Mary, tenderly watching over the infant Jesus, is cleverly handled. Sir Coutts Lindsay, in his large, ambitious subject, "The Vision of Endymion" (102), representing the shepherd asleep on Mount Latmos, with Diana as a vision above him, has attempted a difficult theme: the colouring is rather cold, and the treatment naturalistic. A little more strength of colour in the foreground would have given more balance of tone to the design, which is clever and graceful. Tom Graham's powerfully-painted sea piece, "The Last Boat," a stormy evening, and a heavy surf breaking over the jetty, will draw attention by its bold, vigorous handling. Above is W. J. Laidlay's large and disconsolate scene, "A Long and Last Farewell" (93), an old man bidding farewell to a young girl. The seaward distance, and the expression and attitude of the figures, convey the hopeless and sorrowing nature of the scene. A cabinet figure study of a Louis Seize drawing-room, by D. T. White, "The Minuet," has nice colour. A large and remarkable canvas, 109, "Audrey and her Goats," by Arthur Melville, A.R.S.A., hangs at one corner of gallery. Mr. Melville is an impressionist of the boldest school. His solid colouring in flat and glowing touches, presenting to the eye blotches of green and copper-red foliage, one must accept with reservation. The subject is from Shakespeare's "As You Like It," scene 3, and represents Audrey with her goats. We can merely look at John Pettie's finished sketch of "The Traitor," well known to admirers of his work—pearly in its hues and tone; Miss Catherine Wood's rich "Wallflowers," H. Fantin-Latour's "Marguerites," Sir William Fettes Douglas' "Stonehaven" (139)—a bird's-eye view, excellent in colour and distance; and Miss Merrick's fine portrait of the African Explorer (140), which attracts much attention.

In the East Gallery, Ernest Parton's "Misty Morn," a graceful and delicate study of woodland and silver birch, and Denny Sadler's "First of September," an old inn parlour with two old cronies and a young sportsman with the spoils of the day's shooting, preparing a punch bowl (149), are noticeable, the latter for its thoroughness and minute detail. Overpowering in its size and colour is Sir Arthur Clay's "Court of Criminal Appeal," the judges in their judicial robes, painted, no doubt, by commission. There is an official ring about it. J. Haynes Williams paints a lady in satin evening dress in her dressing-room finishing her toilet, her maid-servant tying her satin sandal. It is dainty and delicate—that is all. James Paterson's moonlit landscape, John Reid's "Washing Day," old Dutch in style, Arthur Hooker's portrait of a lady in rich attire (159), C. Napier Hemy's large luminous picture of "Oporto" (174), with its river and craft, are striking. Clever gleams of light on common and trees are shown by David Murray in his "Evening" (181); Keesley Halswelle's fine, silvery-toned "Early Moonrise, Venice" (186); Gunning King's figure-subject (182); James Guthrie's "Orchard" (195), sombre

in colouring, but full of sentiment; and W. Stott's "Diana, Twilight, and Dawn," a shadowless green landscape in which three nude figures are reposing in somewhat strange attitudes, are works of interest. In the vestibule, R. H. Carter (239) paints a beach with a shoal of fish entitled "A Silver Mist Melting in Softest Light" in which the painter has harmonised the hazy suffused light of an early summer morning with the glistening fish. Hubert Vos has a large picture of a "Room in a Brussels Almshouse" (248), which we remember. The strange work of George Henry and E. A. Hornel (173) looks like a study for a tapestry design; it is clever as a picture of Druidical costume and colour. The other rooms contain several good works by J. MacWhirter, A.R.A.; W. L. Wyllie, A.R.A.; Hamilton MacAllum (269), Edwin Hayes, J. M. Macintosh, J. Orrock, David Green, Nelson Dawson—the latter fresh and pure studies of sea. Descending the stairs, one sees a highly-modelled and very realistic picture of two little girls, the daughters of F. St. Barbe Sladen (381), by H. de T. Glazebrook, conversing on a staircase, the young ladies in red frocks and black silk hose, the light and shade very cleverly managed, the figures, red carpeted staircase, and perspective dexterously handled to produce an illusive reality.

#### ARCHITECTURAL ASSOCIATION.

AN ordinary meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair.

#### VOTING REFORMS.

The nominations of officers and committee having been read, and some fresh names announced,

Mr. A. O. COLLARD raised the question of the numeration of votes, urging that the existing system of counting the votes during the closing meeting of the session was becoming unworkable in the present large increase of members. He moved that they be counted before the meeting, and announced early in the proceedings. Further, as a scrutineer in earlier years, he failed to understand the reason for announcing alphabetically the names of those elected on the committee, and thought, in fairness to the general body of members, the number of votes for each name should be published—a suggestion which evoked warm applause, and cries of "No, no."

Mr. F. R. FARROW seconded both propositions.

Mr. C. H. BRODIE and Mr. OWEN FLEMING, while supporting the first part of the proposal, for changing the time of voting, objected to announcing the position of each name on the voting list as invidious.

The PRESIDENT suggested that it might be sufficient to announce the names in order of voting; the man who had 1,000 votes recorded in his favour might approve of publication; but it might be even injurious to the candidate who received, say, two votes.

Mr. COLLARD: The votes are always pretty close, and never, I believe, fell to so absurd a figure as two.

The PRESIDENT: At the last election 17 votes were recorded for the name last on the list.

Mr. COLLARD: Quite enough, too, for some candidates. (Laughter.)

Mr. F. J. BAGGALLAY demurred to the President's suggested middle course, and thought the numbers should be given.

The propositions having been seconded, the first, for the counting previously to the meeting, was carried unanimously, and Messrs. E. D. Webb, C. H. Brodie, F. Galsworthy, and E. H. Parkes, with the secretaries, F. R. Farrow and E. S. Gale, were appointed scrutineers. The second portion, that the number of votes be published, was then put and carried by a majority of about five to one.

#### THE PROPOSED ARCHITECTURAL STUDIO.

Mr. FARROW announced that at the meeting to be held that day fortnight, the 16th inst., the report of the committee appointed to inquire into the educational methods of the Association would

be brought forward, and consequent thereon a proposal to alter certain rules would be submitted.

#### HOSPITALS.

Mr. KEITH D. YOUNG read a paper on this subject, illustrated by plans and photographs. A hospital, said the lecturer, is primarily a building devoted to the care and treatment of the sick and injured poor; in its secondary, and scarcely less important function, it is a training-school for the teaching of medicine and surgery. In order that both these functions may be performed to the best advantage, it is necessary that large numbers of patients should be brought together in one building—for the task of administering one hospital for 300 beds is far easier and less costly than that of administering ten hospitals for thirty beds each; and for teaching purposes the larger the amount of material the better both for teachers and students. It is the contamination of the air of the ward which retards or prevents the recovery of the patients. This contamination of air may be accomplished in several ways: it may either be by overcrowding of patients in the wards, by imperfect ventilation, by improper arrangement of buildings, by defective drainage, or by defective keeping or maladministration. Having referred to the excessive mortality in ill-managed hospitals, as for instance, in the old Hôtel Dieu at Paris and the temporary hospital at Scutari during the Crimean war, Mr. Young added: The vital importance of cleanliness cannot be too strongly insisted upon. Cleanliness supreme and all-pervading, cleanliness of air, of soil, of building, is the key-note of every point of good hospital construction and administration. In considering the principles which should guide us in the planning of a hospital, the first question to be determined, assuming that the number of patients and staff and the necessary classification has been settled, is the position of the various buildings in relation one to another. There must be in every general hospital at least five separate departments:—1. The administration, which comprises all the purely official and domestic parts; 2, the nurses' quarters; 3, the wards; 4, the out-patient department; and 5, the mortuary. In many important hospitals of recent date these have been again subdivided, and separate buildings provided for kitchen, offices, and the operation-room. The main fact, however, is that all these five buildings should be as separate and distinct as it is possible to make them. In most hospitals erected during the last century you will find that every department, including also frequently a laundry, is housed in one building, and that every part of that building is in more or less direct atmospheric communication with every other part. The evils of this arrangement have over and over again been demonstrated, and many such hospitals have been within recent years either demolished or very materially altered, much to the gain of the patients. As an example of what is thought necessary by eminent medical authorities in our day, the plans of two recent hospitals were exhibited—the University Hospital at Halle, and the Johns Hopkins Hospital at Baltimore. The University Hospital at Halle consists of sixteen detached buildings, of which thirteen belong to the hospital proper, the remaining three being devoted to teaching purposes only. The large central block with four wings is the surgical department, and forms in itself a complete hospital in all but the kitchen offices. The E-shaped block in the south-east corner is the gynaecological department, with the director's residence adjoining; and the two blocks between this and the surgical house are respectively the kitchen offices and the engine-house. Behind these is another E-shaped block, with two detached buildings, one on either side. These together form the medical department. The long building at the extreme west contains isolation wards, and the two smaller blocks between this and the surgical house are for additional isolation, the small building between them being the chapel. The E-shaped block to the north of the surgical house is devoted to diseases of the eye, the throat, and ear. The Johns Hopkins Hospital at Baltimore occupies a site rectangular in form and thirteen acres in extent. The buildings are twenty-two in number, and are all connected together by corridors. The corridors, however, which connect the ward blocks communicate only with the basements under the wards, the communication between the wards themselves being by way of



the flat roof over the corridors. Thus the wards themselves are practically detached buildings. The principle of absolute detachment of wards is here carried out, but not quite to the same extent as at Halle, while the plan of restricting the height of the wards to one story only is strictly observed. This hospital is the outcome of the matured experience and observation of one of the most experienced surgeons in the United States, and no time, pains, or money have been spared to carry into effect what have been thought the essentials of perfect hospital hygiene. In these two hospitals the principle of absolute severance between the several parts is carried to an extent that has not been attempted in this country, and certainly could not be carried out except at enormous cost in London or in any great town. There is, too, in this country a strong opposition to the system of detached buildings, and it would probably be very difficult, if not impossible, to get any committee to approve of a plan in which no covered communication between the wards and the administration existed. Assuming, then, that the wards and the administration building are to be connected by means of a corridor, it is essential to provide that any interchange of air between the two shall be as far as possible abolished. In the Great Northern Central Hospital we have endeavoured to accomplish this upon a very limited site. The wards are attached to the back portion of the administration building by a short piece of corridor, which is ventilated on both sides, and the lifts and staircase, which necessarily form shafts of communication between the different floors, are kept entirely outside the ward pavilion. The necessity for keeping the mortuary building absolutely detached is sufficiently obvious. Nothing could be more fatal to the health of the living than any communication between the wards and air tainted with the emanations from the dead. The out-patient department should be kept separate, because the air of the waiting-rooms, and in a lesser degree of the consulting-rooms, becomes much vitiated from various causes, and also because it is practically impossible to foretell what cases of an infectious disease may at any moment present themselves. The nurses' home may, or may not, be in direct communication with the hospital proper. For the sake of the nurses themselves, probably the more complete the severance is the better. In the administration department are comprised the official quarters, including the board-room, secretary's office, and matron's office, the residential quarters comprising the rooms for the residential medical staff, the secretary or superintendent, the matron, the steward, and the servants, and the domestic department including the stores, kitchen offices, and linen-room. The detailed planning of the administration building will necessarily vary according to the size of the hospital, and no very minute rules can be laid down respecting it. Unless the kitchen offices are placed in a one-story separate building they should certainly be put at the top of the house. There is no practical difficulty attending this arrangement, examples of which may be seen at the Hospital for Consumption, Brompton, the Great Northern Central Hospital, and the Hastings Hospital. The provision of ample store accommodation is also an important point. It is far better to provide too much store room than not enough, for the difficulty of increasing store room in an existing building is very great indeed. Formerly a ward was regarded merely as a room into which a certain number of beds were to be put without much thought being taken of how the well-being of the patients would be affected by the conditions under which they were to be housed. At La Clinique, Paris, the wards were long and narrow, and the windows were placed in the two ends; between these windows no less than eight beds were placed. Again, in many old hospitals the wards formed a series of rooms arranged on each side of a corridor, which formed a channel of communication connecting all the wards together. Yet another form of ward is what is called the "double ward," which consists of two long wards placed side by side, with the windows in the sides, and with openings cut through at intervals in the dividing wall. This arrangement gives four beds between the opposite windows. The fault of all these forms is in a greater or less degree the want of efficient ventilation, and it was the recognition of the evils consequent upon a defective air-supply that resulted in the pavilion system of wards. The essential feature of the pavilion

system is that the wards are long, rectangular buildings, projecting out casually at right-angles to a main corridor. The space between the pavilions should be equal to at least twice the height of the buildings, and the long axis of the wards should be nearly due north and south, so that the maximum amount of sunshine available should be admitted to the wards. The question of the number of stories permissible in a ward pavilion is one upon which authorities differ materially. In many of the most recent hospitals in France and Germany, and notably in the magnificent hospital at Baltimore, the wards are restricted to one story only. Such a system is obviously a most costly one in the matter of site, and it is to be justified only on the score of really important benefit to be gained. Personally, I see no sufficient gain to be obtained at all commensurate to the enormous cost involved. But—and this lies at the root of the matter—if two or three stories of wards are to be superimposed, each must be absolutely independent atmospherically of the other, there must be no shafts, whether for staircases or lifts, to communicate the air of one floor with that above. In nearly all the earlier pavilion hospitals the staircase and one or more lifts, and sometimes that abomination called a dust-shoot, are all closely adjacent to the ward. It is so at the Herbert Hospital, Woolwich—one of the earliest pavilion hospitals, at Leeds, at the Norfolk and Norwich, and at St. Thomas's. At the Great Northern we have placed the staircase and the lifts in such a position that they cannot form shafts from one ward to the other. It would appear from the plan of the Johns Hopkins Hospital that the staircase and the lifts are so placed that they must form channels of communication between the different pavilions by way of the basement; but the system of artificial ventilation is intended to act in so perfect a manner that all chance of such an occurrence is obviated. In considering the internal arrangement of the wards, the first point to be settled is the space to be allotted to each patient. Space in a ward is very commonly referred to as cubic space only; but it is equally important to consider floor-space, and the distance to be allowed between each bed and its neighbour. Upon this question of space authorities differ widely. In the table given in Mr. Saxon Snell's work the floor-space varies from 69ft. per bed to 149ft., and the cubic space from 864ft. to 2,544ft. The last figures are those of the Hospital of St. Andrew at Genoa, whose wards are considerably over 20ft. high. It was the opinion of the late Professor de Chaumont that nothing is gained by making the height of a ward exceed 12ft., and in making calculations in actual practice he was accustomed to exclude all space in excess of this amount. You will see, therefore, how important it is to arrange your cubic space in relation to your floor-space, and not to increase the one at the expense of the other. In the first place, then, the wall space or distance from centre to centre of each bed should be determined. In a large ward, say for twenty beds, the space should not be less than 8ft.—8ft. 6in. or 9ft. by preference. For the width of the ward 28ft. is a good dimension. It allows plenty of free floor-space in the centre of the ward. These figures give a floor-space of 112ft. as a minimum. Taking 12ft. as the standard height, you get a cubic space per bed of 1,344ft. A height of 12ft. will, however, be found, for appearance sake, too low for a ward upwards of 80ft. long, and something must be conceded to one's sense of proportion. Having settled the dimensions of the ward, the next step is to place the beds and set out the windows. In some cases the beds are arranged in pairs with one window to every two beds. This plan of coupling the beds has many disadvantages. In the first place, each bed is unduly near one of its neighbours, instead of being placed in the centre of its own air-space; secondly, the ventilation cannot be so perfect as when each bed has a window each side of it; and, lastly, the beds are necessarily so close on one side to the windows that much inconvenience arises therefrom in the shape of draughts and cold currents of air from the condensing surface of the glass. Each bed, then, should occupy the centre of its own air-space, and should be between two windows. There is one more point to be observed in the arrangement of beds and windows. You will notice that in the wards at the Great Northern Hospital a small window is, in each case, interposed between the end beds and the end walls, and the length of the ward is

increased by the space necessary to get this window in. The reason for this is that it has been observed that when the end bed stands in a corner with a window on one side only, that particular bed has acquired a bad reputation as one in which cases have not fared as well as they ought; and the interposition of a window between it and the end wall has had the effect of correcting this bad tendency. There are certain necessary rooms and offices which must be attached to the wards, and form a part of the pavilion. These consist of a ward-scuttery (or "duty-room"), a small larder for keeping food, cupboards for the ward linen and for patients' clothes, bath-room, water-closets, sink-room, and lavatory. To these may be added a small ward, or perhaps two, for one or two beds for special cases. The ward-scuttery should be immediately adjoining the ward, and is used for washing the crockery used for patients' meals, for making poultices, warming beef-tea, and for the minor processes of food preparation usually done near the ward. It should contain a sink, a small dresser, and plate-rack, and a small cooking-range. The cupboards should be large enough, and should be well lighted and ventilated. If small wards are required, they should be placed at the entrance end of the ward, and a separate water-closet and slop sink provided for their use. The water-closets are usually placed at the further end of the ward. In a long ward there is some inconvenience in this arrangement, but it is more than counterbalanced by the interference with light and ventilation that would ensue if the closets were projected out at one side of the ward—the only alternative to the end position. The water-closets must be separated from the ward by a lobby, having windows on each side and doors at either end, so that there may be no communication of air between the closets and the ward. In order to promote the free passage of air around the building, it is desirable to restrict the height of this lobby to just sufficient to give head-room, and to leave the space between the roof of one lobby and the floor of the one above free and open. The sink-room should be in the same building as the closets, and should be large enough to hold a slop-sink, a sink for washing utensils, and a sufficient storage of vessels not in immediate use. The bath-room must be long enough to hold a bath so placed that only one end is against the wall; and large enough to admit of a patient being wheeled in and lifted into the bath. The first and last thing to be thought of in designing a ward is cleanliness. Everything that favours the accumulation of dust or dirt must be studiously avoided. All avoidable corners, all ledges or recesses, all quirks and unnecessary mouldings, are things not to be tolerated within the ward-pavilion. Floors should be as solid as concrete and solid wood-blocks can make them. The ideal wall surface for a ward has yet to be discovered. Parian cement has proved a costly failure, and glazed bricks or tiles not only have many joints, but cannot be had of sufficiently true a surface to prevent altogether the lodgment of dust. In France the ward-walls are usually finished with what is called "stuc," which is neither more nor less than some kind of cement painted and varnished. There is much to be said in favour of the plan adopted at the Middlesex Hospital. Most, if not all, of the wards were many years ago covered with Parian cement, the surface of which was polished. This proved to be by no means the impervious surface that was expected, and eventually the lower surface of all the walls was covered with a painted and varnished dado, and the space above distempered. Every year each ward is in turn emptied, the distemper cleaned off down to the bare cement, and the walls and ceilings recoloured. The ventilation of a ward is a matter of the highest importance, for upon its efficiency and thoroughness the health of the patients mainly depends. Ventilation is commonly divided into two classes, natural, and forced or artificial ventilation, the one being accomplished by the aid of open windows and the ordinary fireplaces, the other by the aid of aspirating fans or exhaust furnaces, or a combination of the two. In England the most suitable form of ventilation is the most simple. Opposite windows assisted by the extracting power of the open fireplaces supply all that is required, where properly handled, to keep the atmosphere sufficiently diluted. With our humid atmosphere and comparatively equable climate, there are very few days in the year when ventilation by open windows cannot be resorted to.



In America the changes of temperature are so sudden and excessive, and the atmosphere so deficient in moisture, that mechanical ventilation would seem to be a necessity. The best form of window for a ward is the double-hung sash, with a hopper-light above. The lower sash should have the deep bottom rail and sill-board, and the hopper should have glazed cheeks at the side, to give the entering air an upward current, and to prevent down draughts. It is desirable, also, to have some means of admitting air at the floor-level under each bed. In many hospitals abroad the wards are raised above the ground upon piers, and the space thus obtained left open for the free circulation of air. The plan is a further development of the pavilion system, by isolating the ward from the ground, and preventing the stagnation of air around the building. We have adopted this plan at the Great Northern Hospital, but in this instance there are additional reasons in the matter of levels and light and air which rendered it almost a matter of necessity. We now come to the operation-room. In large hospitals with medical schools attached the operation-room becomes a theatre, with its tiers of benches for students. Where no school exists, it should be a room of sufficient size to hold the table, with room all round it for the operating surgeons and their assistants and nurses. Its aspect should be north, and it should have a top-light and a vertical light, and means should be provided for shutting off entirely either light at will. Everything in the operation-room should be made as aseptic and impervious as possible, and floor, walls, and ceiling should be capable of being washed down with a hose-pipe. At the Derbyshire General Infirmary we have recently rearranged the operation-room with the object of rendering it as aseptic and washable as possible. The walls are lined up to a height of about 7ft. with marble, the vertical and horizontal angles being rounded to a radius of 6in. The floor is of Mischiati mosaic, laid to a fall, with a specially-made fitting of gunmetal, closing the aperture to an open pipe leading out to a gully. The walls above the marble lining are painted and varnished. The sashes, skylight, and doors are all of iron, and every part is flush, no projections of any kind being allowed. The sinks and lavatory basins are of porcelain, and the tops of plate-glass. The advantage of using glass is that it can be seen at a glance whether the under side is clean. All pipes, the lavatory-tops, and the shelf for instruments are kept clear from the wall, so that no corners are formed. Adjoining the operation-room should be a room for the surgeons, in which the instrument case should stand, and at least one room for the administration of anaesthetics. The mortuary and post-mortem room must be placed in an absolutely detached building, and must also be at a sufficient distance from the wards to put any chance of contamination of the air of the latter beyond the range of possibility. Here, again, scrupulous cleanliness is all-important, and every part must be made easily washable. Cleanliness in the post-mortem room is of vital importance, and as much care should be taken to make it washable and aseptic as if it were an operation-room. The out-patient department is really a separate institution, and except for the convenience of having a dispensary common to both in and out-patients, there is really no advantage in having both departments in one group of buildings. Very serious evils have occurred in the past through the intimate intercommunication existing between out-patients' departments and wards, and the more distinct the two are kept, the better for the patients in the wards. I have said nothing about circular wards because I wished to avoid anything of a controversial nature. That circular wards are, within certain limits as efficient, and under certain conditions of site superior to rectangular wards I am convinced, but the main principle involved has yet to be decided by the test of time—a test which will be applied in the new Royal Infirmary at Liverpool, now approaching completion from the designs of Mr. Waterhouse.

Mr. F. T. BAGGALLAY moved a vote of thanks to Mr. Young for his very able paper on a subject which he had made peculiarly his own. He should like Mr. Young's opinion on the relative value of open fires and pipes for heating.

Mr. A. O. COLLARD, in seconding the motion, observed that Mr. Young had not referred to the suggestions of the Local Government Board as to the construction of hospitals drawn up by their

architect, Mr. Percival Gordon Smith, which seemed to him to furnish a mean between the extremes of wasteful prodigality and insufficiency.

Professor McHARDY, of King's College Hospital, supported the vote of thanks, remarking that they had been favoured with an address from the highest authority in this land on hospitals. He would strongly endorse the lecturer's remarks about allowing no lodging place for dust or dirt that could be avoided in a hospital; all mouldings, ledges raised, and depressed surfaces should be effaced from a design, and as women were naturally untidy, and had a faculty for rolling up, securing with a pin, and popping into a cupboard, anything objectionable, every wardrobe and locker should have glass doors, so that no nurse might be led into temptation. No piece of dust or dirt was beneath the notice of one connected with a hospital, for scrupulous cleanliness was essential. On one occasion when he had to report on the condition of a hospital to the committee, he borrowed a damp towel, ran it over the ledges and doors, and enclosed it to the secretary, saying that formed his report. He would earnestly impress on architects the necessity for providing adequate accommodation for the nursing staff, isolated from the main building, where they could enjoy recreation. It was a lamentable fact that the death-rate among nurses was double that of any other class of women of the same age in the kingdom, and it was urgent on the architect, therefore, in devising his plans to protect their lives as far as possible, and certainly he ought never to stow them away in attics ill-ventilated and unwarmed, over the sick wards, as was so often the case. The rooms for the medical and nursing staff ought to be entirely cut off by an open space from the sick. The lecturer had not sufficiently emphasised this essential requirement. Mr. Young had referred to the horrors of the old Hôtel Dieu, at Paris; but in the new one there were defects, including a bath-room only 7ft. 6in., by 9ft., and at least 45ft. high; in fact, the old Hôtel Dieu was picturesque, but abominable; the new one was abominable without being picturesque. He believed in providing an open fire in the middle of each ward, simply for the patients to look at; but the secret of heating a hospital was to warm the walls and floors by pipes, and not the air. In England we had variability, but not extremes of climate to contend with; but as a safeguard against exceptionally cold seasons, he had found from practical experience that a balance of 80 per cent. of artificial heat should be provided for by the engineer, while he sought to maintain an equable temperature of 60° F. in each ward, or two or three times in, say, ten years, when the external temperature sank very low, there would be a heavy mortality. They heard a good deal about condensation on internal walls, but if a building was thoroughly warmed its walls could not sweat. The Local Government Board was well staffed, but its officials would be more than human if they would avoid being fettered and demoralised by red tape—no Board should be trusted to lead the public, but must be educated and led by the practical men who thought out these matters.

Mr. PERCIVAL GORDON SMITH said it had always been his aim and wish to avoid red tape. He would emphasise what had been said by the lecturer and the last speaker about warming and ventilation. Unless a building were thoroughly warmed, every ventilating aperture would be closed. He agreed with Dr. McHardy that ample means of warming should be provided, although it might not be needed to the full extent. Hospitals should be aërially separated from the nursing establishment. Among the best foreign hospitals was the small one at St. Denis, Paris, which was far in advance of any he had seen in England, although behindhand in some details; that at Halle, and a new one in Berlin, were also well worthy of study by English architects.

The PRESIDENT, in putting the vote of thanks, said he was rather disappointed that Mr. Young had not given them the pros and cons on the question of circular versus rectangular wards. Both Mr. Young and Dr. McHardy had advocated separating the residences for the medical or nursing staffs from the wards by as wide an open space as the site could afford; but he had found the officials greatly objected to go out of doors to their rooms. He should trust to natural ventilation, except in very large

hospitals, and there the mechanical means used ought to be as simple as possible.

Mr. YOUNG, in reply, said he quite agreed with Dr. McHardy that the proper place to warm wards was at the sides; but all depended on what the wards were to be used for, fever patients requiring little provision of artificial heat, whereas for consumptives the heat must be considerable and uniform, while surgical cases should not be in a high temperature, but needed to be bathed in a stream of pure air. In a fever hospital he had provided the floors of wood blocks paraffined over, and the walls of concrete, the heating being by Boyd's stoves, and the wards could be washed out, purified, and fit for use by patients suffering from a different complaint without risk on the third day from being vacated. As to circular wards, apart from the merits of the form itself, there were some sites, which could not so fully be utilised by buildings of a different form. This was the case at Greenwich, the earliest circular ward in England, and also at Hastings. Medical men always grumbled when the residences for the staff were separated by a court or garden from the wards; but their objections could be safely ignored.

#### ARCHITECTS' REGISTRATION IN NEW YORK STATE.

AT the last meeting of the New York Chapter of the American Institute of Architects a discussion took place on the Bill "to Regulate the Practice of Architecture within the State of New York," proposed by the Western New York State Association of Architects. The general tone of the discussion was that public opinion in the State is now ripe for statutory intervention in the direction of taking the practice of architecture under protection, as has already been long done in the cases of medicine and of law. The question was raised as to whether the public would, in the long run, be benefited by restricting the practice of architecture as much as the profession would be, especially during an epoch of very active art production, and it was decided that there were, during the current phase of art predilection, good reasons for making the most of whatever opportunities should offer in this community for exploiting before the public the fact that the State Legislature sufficiently acknowledges the importance of the practice of architecture to debate the feasibility of enacting and, quite possibly, of actually enacting, ordinances for the protection of its professors from insufficiently trained interlopers, and that such would be the result of the passage of a Bill covering the subject, even if, under the circumstances of its production, necessarily defective, and probably of only temporary force.

The chief defect of the Bill was thought to be in the clause reading: "But nothing herein contained shall be construed to prohibit any person in this State from acting as architect of his own building, or as architect for any person employing him with full knowledge on the part of such employer that the person so employed is not a licensed architect in accordance with this Act," as such clause would nullify all the other provisions of the Bill, for the uses of unscrupulous persons. But it was recognised, says our American contemporary, *Architecture and Building*, that the insertion of the clause was probably demanded as a *sine qua non* by legislators in the interest, whether real or only supposed, of some of their constituents, and that it might be afterwards repealed or rectified. Meanwhile, as it would not be likely to make much, if any, impression on laymen, the desirable object would be gained of the public and the legislators being habituated to any ordinance in the interest of the profession, and of the best attainable practice of the building art. The next following clause of the Bill—viz., that nothing contained in it shall "prohibit architects residing in other States, and not having an office or carrying on a general business in this State, from competing for a special building, or from visiting the State for such purpose in person"—it was also felt, allows conditions which, except under strict regulations, might also conduce greatly to unprofessional practice. Eventually resolutions were passed generally approving of the principles of the measure, but objecting to some details.

The Devon and Cornwall Banking Company, Limited, are about to erect new premises at Camborne from plans by Mr. James Hicks, M.S.A.



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## ILLUSTRATIONS.

THE "ASCENSION," BY GEORGE TINWORTH.—CONTEMPORARY BRITISH SCULPTORS.—NEW SCOTLAND YARD.—NEW BANKING PREMISES, THREADNEEDLE-STREET.—GLENRIDGE, N.J.—COMPETITIVE DESIGNS FOR THE GREAT LONDON TOWER.—RESIDENCE AT CATFORD.

## Our Illustrations.

PANEL OF THE "ASCENSION," BY GEO. TINWORTH.

THIS beautiful panel has been fixed at St. Mary Magdalene Church, Trinity-road, Upper Tooting. Mr. E. B. Ferrey is the architect. The church has been lately built, and the walls all round up to about 12ft. high are arranged with bays in which it is proposed, as occasion presents, to place a series of panels representing incidents in the life of the Saviour. The Ascension, being the last act of the Saviour on earth, occupies the end position, and is at present the only panel fixed. When the proposal is carried out in its entirety it will have a very pleasing effect, and will, as far as we remember, be quite unique. The walls are plain brickwork tuck-pointed, and the panel, including a moulding surrounding it, about 4ft. by 2ft. 6in. The panel was made by Messrs. Doulton and Co., of Lambeth.

CONTEMPORARY BRITISH SCULPTORS.

(SEE description on p. 672.)

NEW SCOTLAND YARD.

The main building is a parallelogram of about 128ft. towards the Embankment by 168ft. deep, inclosing a courtyard 55ft. by 60ft. The buildings extend on the east and north fronts considerably, but were compelled to be kept low. The lower stories are of granite, which was all prepared by convict labour at Dartmoor, and as convicts are not necessarily masons, it had to be kept extremely simple, as it would have been beyond their power to execute any complicated mouldings. As it is, they must be considered to have succeeded remarkably well. The main entrance doorway is of Cornish granite, and is of free labour, massive and bold in design. The foundations were tedious and troublesome, in many places going to a depth of 40ft. below the level of the roadway. The trouble consisted in springs, which poured in a deluge of water, so that on one or two occasions, when the pumps broke down, the water acquired a great depth in the course of a couple of hours; but, in spite of this, the work was so well done that up to the present time not the smallest settlement has appeared. The walls are thick throughout, being mostly built of bricks from Gamlingay, in Cambridgeshire, and are all set in cement throughout, with the exception of the external red brickwork, which is in blue lias lime. The building consists of a deep front and back block, consisting of a centre corridor, with rooms on each side. Each of these is covered by high-pitched roofs, with gables at each end. The sides consist of narrower blocks, with corridors looking into the court, and rooms on outer sides only. The utmost possible simplicity of roof is thus secured. The chimneys have been much commented on. The object was

to draw the flues into a few large stacks, instead of letting them run straight up anyhow, emerging from the roof in all sorts of positions. When the roofs are of low pitch it does not much matter; but when a feature is made of a large expanse of roof it was considered that it would be undignified and somewhat unsightly, and so the existing arrangement was adopted, not without much trouble. The flues, however, are all very good, with no sharp or awkward bends. The building may be considered as practically fireproof throughout, and, indeed, with the exception of part of the roof, there is little to burn, all architraves, skirtings, &c., being of Parian cement. The works have been entirely carried out by Messrs. John Grover and Son, of Wilton Works, New North-road, under the immediate superintendence of Mr. George Grant as clerk of works. The lead-work and plumbers' work generally, as well as heating, have been done by Messrs. Wenham and Waters, of Croydon. A very large electrical plant is now being fixed for lighting the whole building. As yet the wiring alone has been done. This is all under the direction of Mr. S. S. Campbell Swinton. The whole of the gutters surrounding the summit are lined with Claridge's patent asphalt. This material was chosen also to cover the arches forming a depository for important documents, which it was necessary to protect from damp. The work has been done to the satisfaction of all concerned by Claridge's Patent Asphalt Company.

NEW BANKING PREMISES, THREADNEEDLE-STREET, E.C.

THESE premises, the freehold property of Mr. W. Brass, are being built on the sites of Nos. 43, 44, 45, 46, and 47, Threadneedle-street, and Nos. 1, 2, 3, and 4, Crown-court, which previously existed in the rear of the former, the court itself having been incorporated in the scheme and built over. The buildings are being carried out to suit the requirements of banks and insurance offices, and the sub-basement, basement, ground and first floors of about half the site have been let for a long term to the National Bank of India. Each floor is approached by a spacious stone staircase and a hydraulic passenger lift in the well-hole of the stairs. The whole of the floors are fireproof in construction. The front up to sill of first-floor windows is in polished grey Aberdeen granite, the upper part being in Portland stone. The works are being carried out by Messrs. W. Brass and Son, of Old-street, at a cost of about £20,000, from the designs of Mr. T. H. Smith, architect, of 17 and 18, Basinghall-street, E.C.

GLEN RIDGE, N.J.

THE drawing given herewith shows the new music-room wing added to the original house, which was erected some few years ago from the same architect's designs. The music-room has an alcove leading out of it into a flower porch, to which there is an arched entry from the garden. This is so contrived as to be inclosed in winter or of an evening, when the apartment, furnished like a conservatory, can be used for coffee service or light refreshments without interfering with the use of the ball room. The walls are of local stone. The room is wainscoted and has a great fireplace. On the garden front are two gables with a balustraded parapet between. Mr. Maurice B. Adams, F.R.I.B.A., is the architect.

PROPOSED GREAT TOWER FOR LONDON.

THESE drawings are merely sketches of a few typical designs, which were chosen not so much because the towers illustrated are the most suitable or likely to be selected for the prizes, but as representing some of the more original and striking suggestions or methods of construction. For our remarks upon the designs generally we refer our readers to the article published in our pages last week. The elevations printed herewith to-day are drawn to a uniform scale, and the height of the Eiffel Tower is set out by the side of the others for comparative purposes. We have received some other drawings, too late, however for the present issue.

RESIDENCE AT CATFORD, KENT.

THIS house, now nearing completion, is being built for Dr. Hammersley from the designs of Messrs. Williams and Hopton, 156, Regent-street, W. The walls are of bright stocks with red brick dressings, with Brown's ornamental and moulded bricks for cornices, strings, &c. The carved brick and stone was executed by

Messrs. Reid and Co., Berners-street, W. The staircase is of American walnut with large wrought and carved newels and turned balusters. The whole of the gates, iron and wood mantelpieces were supplied by Messrs. Jas. Allan, Senr., and Co. The building has been carried out by Mr. R. A. Lowe, of Chislehurst, at a total cost of £2,400.

## COMPETITIONS.

NEW CHURCH AT JOHNSTOWN.—Several architects were invited a short time ago to submit designs for this new church, to cost about £2,000. After careful examination by the committee of the various plans sent in, they were of opinion that the design bearing the motto "Semper Paratus" was the best. Before finally deciding, all the plans were submitted to Mr. G. A. Humphreys, M.S.A., architect and surveyor, Mostyn Estate Offices, Llandudno, N.W. (who had drawn up the "Instructions"), and also to one of the assistant architects to the Ecclesiastical Commissioners. Both these gentlemen were unanimous in their decision that the design by "Semper Paratus" was best and the most suitable for the requirements of the district. Upon breaking open the sealed envelope it was found that the successful architect was Mr. Alfred C. Baugh, Egerton-street, Wrexham.

WORCESTER.—Sixty-eight competitive designs have been sent in for the Victoria Institute, and the following firms of architects have been selected for the second competition:—1, Smith, Woodhouse, and Willoughby, Manchester; 2, Cook and Grocock, Cardiff; 3, Ryde and Bedford, London; 4, Salter and Adams, London; 5, Moore and White, London; 6, Simpson and Allen, London. Mr. Waterhouse was the assessor. The building is to cost £12,000. It comprises museum and art gallery, reading and reference library, newsroom, science and art school, and technical school in basement.

## SCHOOLS OF ART.

BIRMINGHAM.—The committee of the Birmingham Municipal School of Art have presented a report to the City Council recommending the acquisition of vacant land adjoining the Central School, in Cornwall-street, for the purpose of the extension of the building. The present building is now occupied to its fullest capacity, and is at special periods seriously inadequate to the requirements of space and organisation. The area of the proposed additional land is 968 square yards, while that occupied by the present school is 1,053 square yards. The owner, Mr. George Colmore, will let the additional land on lease for 99 years at £266 4s. per annum, and has offered £1,000 towards the cost of the extension of the school buildings. The committee have had prepared approximate plans for the extension, and estimates of cost, the probable outlay for buildings and fittings being about £13,000, and the net annual cost of the school would be augmented by about £1,500. During the autumn term of 1888 2,646 individual students were in direct connection with the school; a total increase of 667 on the number for the corresponding term of 1887, of 1,059 on that for 1886, and of 1,800 on the number for 1884. This rate of increase is maintained by the experience of the current year; and as the eleven branch schools are further developed, it may be expected that a still greater measure of progress will be realised. All the rate-aided art instruction within Birmingham is now controlled by the School of Art Committee; and the scope of the work done gives the school a position absolutely unique in England.

YORK.—The annual meeting and prize distribution of this School of Art took place on the 1st inst. Mr. S. W. North, who presided, said that the school was founded in 1842, and was one of the earliest in the kingdom. They had now upwards of 200 students, and they had been compelled to remove the work of the school to the Fine Art Institution, where they would have much larger accommodation. This removal involved them in an immediate expenditure of at least £1,000 for structural alterations. Mr. J. H. Fowler Jones (hon. secretary) read the report, which was adopted.

A new stone drinking-fountain is about to be erected at Redruth. The donor is Mr. J. Passmore Edwards, the proprietor of the BUILDING NEWS.



## WAYSIDE NOTES.

IT is not necessary to visit the exhibition at the Royal Academy in order to obtain an idea of the character of the architecture of the New Police Offices. The building may now be seen in very brick and stone, and a shilling cab ride or pleasant stroll across the Green Park will take the intelligent architectural amateur from the counterfeit at Burlington House to the real thing on the Victoria Embankment, where it stands within the shadow of the Westminster clock-tower. I vouchsafe this information for the benefit of any of your lay readers who may be visiting the Architectural Room at the R.A., and who may have noticed the question put to the Home Secretary at a recent sitting of Parliament. Such persons may feel curious about a building whose style has excited ironical remarks from more than one M.P., if we may judge from reports of proceedings in the House. Mr. Cavendish-Bentinck apparently does not like the design, and since "laughter" followed upon the Home Secretary's announcement that "the building appeared to him worthy of the site," I take it that others are in accordance with Mr. Bentinck's views.

I can well understand that Mr. Norman Shaw's fine design does not elicit much sympathy from the public. They, doubtless, consider it to be bare and barn-like, and, at the best, an unsightly eccentricity. We architects like it because it is of good outline, simple and pleasing in composition, and because it contains sundry quaint architectural conceits gratifying to the taste of the day. To the public the plainness of portions of the walls is eminently offensive, its great roof unmeaning, and its detail incomprehensible. Marked as has been the improvement in architectural taste during the last few years, the B.P. is not yet educated to the understanding of a design like the New Police Offices. One can hardly, however, express surprise at this, for the style of the design is an acquired taste even to the architect, and it is not every competent professional who will regard it with the enthusiasm of the school to whose powers of appreciation it particularly appeals. All this I can well understand, while, for my own part, falling in with the views of those who consider the design to be a unique specimen of Mr. Norman Shaw's handiwork.

It is a relief to get a really novel architectural composition for a public building in this country, where too often hackneyed commonplace has been the order of the day. The New Police Offices may never appeal to the mass of Englishmen; but the educated fraction of the community will duly appreciate it, and claim it as a welcome relief on regulation Gothic and Classic. To my mind, the building is a great ornament to the Embankment: from far or near it is pleasing to the eye, and the angle turrets are little gems of architectural design. And I doubt not but that when the works are thoroughly complete and encumbering hoardings removed, more appreciative notice will be taken of the building, and the croakings of persons unqualified to criticise anything in the way of architecture will be drowned in well-deserved applause.

Architects adverse to the competitive system will have noticed with pleasure that in the course of the remarks made by Mr. Matthews, in replying to the question about the Police Offices, the shortcomings of competition work were incidentally touched upon. The Home Secretary said that, "having regard to some recent conspicuous results in competitions of designs for large public buildings, he preferred to select an eminent architect upon whom he could rely." This statement is scarcely of such a nature as to cause the architects of the buildings referred to to swell with excessive pride. What these buildings are we can only guess, and it would be invidious to throw out suggestions as to the why and wherefore of Mr. Matthews's dislike to the competition system; but it is evidently a case of "once bit, twice shy." To my way of thinking, it would be well if more persons were inclined to be shy of competitions. They would often save themselves a lot of vexation, trouble, and loss, and architects would equally benefit, in the long run. There is a certain gratification in the reflection that often in the case of unsatisfactory results following upon competition jobs, the promoters of the

competition have only themselves to blame. The hope of gaining a lot of ideas from the architectural profession for a very small expenditure of premium-money induced them to organise the competition, and as reward they often find themselves with an unsatisfactory building, and a no less unsatisfactory architect.

The Westminster Abbey Commission has been well chosen, and seems to have given satisfaction all round. Satisfaction in this case, perhaps, means a measure of confidence that the Abbey may be not tampered with in such a way as to be offensive to true sentiment and archaeological and architectural instinct. The presence in the Commission of the Dean of Westminster, Mr. Waterhouse, and Sir Frederic Leighton should insure security on these scores. It would be difficult to hazard a guess as to the probable result of this Commission; but an idea seems to have gained ground that there will be a sifting process and sort of critical examination of existing monuments. There seems some reason to suppose that the tablets, effigies, busts, and bulky monuments at present cramming the Abbey to its utmost capacity will come before a searching tribunal. Had they sense and feeling, many might well quake with anticipation of the result; for, undoubtedly, there are not a few monuments taking up large spaces that commemorate mere nobodies, judging by what we know of the intrinsic merit they exhibited when in the land of the living.

But even supposing a clearance to be then made within the Abbey walls, the whole problem before the Commission will still be unsolved, and the National Campo Santo question must come to the fore again, whether this should be part and parcel of the Abbey buildings, or a distinct edifice of itself, will probably be one of the knotty points before the Commission. We all have a natural antipathy to the idea of modern additions to Westminster Abbey, and it is my sincere hope that the Commissioners may decide against any project to make the addition. At the same time, the practical, common-sense man who comes along and asks, "Why, in the name of fortune, if a new building is wanted, is it not built?" has got Mediaeval precedent on his side. He may point to the unexceptional practice of the old builders, who built in their own style on to the work of their predecessors, and, if skilled at argument, it would not be easy to convince him that the conditions of the present case and those attendant upon architecture in the Middle Ages are incompatible.

It is often supposed that the days of large fortune-making by contracting have passed away, and that the contractor of the period is a person who ekes out an existence by means of the meagre profits he can only secure by reason of the cutting-down of prices in the competition of the times. Nevertheless, the late Mr. Thomas Andrew Walker, contractor for the Manchester Ship Canal, managed so to conduct his business as to leave a personal estate that has been sworn at the gross value of nearly a million sterling, and a net value of £551,694. This is a comfortable amount enough, and should encourage the contracting fraternity who may be desponding about the times and manners, to believe that, even in days when quantities are a little more detailed than "provide and fix one staircase complete as drawings," there is still room for energy and enterprise, and money is to be made. We may never have such another golden age for contractors as the railway mania proved; but talent for this line of business will always have its rewards when the talent is accompanied by other qualities that render it useful, and without which it is an empty vanity.

I am glad that the promoters of the Central London Railway Bill have met with encouragement at the hands of the Committee of the House of Commons to whom the consideration of the Bill was intrusted. The few restrictions and modifications imposed by the Committee are only reasonable, and, except delaying the scheme for a short time, will not hurt anyone. If all goes smoothly, the new enterprise should pass every opposition and criticism, and, before long, work on the proposed railway be seriously commenced.

The Architectural Association Committee on educational matters has discharged its duties most creditably, and if only full benefit can be

taken of the hints and suggestions embodied in the admirably drawn-up report, the educating power of the A.A. will be presently four-fold. As in other matters, money is the first consideration. The scheme, it must be evident to everyone, cannot be carried into effect unless increased funds are available. Whether the London members will still object to the raising of the subscription to one guinea—which apparently, like Registration, must come sooner or later—or are in a different mood to that which held them when it was last proposed to increase the amount, remains to be seen, and probably will be seen at an early date. It certainly would seem to me the first step to take, for if the increased funds be not forthcoming the scheme falls to the ground; unless, indeed, there be other practical suggestions forthcoming as to how the desired end may be attained. For I doubt whether the fees expected from students could be safely relied upon to insure a successful launching of the new system; and the reforms and innovations proposed by the committee, excellent though they would prove, are best left alone unless the way seems clear. It is very bad to be too fearful of failure in new ventures, when the ventures appear just and likely to succeed; but in this case there should be a good deal of caution exercised, or an old system, which in its time has achieved great things by humble means may be overthrown for one that is untried and may be a failure. A failure does not appear probable from any defect in the principles of the proposed system, but only from inefficient means for carrying it on powerfully. I hope, for the weal and credit of the old Association, that it may be safely carried into execution, and that under the new order of things the education of the architectural student will be placed on a more scientific basis, and reduced more to a system than heretofore. From a perusal of the proposed curriculum in the May number of *A.A. Notes* there appears no reason to doubt that the labours of the committee have insured this, and that the scheme, if successfully inaugurated, will be of permanent benefit to the architectural student and, indirectly, to the whole profession. GOTH.

## CHIPS.

At Hollacombe, near Winkleigh, Devon, the foundation stone of a mission church was laid last week. The building is to be 20ft. by 20ft. 9in., and is to include tower, porch, vestry-room, and chancel. It will be built of local stone, with Bath stone dressings, and will cost nearly £700. The work is being carried out by Mr. Ellis, builder, of Northtawton, from the plans of Mr. Kelnor, of Winkleigh. The church is to be dedicated to St. Michael and All Angels.

A joint-scheme of water supply is about to be carried out for the local authorities of Insh and Premnay, N.B., from plans by Messrs. Jenkins and Marr, of Aberdeen.

Last week a chapel, attached to the Convent of the Sacred Heart, at Burnham, Somerset, was opened. The new buildings consist of the chapel, approached by a cloister from the convent, and also a chaplain's residence, the large block of buildings intended for a ladies' boarding school and apartments for the nuns. Mr. A. B. Wall, of Cheltenham, executed the carvings and altar piece in the chapel, Mr. J. H. Kitch, of Bridgwater, was the builder, and Messrs. Bradfield, of Bridgwater, executed the masonry. The architect was the Rev. A. J. C. Scoles, also of Bridgwater.

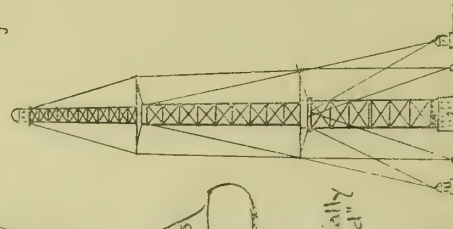
The County Council for Hertfordshire discussed at their last meeting the future duties and emoluments to be given the county surveyor, Mr. Urban Smith, and decided that he be paid £500 per annum, in addition to allowances of £300 per annum for travelling expenses, and a sum not exceeding £150 for actual outlay on clerical assistance for main road accounts. They also voted Mr. Smith an honorarium of £100 for extra services during the past year.

The new Palace of Varieties, Oxford-road, Manchester, will soon have the Salvation Army for a very close neighbour. The opposite corner site to the above, facing Oxford-road, with 90ft. frontage, and the new 60ft. thoroughfare called Whitworth-street, with 120ft. frontage, has been secured by General Booth for close upon £15,000. Preliminary sketches of the buildings proposed to be put upon the site—viz., a large citadel (accommodating 3,000 persons), temperance hotel, several shops, and offices—are being prepared by Mr. J. Williams Dunford, architect, of 101, Queen Victoria-street, E.C. The cost of the buildings will be about £12,000.

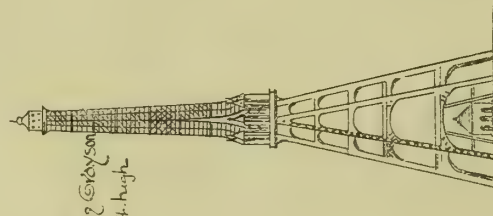


PROPOSED  
GREAT TOWER  
FOR LONDON -  
Competitive  
Designs  
showing  
comparative heights

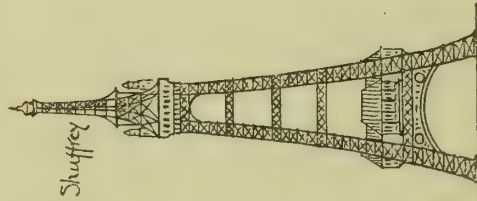
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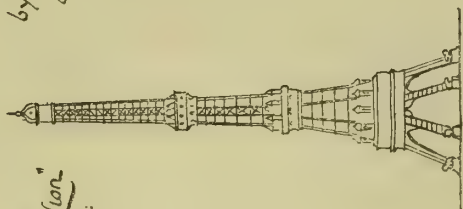
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by Messrs Fox & Gwynne  
1,300 ft. high



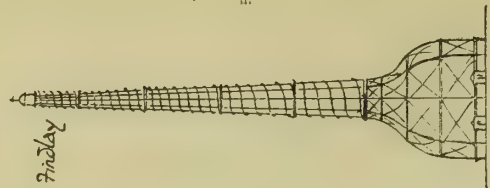
No 57.  
by Messrs Read & Shuffrey  
1,250 ft.



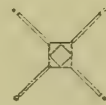
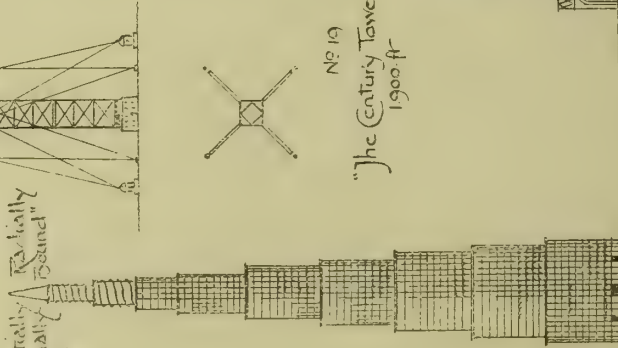
No 68  
"British Lion"  
1,200 ft.



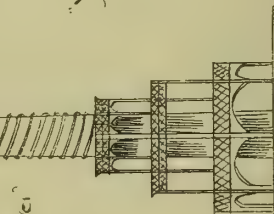
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by Messrs Rendel, Findlay  
& Ricardo.  
1,260 ft.



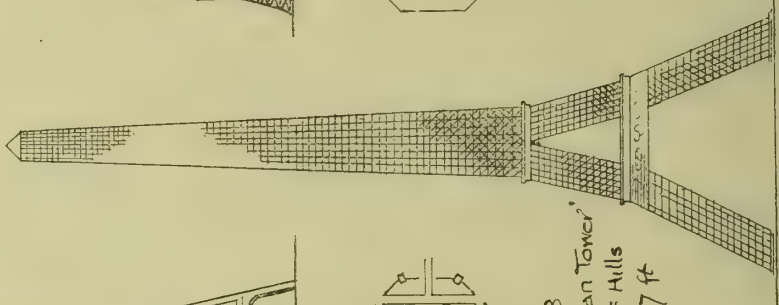
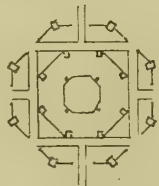
No 5  
"circumferentially Radially  
& Diagonally  
Bound"  
1,600 ft.



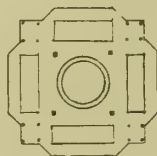
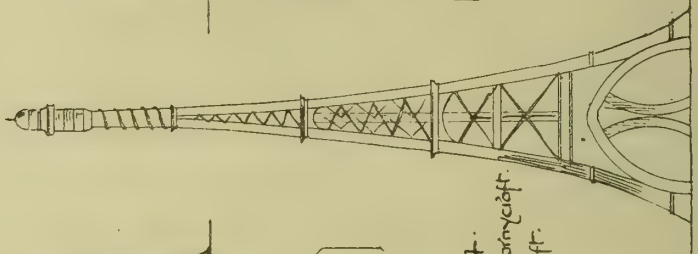
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"The Century Tower"  
1,900 ft.



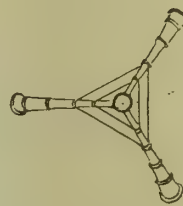
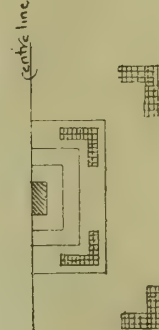
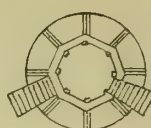
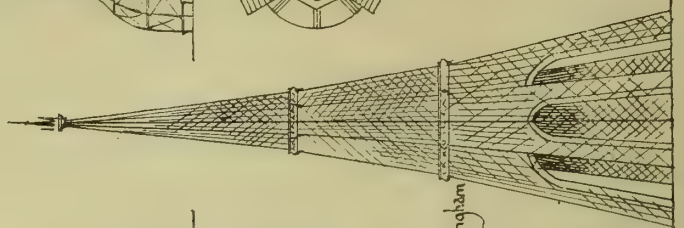
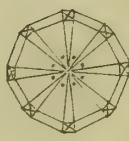
No 38  
"The Vegetarian Tower"  
by A. F. Hills  
2,007 ft.



No 14.  
by J. I. Thompson  
1,760 ft.



No 16  
by E. de Velé Buckingham  
1,700 ft.

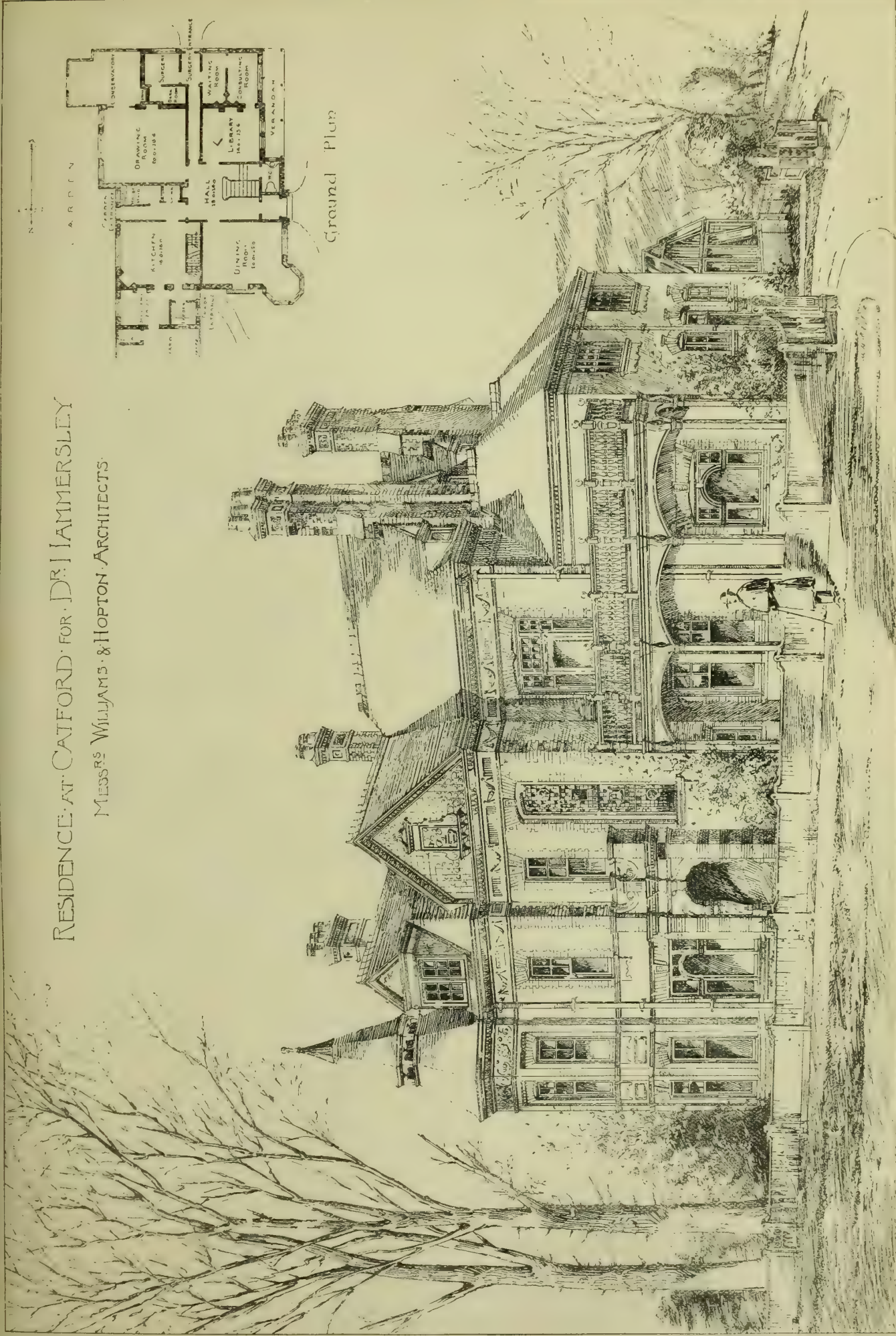


See also other



RESIDENCE. AT CATFORD. FOR DR. HAMMERSLEY

MESSRS WILLIAMS & HOPTON ARCHITECTS.





## CONTEMPORARY BRITISH SCULPTORS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

IT would be quite beyond our scope to give anything like a detailed account of the work of the eminent sculptors whose portraits we print to-day. We simply propose to furnish a few leading particulars:—

Sir Frederick Leighton, Bart., P.R.A., was born at Scarborough, Dec. 3, 1830. He commenced his art studies in Rome, under Filippo Meli, at the age of 13, a year later entering as a student the Royal Academy of Berlin. His general education was continued after this at a school at Frankfurt-on-the-Maine. Hiram Powers, the celebrated American sculptor, was consulted on the embryo painter's work, and he advised the adoption of art as his profession. He then continued his studies in Brussels and Paris, afterwards becoming the pupil of E. Steiner, of Vienna. Mr. Leighton's first exhibit at the Royal Academy was in 1855, when his large picture of "Cimabue" (representing the procession which is said to have accompanied with great honour and rejoicing through the streets of Florence, to the church of Santa Maria Novella, Cimabue's picture of the Madonna) was bought by the Queen. "The Triumph of Music" followed a year later, and ever since the walls of the Academy have been graced by this great artist's beautiful works, all of which are more or less familiar to students of art. "The Five Foolish Virgins," from the reredos of Lyndhurst parish church, is one of his notable pieces of decorative work, and the Industrial Arts of Peace and War at South Kensington are other examples. "The Dance," a decorative frieze shown in 1883 for a private mansion, and "Music," a similar work exhibited in 1885, may also be mentioned. In 1886 his bronze statue of "The Sluggard" formed one of the attractions of the year, and a design for a ceiling. In 1887 Sir F. Leighton designed the Jubilee Medallion. "Needless Alarms" was a statuette from his chisel. The celebrated "Athlete wrestling with a Python," now at South Kensington, was exhibited ten years earlier. In 1883 the decorative cartoon prepared by the President for St. Paul's Cathedral Dome attracted attention. Several books were illustrated by Sir Frederick. He was elected A.R.A. in 1864, and R.A. in 1869. He was chosen President on the death of Sir Francis Grant in 1878, and a few days later received the honour of knighthood. He was created a baronet in the year of the Queen's Jubilee. He is D.C.L. of Oxford, LL.D. of Cambridge, and LL.D. of Edinburgh. Sir F. Leighton was colonel of the Artists' Corps of Volunteers for some years, but he resigned that commission in 1883. Sir Fredk. Leighton is a member of several foreign artistic societies, and has acted as president and otherwise as member of the several International Exhibitions at home and abroad. His portrait is by Messrs. Kingsbury and Notcutt, of Knightsbridge, S.W.

Mr. Hamo Thornycroft, R.A., was born in 1850, and brought up in Cheshire. He was educated at Macclesfield Grammar School and at University College, London. He worked in his father's studio at the age of 17, and in 1869 was admitted as a student at the Royal Academy. He has studied in Italy, and in 1875 he gained the gold medal of the Royal Academy for a group of "A Warrior bearing a Wounded Youth from the Field of Battle." In 1880 he made his first success, with a statue of "Artemis," which was executed in marble for the Duke of Westminster, and is now at Eaton Hall. He was elected A.R.A. in 1881, and R.A. in 1889. His statue of "Teucer" was purchased for the Chantrey fund, and is now in bronze in the South Kensington Museum. "The Mower" in 1884 and "The Sower" in 1886 are celebrated works from his hand. "The Memorial to the Poet Gray," at Pembroke College, Cambridge, must also be mentioned, as well as the bust of Samuel Taylor Coleridge for Westminster Abbey. The statue of General Gordon in Trafalgar-square is his work. This year at the Royal Academy "The Mirror" is exhibited as his Diploma contribution to the galleries of Burlington House. Messrs. Maull and Fox are the photographers of the portrait we give.

Mr. George A. Lawson was a student at the Trustees Academy, Edinburgh. After some time spent in Italy, he gained his first public commission by competition for the colossal statue of the Duke of Wellington which surmounts the Wellington column, Liverpool, together with a

panel in bronze of the Guards at Waterloo for the base of the column. This was followed by the statue of the late Lord Cochrane (bronze), for Valparaiso; also the statue (bronze) of the late William Wheelwright for the same place. Next the statue of the late John Biggs (marble), for Leicester, and then the statue (bronze) of the late Joseph Pease, for Darlington, with four subject panels, in bronze, on the pedestal. The statue of the late John Vaughan followed for Middlesbrough. This was also in bronze, with four subject-panels. Then came the Moorhouse statue (bronze) for Christchurch, New Zealand; while at present he is engaged on the colossal statue of "Burns," which will be in bronze, with subject-panels, for his native town (Ayr). To these should be added the pediment for the new municipal buildings, Glasgow, together with apex group and frieze over principal entrance. Of ideal works, may be mentioned "Cleopatra," "Callicles," "Daphnis," "A Danaid," "Ave Caesar! Morituri te Salutant," "Summer," "Bequeathed by Dying Sire to Son," and the realistic group called "Motherless" (Academy last year). Smaller groups in marble and terracotta—amongst the principal of the latter is the "Bard," presented to the Scottish National Gallery by the Society for the Promotion of Fine Arts in Scotland. Elected H.R.S.A. in 1884. Mr. Geo. A. Lawson's portrait was produced by Messrs. Done and Ball, of Baker-street, W.

Mr. E. Onslow Ford was born in 1852. In 1870 he went to Antwerp and entered the antique school there, when he studied under M. Buffeau. A year later he went to Munich and joined the Academy, still studying painting; but before leaving he gave this up for sculpture. At 18 he was living in London endeavouring to live by his art, and at this time executed several busts. He went to Munich and became a follower of Wagnüller, and had a studio of his own. Here Mr. Ford married, being at the time rather more than 21 years old. Shortly after this event he returned to London, where he has since resided. His first important commission was the Rowland Hill statue at the back of the Royal Exchange, won in competition. His statues of Mr. Gladstone; Mr. Irving as "Hamlet"; and "Linos" are all works of known merit; his "Folly" was bought by the Chantrey Trustees; "Peace" was premiated at the Salon in 1888. The "Singer" appeared last year at the Royal Academy, and this season Mr. Ford has surpassed himself by the great statue of General Gordon, which is to stand in front of the Royal Engineers' Institute at Chatham. The hero is mounted on a camel. The bronze is to be uncovered next summer. His statue of "Music" is in the lecture theatre at Burlington House. We are indebted to the *Portfolio* of April last for some of these particulars. An illustrated notice of Mr. Ford's work was then given. Our photographic portrait to-day is from the studio of Messrs. Done and Ball, of Baker-street, W.

Sir Joseph Edgar Boehm, R.A., was born in Vienna in 1834, of Hungarian parents. His father was Director of the Mint in the Austrian empire, and the possessor of a celebrated private collection of works of art. He was educated at Vienna, and from 1848 to 1851 in England. He studied also in Italy and in Paris, but has been settled in England since 1862. He received the first Imperial Prize of Vienna in 1856. He was elected a member of the Academy of Florence in 1875, and an Associate of the Royal Academy of London in 1878. Mr. Boehm executed a colossal statue of the Queen for Windsor Castle in 1869; also a monument of the Duke of Kent in St. George's Chapel, and bronze statuettes of the Prince of Wales and all the Royal Family (for the Queen); also a colossal statue at Bedford of John Bunyan, 1872; and another of the Duchess of Bedford for the Park, Woburn Abbey, in gilded bronze, 1874; a statue of Sir John Burgoyne in Waterloo-place; a colossal equestrian statue of the Prince of Wales for Bombay, 1877; a statue of Thomas Carlyle; a monument at Deene to Lord Cardigan; a monument at Aldershot Church to Sir Yorke Scarlett; a colossal figure of an angel in marble for the Marquis of Northampton for Castle Ashby, and a horse group in bronze for Eaton; also a colossal equestrian statue of Lord Napier of Magdala at Calcutta, Lord Lawrence in Waterloo-place, and the new Duke of Wellington memorial for Hyde Park Corner. Sir Edgar was elected member of the Academy of Rome in 1880. The Government gave him the commission to execute the statue of Lord Beaconsfield for Westminster Abbey, and

the effigy of Dean Duncombe for York he did from Mr. Street's last designs. The reredos in marble for Newmarket Church and the monument of General Gordon in St. Paul's Cathedral are from his hand. Sir Edgar Boehm designed the medallion of the Queen for the Jubilee, and this served as the model for the new coinage. In 1881 he was elected Sculptor in Ordinary to the Queen, and he has delivered lectures on sculpture at the Royal Academy. This sculptor continues his animal studies, having lately executed a portrait of the Duke of Portland's celebrated racehorse St. Simon, the horse Cremorne for Mr. Savile, a colossal "Lion and Lioness" for Lord Leicester, and other similar works; also a life-size "Bull, with his Leader," which, after being shown at the Royal Academy, was purchased by the Committee of the Melbourne Exhibition. In Jubilee year Sir Edgar executed about six or eight statues of the Queen, and has just finished a colossal statue of the late Prince Consort for Windsor Park. He was created a baronet last year, and is at present engaged upon a fountain with mythological subjects for the Duke of Bedford, an equestrian group for Baron Rothschild, and an equestrian statue of Lord Napier of Magdala, to be placed between the United Service Club and the Athenæum, in Waterloo-place, S.W. His portrait is by Messrs. Elliott and Fry, of Gloucester-terrace, S.W.

Mr. W. B. Richmond, A.R.A., was born in 1842. He made a portrait of his brother in water colour when he was nine years old, and he "lived in an atmosphere of art," several distinguished painters frequenting the student's home. The study of poetry and music was seriously undertaken at this time. In 1856 he became a probationer at the Royal Academy, and he was thrown early into contact with John Leech, Rossetti, William Morris, Swinburne and others. His first picture was "Enid and Geraint," after which came "The Reconciliation of David and Saul." In 1859 he painted "Boaz and Ruth," the proceeds of the sale of which paid for a first trip into Italy. Portraits of children after this won for him some reputation; but he says that "finding he would be immersed in portraiture," he left for Italy again in 1865, where he painted frescoes as essays, and completed "The Triumph of Bacchus," exhibited in the Royal Academy in 1869. Afterwards a lengthened stay in Algiers enabled the artist to study colour out of doors of Arabs, negroes, &c. Portraits followed of Mr. Gladstone, of Lady Frederick Cavendish, and of Lady Halifax, on his return to London, as well as a colossal "Prometheus." The decoration of the walls of Lythe Hill, in fresco, was next carried out, which work was followed by a large fresco at Liverpool, 40ft. by 20ft. The design was modelled in wax first, and contained sixty-four figures. It represented "The Triumph of Commerce over Barbarism." In 1878 Mr. Richmond made his first effort on a large scale in sculpture, modelling his "Runner," not in clay, but in tow and plaster; but he says he would not advise anyone to repeat that labour. This figure was shown in 1879 at the Grosvenor Gallery. "The Arcadian Shepherd" was exhibited last year at the Royal Academy. His photograph was done by Mr. Moffatt, of Edinburgh.

## THE BASILICAN CHURCH OF BRIKWORTH, NORTHAMPTONSHIRE.

By FREDERICK GEORGE LEE, D.D., F.S.A.

BRIKWORTH, with a population of about 1,200, lies about seven miles north of Northampton, and twelve from Peterborough, thus not very easily accessible or attainable. The name of the place is set forth as "Bricklesworth" in the *Saxon Chronicle*. In "Doomsday Book" it is called "Bricklesworth." In the "Record of the Taxation of Pope Nicholas" (in which the taxation for the rectory is put at £21 6s. 8d., and for the vicarage £4 13s. 4d.) the name is first written "Bricklesworth," and later on "Bricklesworth." The name as at present spelled, Brixworth, stands in the *Valor Ecclesiasticus*.

The living is a "discharged vicarage," as it is technically termed, in the diocese of Peterborough, and was formerly in the gift of the Chancellor of the Cathedral Church of Salisbury.

\* This is said to signify a locality or habitation noted for its springs. There is, as I was informed, scarcely a place in the whole parish in which a spring is not to be found, and often on the very surface of the land.





All Saints Brissworth Northamptonshire

but now is in the patronage of the bishop of the diocese. The changes in detail as regards its patronage were thus effected:—In the 13th century the advowson was bestowed upon Salisbury Cathedral, the chancellor thereof holding it as his prebend. On the death of Dr. Hugh Percy, Bishop of Carlisle, in February, 1856, when certain of the cathedral properties were considerably manipulated, it passed to the Ecclesiastical Commissioners, who subsequently disposed of the Prebendal estate to Mr. Jones-Lloyd, afterwards Lord Overstone, upon whose death, the then lessees receiving due compensation, the patronage became vested in the Bishop of Peterborough.

Its parish church, dedicated to God in honour of All Saints, is a building of almost unique antiquity and interest, being one of the very few remaining English churches erected on the Basilican type and plan. A considerable portion of the building, together with all the foundations, many of which remain buried, though during the last fifty years they have been carefully examined by competent judges, are certainly of Roman materials and workmanship. The bricks, the arches, the plan, all the lower part of tower portion of the superstructure, the peculiar and unmistakable quoins, the westernmost turret, the lower half of the tower walls with its internal windows, belong no doubt to the period of the Roman occupation here\*; for these reasons, therefore, this building demands special consideration.

Answers to the "Why?" and "Wherefore?" shall now be set forth:—

The *Basilica*, or hall of justice,† in its most ancient and simplest form, was a rectangular

\* It is believed that our Roman conquerors had a station here of some importance. Adjoining the churchyard may still be clearly traced the remains of a camp, near which, as I am informed, several coins of Antoninus Pius and Carausius have been found, together with a few cinerary urns and bronze ornaments.

† See Parker's "Glossary of Architecture," Vol. I. pp. 65, 66 (Oxford: 1859), in which the term "*Basilica*" is shown to have been anciently applied to a tomb, as also to "the small chapels appended to churches." It is still likewise given "to some of the old churches of Rome by way of honorary distinction."

building, apportioned in its almost universal ground-plan into three equal squares; two with no divisions, conjoined at one end, and thus the larger; the other distinguished from the two by some kind of division—arch or raised platform. In front of the larger and lengthier division there was usually an *atrium* or porch; while, at the extreme end of the smaller division, there was often a semicircular apse, or (as it was of old technically termed) *concha*, so-called from its resemblance to the inner portion of a shell.

This tripartite division is found in some of the earliest heathen temples—e.g., that of Pæstum, the temples of Theseus, Jupiter, Æsculapius, and in those of Jupiter Stator and of Neptune at Rome. The Tabernacle, Temple, and synagogues of the Jews are one and all of a similar ground-plan.

Here, in such basilicas, of old, were held the courts of justice in civil matters, and sometimes religious services and public rites of a religious character. The semicircular apse would thus have contained the *bema* or tribunal, raised by a platform above the rest of the edifice, where the chair or throne of the judge would stand. The rectangular portion nearest to this apse would be apportioned to the use of the advocates and their clients, while the large part beyond and below would be indiscriminately filled by the public.

Subservient to this main structure were often erected lateral chambers, on either side of the part just described, for advocates, officers, the preservation of records, &c.

There can be little doubt that this type of building is of remarkable antiquity,\* going back to the very earliest ages, when, as is certain, both regal and sacerdotal functions were united in one person, and were often at the same time delegated to a class of officials representing both

\* Nothing is stated in the text above without direct and distinct authority. To secure brevity, however, references are not set forth, because, so far as the author is aware, there is little difference of opinion existing as to the leading facts, features, and principles enunciated.

monarch and priest, both king and judge. Virgil has: *Rex Anius atque sacerdos*.

Thus, when Christianity had triumphantly overrun the Roman empire, these halls of justice were found, in every particular, suitable for Divine worship. In such architectural ground-plan (independent of other features) the Temple, the Synagogue, and the Basilica possessed a common idea and scheme. The *bema* served for the bishop's official chair or *sedes* (hence, subsequently, his see); the advocates' official chamber served for vestries or side chapels, or for the table of the prothesis; the altar was placed in front of the *concha*, near which the officials stood for sacrifice and prayer, while the hall itself afforded abundant space for the worshippers, those not yet admitted to the full privilege of worship having to be content with the *atrium*, or porch.

Additions for convenience sake were, of course, subsequently made to such halls of justice by porches, peristyles, constructional galleries, *triforia*, internal balconies, domes, and towers. Often a crypt had been constructed under the *concha*, which was occasionally used as a temporary place of confinement. When the *Basilica* was formally and specially devoted to Christian worship, and its walls anointed and consecrated with prayer and ceremony, this crypt was sometimes used as a burial-place.\*

There are numerous Christian churches in Italy, Sicily, Dalmatia, Bosnia, and elsewhere of a purely Basilican type, both in ground-plan and elevation: none perhaps more engrossingly interesting than the old church of Torcello, near Venice, now far too uncared-for and partly ruinous, but full of singular beauty and appropriateness in its internal arrangements, and

\* The following churches, in plan and certain details, are more or less of a similar character:—Earls Barton, Northants; Sompting, Sussex; Dunham Magna, Norfolk; Barnack, Northants; Caversfield, Iver, and Lavenham, Bucks; St. Michael's, Oxford, Northleigh, Oxon; the destroyed church of Tettesworth, Oxon (on the old coach-road from London to Oxford); Beestone St. Lawrence, Elmham, and Newton, Norfolk; and Tintagel, Cornwall.



remarkably curious. The parish church of Murano is of the same type, though later. So, too, is the ancient church of St. Ambrose, at Milan, with its western court-yard and cloisters. The author studied these buildings for many days, taking several drawings and notes of their most remarkable features, in the month of November, 1877, and these are before him now, illustrating Basilican features (both in their simplicity and development) of notable interest.

The ground-plan of Brixworth Church, after restoration\* and as at present existing, proves the church to have been erected upon the most ancient and earliest Basilican type. It has a nave (so to write) divided into two parts of one and two-thirds, of 30ft. and 60ft. respectively, and exactly 30ft. in width—an example of size recognised and admitted as of the highest antiquity. A square atrium, recessed from the outer west wall of the nave on each side to the extent of 9ft., stands in the centre of that part of the building, having in turn a circular central tower-let, or turret (erected circa A.D. 870), for staircase to its west. At the east end, the *concha*, or apse, is semicircular in form within, though polygonal without, and externally supported by six shallow and flat buttresses. The nave is 90ft. long by 30ft. wide.

Anciently, as existing foundations prove, the present chancel was surrounded by an ambulatory, the outward wall of which was exactly parallel with the existing wall of the chancel. The original floor of this last was found to be perfectly level with the floor of the nave. But in this case, though crypts were common to many ancient basilicas, there was certainly no crypt.

The walls of the nave consist of four bays (as it were), the arches being semicircular, built with large flat bricks or Roman tiles, of a bright red colour, resting upon square impost of the same material, these placed again upon square piers of tiles and stones intermingled. No Norman woodwork† remains.

Above, on either side, between the openings of the lower arches, are three clerestory windows, of the same type as those below, but in every respect smaller. These contain far more stones

mortar made use of having itself hardened most effectually.

Here it should be noted that the lower portion of the original walls are no less than 4ft. thick—in some parts even more—while the upper part or clerestory narrows somewhat by several inches, but still retains its massive and solid character.

The rectangular tower at the west end is of the same kind of work, with arches of a like construction of Roman bricks. Higher up, within the tower, on its south side, as also on the west side, are three very early conjoined arches, having Saxon balusters between them in stone, added, no doubt, circa A.D. 870, when the round tower was added on and the west window necessarily closed up. Those on the western end of the nave have been sadly over-restored.

The original north and south aisles were no doubt co-eval with the nave, as was also the eastern apse. But the aisles of the old hall of justice have been removed.

The south chapel, of Early English work, was erected by Sir John de Verdun, some time Lord of the Manor, whose broken memorial effigy under an arched recess still remains, though it has been barbarously treated. The chapel has a three-light east window. Its roof, and, indeed, all the roofs, are modern. The north door, likewise a modern addition, is most awkwardly placed towards the east end near the sanctuary of the chapel. Any other position would have been better. The west end of the chapel would have suited it best.

The choir is very simple and very severe.

Two stone slabs remain in the nave, one with an inscription in Norman-French to the memory of Adam de Taunton, some-time vicar; the other in remembrance of Simon Curteis, about the same period. Each originally had brasses, but these are gone; while the inscriptions themselves are every year becoming more and more illegible. A late altar tomb of fair design, over the remains of Lord Inverary, is in the south chapel. Here traces of wall-colouring—conventional flowers, with alternately two blackbirds or ravens placed back to back—were discovered in 1849; but

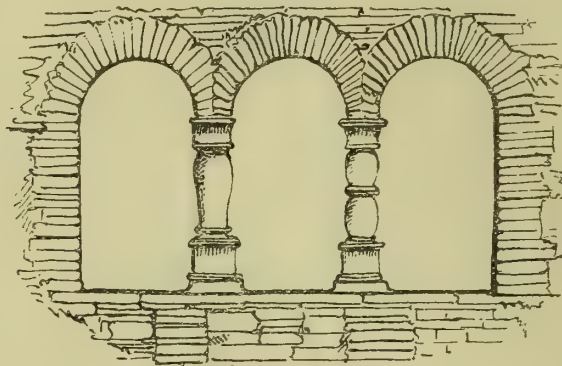
of antiquity. And I likewise quite allow that, unless judicious repairs are from time to time carried out, such archaeological works of interest might be altogether lost to us. It is, however, said, by all whom I have consulted, that the restoration, made about thirty years ago, under the Rev. Mr. Watkins, Vicar, was careful, judicious, and effective. None can deny this much, though they may reasonably enough desire to have inspected the church before such restoration was undertaken.

#### THE LATE CITY ARCHITECT OF GLASGOW.

MR. JOHN CARRICK, the city architect of Glasgow, died at his residence in Park-quadrant, Glasgow, on Friday, aged 70 years, from influenza.

Mr. Carrick was, says the *Glasgow Herald*, one of the oldest officials connected with the Corporation, and the value and importance of the work he did for the city over a period of close upon half a century it is impossible to over-estimate. He was the efficient instrument in carrying out every scheme of public improvement undertaken in Glasgow throughout all these years. His knowledge of municipal matters was exact and extensive, and to this exceptional experience he added rare clearness of view and soundness of judgment. Everything which he undertook was done thoroughly. Mr. Carrick served his apprenticeship with the late Mr. John Bryce, architect, brother of the better-known David Bryce, of Edinburgh. Afterwards he was assistant to the late Mr. Herbertson, and he also spent a short time in England and in foreign travel. Returning to Glasgow, he began business in partnership with a Mr. Brown, under the firm of Brown and Carrick, but the co-partnership lasted only a few years, Mr. Brown retiring on falling heir to an estate. In 1844 Mr. Carrick entered the service of the Corporation, succeeding the late Mr. Hume in the office then known as superintendent of streets. When the City Improvement Scheme was projected, Mr. Carrick was one of its most cordial supporters, and the duty of selecting the areas to be dealt with, and of determining the method in which they were to be operated upon, were largely entrusted to him. In course of a few years, he saw a large portion of the central district, hitherto a danger and disgrace to the city, completely transformed in character and appearance. Other improvements executed or projected about this time were the formation of new squares at Bridgeton Cross and Gorbals Cross; the opening up of a fine approach to the Cathedral from the south by way of John Knox-street; the covering in of the Molendinar Burn, and the formation of a street along its course; the construction of the Alexandra Parade, and the laying out of the lands of Oatlands and Overnewton for the erection of workmen's houses. Mr. Carrick was also the architect of the workmen's dwellings in the Saltmarket, and of the model lodging-houses erected by the Improvement Trustees. To Mr. Carrick, too, fell the duty of preparing the designs for four police-stations and for the pavilion fever and smallpox hospitals at Belvedere. He also remodelled the City Hall. The question of the disposal of sewage necessarily received a large share of Mr. Carrick's attention, and the entire existing sewerage system was laid down according to his plans and under his personal supervision. Tramway routes were also laid out under his direction. The acquisition of parks by the city was another subject in which he took a keen interest. He was a member of the Glasgow Institute of Architects, a Fellow of the Royal Institute of British Architects, and a member of the Institution of Civil Engineers.

A Tudor room in Hampton Court Palace has just been cleared of its modern fittings and added to the public suite of apartments. It is known as Wolsey's Private Chapel, and is approached from the Mantegna Gallery. The interior walls, to a height of about 7ft., are panelled with oak drapery panels. Above the panelling and extending round three sides of the room is a series of pictures in oil, painted on oak panel, illustrating "The Last Supper," "The Betrayal," "The Procession to Calvary," and the "Resurrection." These have been restored under the superintendence of Sir J. C. Robinson, her Majesty's Surveyor of Pictures. The ceiling is of a geometrical design, richly ornamented with Tudor emblems.



Windows in tower.

than bricks, indicating apparently that the original Roman brickwork had been exhausted when, in reconstruction for sacred purposes, this part of the building had been reached. Here the brickwork is very broken and fragmentary, while the mortar used in building them—as I am informed—was seen to be less ancient than some of that of the older sort still adhering to them, when the latest restoration enabled a careful examination of the work in detail to be undertaken.

The stones made use of, evidently taken from the neighbouring beds, belong to the lias formation. This stone, of a sandy kind, impregnated with iron, is of a bluish tint, and hardens very much on exposure to the weather. The corners of the building are found to contain large blocks of granite, with the well-known long-and-short method of construction, the

\* For the restoration of the church several munificent gifts were offered—e.g., the family of the late vicar, Joceline Watkins, and others, gave £220; Sir Charles Isham, Bart., £150; Earl Spencer, K.G., £100; R. L. Bevan, £60. Inclusive of the above, no less than a total of £2,500 was spent prior to the church's reopening on July 11th, 1866. It is now in an excellent state, though somewhat devoid of due ornamentation.

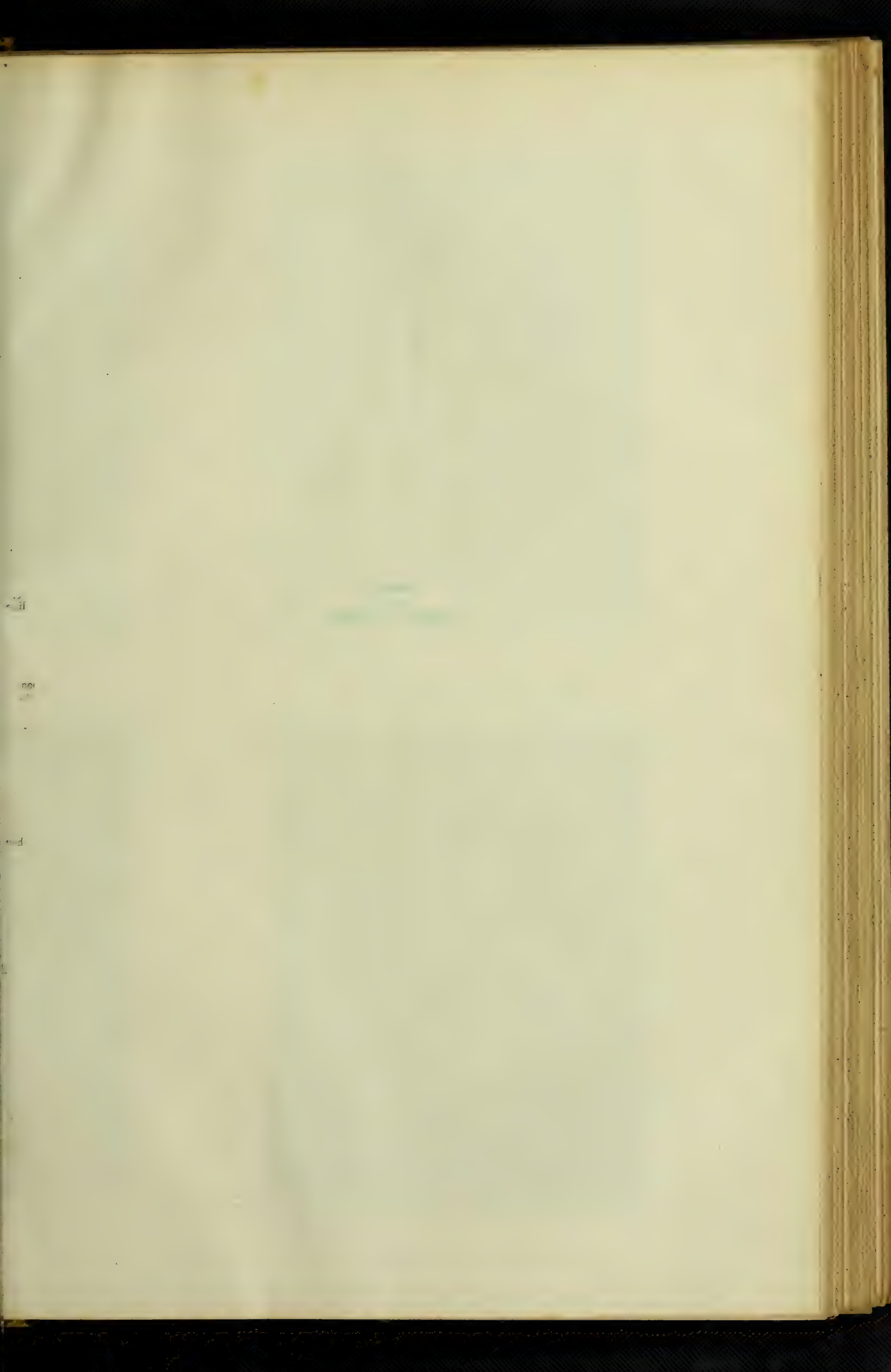
† There remains some Norman woodwork of very high antiquity in the upper chapel of the old church of Comp-ton, near Godalming, in Surrey, which is quite worthy of inspection.

these were found to be incapable of restoration, and so were entirely obliterated. No drawings were taken of them, which might easily have been done prior to the last restoration.

Professor Willis, of Cambridge, the late Rev. D. T. Knight, M.A., of Weston Favell; and the late Mr. Parker, C.B., of Oxford, held that the round tower at the west end, appended to the square tower, was erected about, or soon after, the year 870 or 871, this latter being the first year of King Alfred the Great. At that period the Northmen overran the country, and it is clear that this tower was built, and pierced by very small windows, for the use of archers, in order to serve as a place of defence. When this addition was carried out, the chief entrance of the original square tower was necessarily blocked up, though another entrance of the same type (considerably smaller) appears then to have been made for access to the addition.

To those interested in architecture and archaeology, who have not yet had the privilege of examining foreign churches of the Basilican type, I would venture to recommend a visit of inspection to one of the most interesting in our own country—that of All Saints, Brixworth. I grant that the alterations and restorations of the present century—by no means undertaken too soon—have necessarily robbed it of some features



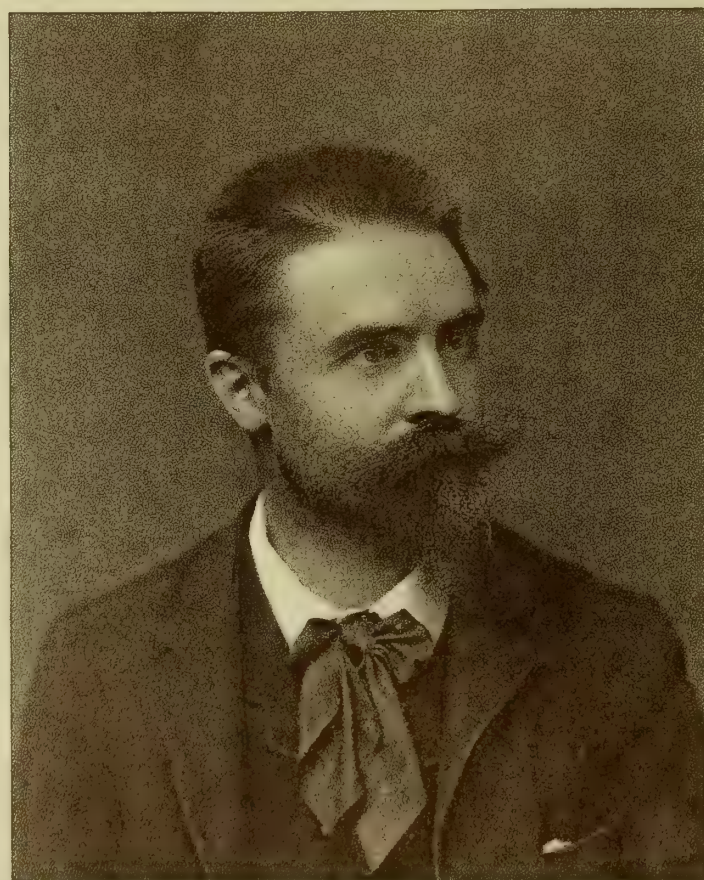






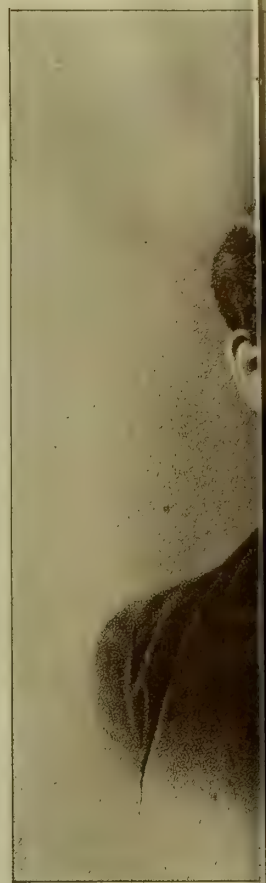
*Fredk Leighton*

SIR FREDK LEIGHTON BART R.A.



*E. Onslow Ford*

E. ONSLOW FORD A.R.A.



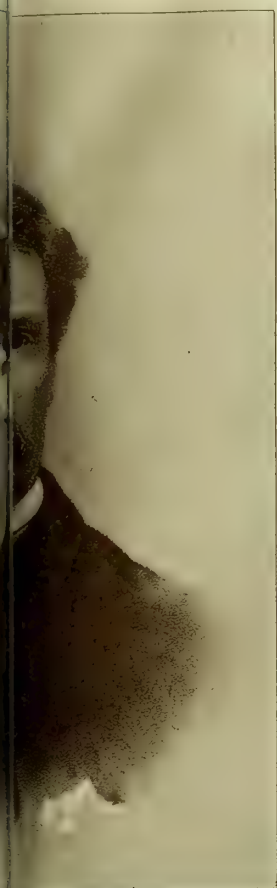
W. HAMOND



SIR EDWARD



AY 9, 1890.



*Hand Thorneycroft*

THORNEYCROFT R.A.



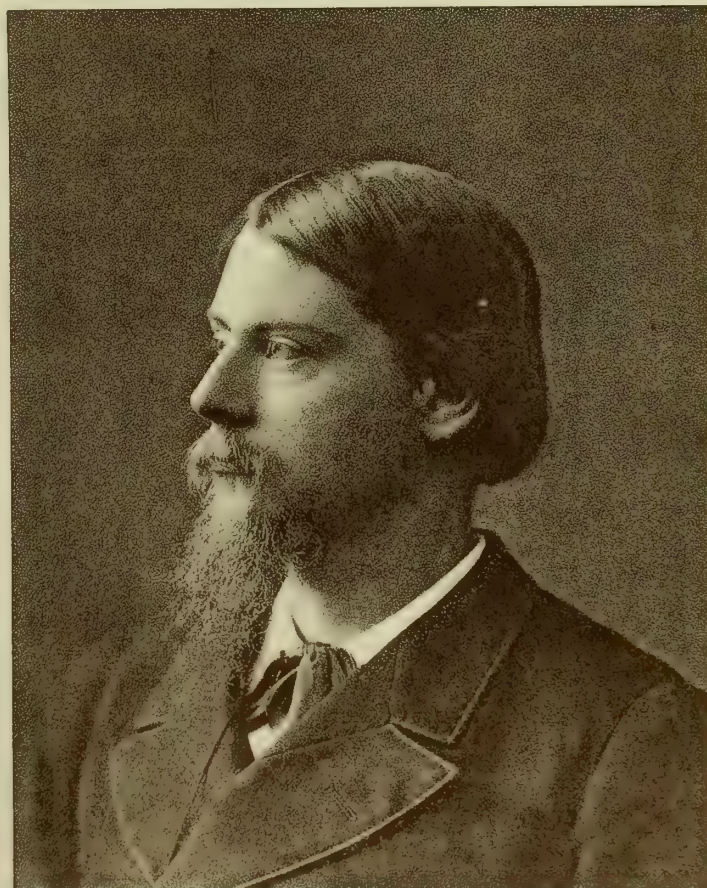
*Geo. A. Lawson*

GEORGE A. LAWSON.



*J. B. Bachman*

BACHMAN R.A.



*W.B. Richmond*

W.B. RICHMOND R.A.







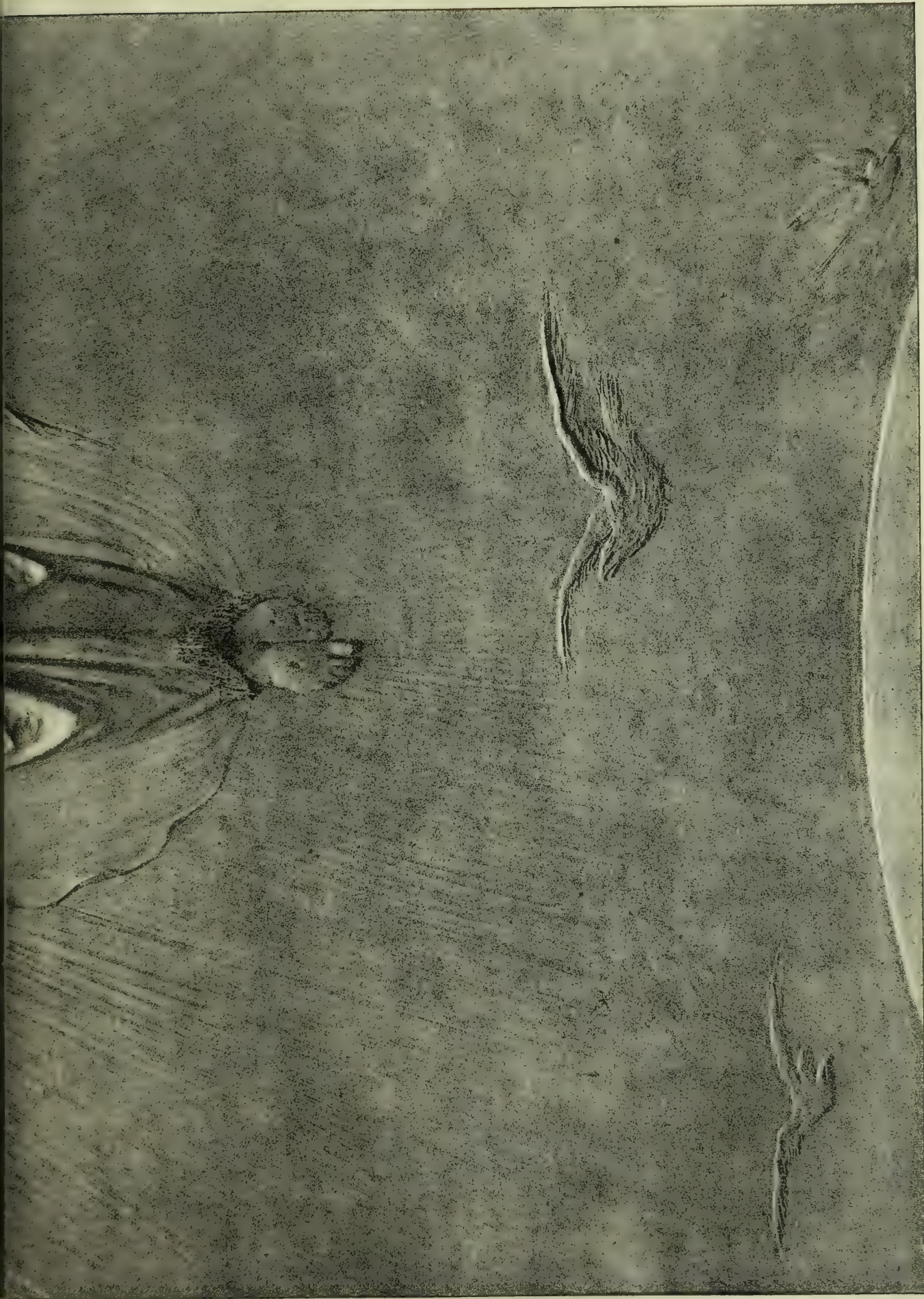




THE BUILDING NEWS, MAY 9, 1890.







E. B. FERREY ARCHT.

"Photo-Tint" by James Archer & Co. Queen Square London W.C.

EXECUTED BY DOULTON & CO

THE ASCENSION - TERRA COTTA PANEL BY GEORGE TINWORTH  
ST MARY MAGDALENE CH. UPPER TOOTING







## Building Intelligence.

**BEVERLEY.**—New offices for the East Riding County Council are about to be erected at Beverley. The buildings, which will be situated in Cross-street, on the site of the old Mechanics' Institute, provide a suite of offices on the ground floor for the clerk to the Council, and large strong-room for the county records; also four offices for officials. The entrance is through a stone doorway and portico into a spacious corridor, which leads to the staircase hall. The staircase is to be constructed of oak. On the right side of the corridor on entering is a large committee-room, with bay window. The Council chamber on the first floor, will be 56ft. by 36ft., and semi-circular in arrangement. It will be broken up by deeply-recessed bay windows and fireplaces. The fittings are to be of oak, and the ceiling and walls will be enriched with panels and pilasters. On each side of the landing will be members' rooms, and there will be a large committee room on the same floor. The public gallery will be on the second floor, and admission to it will be gained by a side entrance from Register-square. The buildings are to be of red brick with stone dressings, and the style selected is English Renaissance. The estimated cost is £4,500. Messrs. Smith and Brodrick, Hull and Goole, are the architects.

**EDINBURGH.**—On Monday a meeting of the landward heritors of St. Cuthbert's parish was held, for the purpose of considering a report by Messrs. Cunningham, Blyth, and Westland, C.E., in reference to the stability of the foundations available for the proposed extension of the church towards the east. Messrs. Cunningham, Blyth, and Westland's report was to the effect that it would be advisable to dig down, but that such digging down would interfere with certain of the graves, and the meeting adopted a resolution sanctioning the kirk-session, at their own expense, to make such excavations in the east part of the burying-ground as were necessary to ascertain if solid ground were there available for satisfactory foundations, and, further, authorising the kirk-session to proceed with the building, provided, after the excavations, the stability of the plans was vouched for by some "eminent builder" to be employed by the heritors at the expense of the kirk-session. Dissent was intimated on the ground that the proposed extensions would interfere with the graveyard.

**JESMOND, NEWCASTLE-ON-TYNE.**—The new High School for girls in Tankerville-terrace, Jesmond, was opened on Saturday by Miss Helen Gladstone. The buildings have been erected in the Queen Anne style, from designs by Messrs. Oliver and Leeson, of Newcastle. All the teaching department proper is on the first-floor level. Centrally situated is the large assembly hall, with an open-timbered Jacobean roof. Surrounding it upon three sides are corridors, giving access to a range of six class rooms, the chemical laboratory, and the art department. There are two staircases, one at either end of the main corridor. Upon the ground floor are the junior and senior children's cloak-rooms, assistant-mistresses' common room and cloak-room, porter's office, lady superintendent's room, dining hall, and kitchen department, with the caretaker's living rooms. Beneath the large assembly hall is the gymnasium. In the rear is the playground. The buildings are carried out in Sherburn red bricks, with red terracotta mouldings, and red Corncockle stone dressings. The roofs are slated. Accommodation is provided for about 250 pupils. The works have been carried out by Messrs. Haswell and Waugh, as general contractors, at a cost of about £5,000. Mr. Robinson, and lately Mr. Armstrong, acted as clerk of works.

**LINCOLN.**—The drill-hall which Mr. Jos. Ruston is having built for the Lincoln Rifle Volunteers will be opened on Saturday, 24th inst., by the Right Hon. E. Stanhope, Secretary of State for War. The new hall has a front facing Broadgate, and extends back to Free School-lane. The drill-hall is 135ft. by 50ft., having a floor of wood blocks laid in pitch upon a concrete foundation, walls of red brick, and an iron-framed roof, with skylight extending almost from end to end on the north side. The main entrance to the drill-hall is from Broadgate, by means of oak folding doors. On the right of the main entrance is an officers' room, and on the

left are the adjutant's and his orderly's rooms. Immediately over these is the men's room, which runs the width of the whole frontage of the building, and is capable of being divided by a revolving partition. There is also on this floor a gallery looking into the drill-hall. The staircase leading from the second floor to these upper places is wide, and receives plenty of light from the main hall. Along the right wall of the drill-hall are doorways leading to the caretaker's abode, the gymnasium, and the store-room for clothes. Above the last-named is the sergeants' room, and the same staircase leads also to the band-room. On the left of the drill-hall are the magazine and the armoury, with workshop adjoining. Underground is a double Morris-tube range with a centre passage for marksmen, and a room at the firing point 35ft. by 15ft. The building is to be heated with hot air, the heating chambers being underground. Messrs. Goddard and Son are the architects, Messrs. H. S. and W. Close the builders, and Mr. Simpson is the clerk of works.

**LONDON SCHOOL BOARD.**—At the last meeting of this board it was reported that a recent examination of the Buckingham-terrace Board School, Chelsea, showed that serious defects existed in the drainage. The Chairman drew attention to a serious discovery which had been made in the Works Department as to a wholesale destruction of documents relating to the construction of schools some years since. Facts had been brought to the knowledge of the Board with regard to the building of the Kilburn-lane Schools which had led to the Board taking a legal action for redress against the builders, and in the usual legal preliminaries it was found that documents relating to these schools were no longer under the control of the Board. It was then ascertained that one of the officials, the head of a room in the architect's department, had been in the habit of systematically destroying the weekly reports of the clerks of works, in connection with the erection of new schools, six to nine months after the completion of the schools. The official in question claimed that the destruction was carried on openly and for the purpose of providing much-needed room, and he alleged that the late architect and other officials of the Board were cognisant of it. He admitted an error of judgment; but the matter was too serious a one to be treated in this light, and he moved that the official should be called upon to resign. An amendment that the official should be informed that to destroy the papers as stated was a grave error of judgment, and that a repetition of such conduct would be incompatible with further service under the Board, was, however, carried by 32 to 10.

**SOUTH MORNINGSIDES.**—St. Matthew's Established Church, South Morning-side, Edinburgh, was opened for public worship on Friday. It has been built from plans prepared by Mr. Hippolyte J. Blanc, of Edinburgh. Erected on a prominent site on the Braid estate, the building is carried out in the Early Decorated style. Provision has been made for an extension at the south-east end of the site, and the church, when finally completed, will provide accommodation for 1,000 persons. A tower and spire, rising to a height of 180ft., will ultimately be placed at the north-west angle. The masonry throughout is of red stone. Internally the plaster has been treated with colour, to remove the usual raw finish of white plaster and secure a harmony of effect with the stone dressings. In the spandrels between the arches the plaster has been enriched with diaper ornament in low relief, and the arched ceiling of wood is also relieved with ornament. The glass is clear throughout, relieved with faint ornamental outlines. The cost is about £6,000.

The International Exhibition of Electrical Engineering, General Inventions, and Industries at Edinburgh was opened on the 1st inst. by the Duke of Edinburgh. It has been built from designs by Mr. Allan W. Carter, C.E., who has adopted in the treatment of the façades features from styles so diverse as the French Renaissance and Japanese.

On Saturday afternoon a chapel, which has been added to Bath College, was opened by the bishop of the diocese. The building is Greek in character, with details to correspond with the fronts of the college and head master's residence, which connects it. It is built on the old playground, and consists of a nave, with seats for 260 persons, and a chancel accommodating a choir of 48. The seats are of pitch-pine. The chapel has cost £2,400.

## Engineering Notes.

**THE TOWER BRIDGE.**—At the last Court of Common Council a letter was read from Mr. J. Wolfe Barry, the engineer, in which he said the time fixed with Messrs. Arrol and Co. and Messrs. Perry and Co. for the completion of their contracts for the Tower Bridge was July, 1891, and Sir W. Arrol expressed his confidence at being able to adhere to the contract date, but it might probably be the end of 1891 or the beginning of 1892 before the bridge was finished. The approaches on both sides of the river were far advanced, with the exception of the paving, which would be done at the same time as the bridge. The hydraulic machinery was nearly completed, and would all be ready in time. The slow progress made with the foundations was owing to the necessity for making arrangements for carrying on the river traffic while the bridge was being erected.

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The closing address for the present session was delivered on Monday evening by Mr. T. Mellard Reade, who has been re-elected as President. He remarked that that hardy annual, "the Architects' Registration Bill," was again budding forth. It commanded, he said, enthusiastic support from a small, but apparently compact, body of architects, but hitherto had failed to enlist the profession in its favour. The Institute at present represented the views of the majority of architects, and so long as their representative body opposed the Bill it was unlikely to pass into law. He was personally averse to sudden changes, but eventually it might, he admitted, be desirable to support such a measure. The call lately made for compulsory examination was another phase of the same desire for legislative aid in securing reforms, and he would also advise its promoters to wait awhile and see the effect of the present voluntary examinations. As to competitions, he felt that the increasing readiness to enter the field for rewards utterly inadequate as a remuneration when won tended to degrade the profession. All the evils of competitions were due to this undignified eagerness of architects to submit plans on any and every occasion. Having alluded with satisfaction to the success of the student classes recently organised by the Association, Mr. Reade proceeded to deal with the subject of "Plainness and Picturesqueness" in detail.

**NORTHERN ARCHITECTURAL ASSOCIATION STUDENTS' SKETCHING CLUB.**—At a meeting of associates and students interested in the formation of a sketching club in connection with the Northern Architectural Association, held on March 25th, it was resolved:—"That it is desirable to form a club, having for its object the frequent meeting together of the younger members of the profession for the purpose of sketching and measuring buildings of architectural interest in the district," and, as a result, the above-mentioned club has been called into existence. The first meeting was held at Durham Castle on April 20th, and on Saturday last the members met at Seaton Delaval Hall, and it is proposed to continue the meetings fortnightly. The committee of the club is formed of three members: Messrs. R. B. Dick, Edmund Rich, and Charles S. Errington, hon. sec.

The Princess Louise opened, on Tuesday, the Arts and Crafts Exhibition at Torquay, and laid the memorial-stone of the new pier and harbour works, which are to be carried out for the general improvement of the town as a yachting station, at a cost of about £30,000.

Monkleigh Church, near Torrington, Devonshire, has just had an important addition to its chancel-fittings in the form of an elaborately carved and decorated oak Communion table in the Late Decorated style. The front is divided into five panels, the central one being largest; the construction of its tracery forming a cross embellished with the Agnus Dei on a gold ground, and surrounded by rays. The side panels have traceried heads with carved spandrels and with sacred monograms in gold inclosed in decorated vesicas. An embroidered super-frontal has also been supplied. The whole of the work was intrusted to Messrs. Jones and Willis, of Birmingham and London.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L., LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—W. and G. F. R. Co.—D. C. C.—W. E. R. and Co.—G. and Co.—B. C. B. I.—W. H. H.—C. of W.—G. W. R. Co.

## Correspondence.

## THE YORK COURTS OF JUSTICE.

To the Editor of the BUILDING NEWS.

SIR,—My attention has just been drawn to the paragraph relating to the Courts of Justice, York, in your issue of the 25th of April.

This report may lead to erroneous impressions in the public mind, and in justice to myself I have to ask you to make the following corrections:—

The statement of the Lord Mayor as to the rise of ten per cent. in prices does not apply to the original contract (which is £3 less than the amount stipulated), but to additional work estimated for since the contract was signed.

The statement that concrete was substituted in place of lime is badly expressed. Concrete was estimated for, composed of lias lime; but owing to the uncertain nature of the ground, I deemed it advisable to recommend the committee to adopt cement concrete, thereby entailing an additional expenditure of £261 9s. 1d.

I think it is only right to amplify your list by the following works, added to the contract, making up the grand total.

Additional plate glass, marble mosaic in entrance hall and corridors, tile dadoes and scagliola marble columns and pilasters, tower and dormers in oak instead of pine, facing bricks 2½ in. instead of 3 in. thick, additional price for clock, bells, &c., tiles on lavatory walls, main entrance doors in oak instead of pine, &c.

Trusting you will find room for this in your next issue—I am, &c., HUGH A. MATEAR.  
Liverpool and London.

## SETS OF QUANTITIES.

SIR,—Upon comparing the sets of quantities now being published, on the London system, with those of the North, I cannot help thinking

This column shows on what part of building the dimensions are intended.	Numbers.	Dimensions.	Squaring.	Deductions.			This represents the Bill of Quantities ready for lithographing.
				Numbers.	Dimensions.	Squaring.	
A. and W. ....	3/	55 0 17 0	935 0	3/	3 0 3 6	31 6	Yds. ft. Sup. 341 1
Chimney breasts.....		7 0 17 0	357 0				1½ Bricks in mortar, open for plastering
Staircase .....		32 6 17 0	552 6				
Ditto .....		34 6 17 0	586 6	3.	5 6 9 6	156 9	
Back stairs .....		25 6 17 0	484 6		3 6 9 6	33 3	
Safenext Grainger-street		42 6 10 0	425 0		8 6 14 0	119 0	
Lower part of window .		8 0 7 6	60 0		3 0 6 6	19 6	
Chimney breasts .....	3	7 0 17 0	39 8		3 0 3 6	10 6	
			3440 2 370 6 3070 8 341 1			370 6	
Cellars .....	7/	4 0 7 6	210 0				Ft. in. 391 5
W.C.'s, &c. ....		3 6 8 3	86 7				Supl. 2½ framed braced doors, filled with jin. wrot. tong and beaded boarding narrow widths, 5 b braces and cross rails. No. 14 doors to cellars, entrances to and w.c.'s), and hang with purpose-made w strap hinges. See Sm
Store .....		2 9 7 6	61 10				
		4 0 8 3	33 0				
			391 5				
< B >	<	C	>	<	D	>	E

The following is the usual procedure by the surveyor using this system. Firstly, He writes a true specification for the item he is about to measure in column A. Secondly, The parts of building where the item is required, column B, following with the dimensions in C, and deductions in D.

This really is all the surveyor need do, having previously, when writing the description, stated how the item to be charged, as, for instance, yards, feet superficial of 1½ brick, &c.; each sheet as completed is given to assistant who square, cast, and extend. The columns A and E represent the bill for lithographing.

the latter are far superior in every respect. I take the liberty to forward one sheet, on the paper used for the draft, with explanatory notes. I have used the North system for upwards of fifteen years for works varying from £3,000 to £30,000.—I am, &c.

GEO. T. HOWELL, Architect and Surveyor.  
31, Cock-lane, London, E.C., May 5.

## PROVISIONAL AMOUNTS IN QUANTITIES.

SIR,—As "Twice Charged" asks me to give information on this subject, I can only state that I have never known a case of "surveyor's provisions," and, as before stated, I will not believe the surveyors do anything of the kind.

It is very easy to write in a building paper that surveyors do all sorts of things. Anonymous scribbles can stab in the dark; but if "Twice Charged" really knows of cases, why does he not name them, and, above all, give us his full name and address, that we may know who it is that throws mud in the hope that some will stick?

I think that persons should not anonymously attack others on mere hearsay evidence; there should be a clear case stated, with ample proof.

What would "Twice Charged" think if I were to make some statements about builders and their managers based upon the doings of some fourth-rate contractor, and then try to persuade your readers that there were no honest builders?

In conclusion, I may ask, Why is "Twice Charged" putting himself forward to protect the much-injured client?—I am, &c.,

26, Budge-row, E.C. HENRY LOVEGROVE.

SIR,—"Twice Charged" has his finger in a crack in a faultless system, and is trying to make a big hole of it. Provisional quantities inserted by a surveyor are rare, and in the few cases where they are inserted, it is done to meet an emergency, and is perfectly justifiable. I defy any surveyor taking out the length of lead pipes to an addition to a house, say, 100 miles from his office, to do so absolutely correctly. There is a rush to get the job done, time does not admit of an inspection of the site, the length of pipe is calculated as near as possible; but to meet a possible extra, a provisional length is inserted, which, together with the usual architect's provision, is omitted in nine cases out of ten by the architect at the settling up of the job without the surveyor being called in at all.

The large provisions of 200yd. cube of concrete, &c., must be taken with a provisional amount of

salt (to be deducted at the completion of letters), to say nothing of the other amount mentioned by "Twice Charged." It must have been a very big job to justify such insertions and a very incompetent surveyor afraid of quantities, and a very sleepy architect, too.

To charge a large body of men with insertions to swell the commission, is a gross palpable falsehood, and not worth answering. If "Twice Charged" were a surveyor, he would think less of our getting commission on a mortar provision; for, surely, something must make for work which does not pay, and on which, actually works to reduce his commission—for instance, in the not infrequent case of reducing estimate when the tenders are too high; or, when after the bills are all but written, a cheap material is substituted for another, which has been measured in a different way, such as zinc lead, distempers for paper. Quite lately I had a letter from an architect after the bills were ready for lithography, substituting stain for a varnish for painting for various rooms. Here we have work measured twice and only once charged for. This omitting one item and substituting another after the work is done is most puzzling work, and requires great care.

How often does the surveyor write specifications, supply tracings, find out construction errors, and make most valuable suggestions?

"Twice Charged" may be sure that when surveyor gets a double commission on a provisional amount, the seeming injustice disappears when consideration is taken of the frequent case of work being measured twice and not paid for. Let him think of another instance, not infrequent when an architect sends a rearrangement of, say the kitchen offices, or adds another bedroom to a building after the quantities are nearly prepared.—I am, &c.,

TWICE WORKED, ONCE PAID.

SIR,—The question of the use of the term "prime cost" versus "value" as applied to the amounts does not receive much enlightenment at the hands of "A Disgusted Surveyor." There is no argument for the use of "net prime cost" that because the builder gets a long discount on certain classes of goods (though nothing like so much as stated) that therefore he ought to be jockeyed out of it as much as possible by the mere blind of adding "the profit to be added" on the stated amount.

Mr. "D. S." must be a very "overgrown schoolgirl" indeed—probably a barely "fledged one" (to use his own similes)—if



inks that in these cutting days of competitions builder trying to get the job would put any profit on these amounts as invited; any builder who would soon find himself out-distanced by his competitors. In the first place, there is the uncertainty attaching to the very use of the words "prime cost," whether accompanied by the rider "profit to be added" or not; in the second place, the custom has prevailed so long of considering "prime cost" to be the "list price," or p.c. to the client, that any builder would naturally hesitate before adding any further profit to such prices; and in the third place, it is usual among the large majority of architects, to whom these matters generally have to be referred, to allow the list prices to stand even after "net p.c." and "profit to be added" have been stated in the quantities, for, as it has so frequently been pointed out to them, it is the profit in the whole job which has to be considered, not that on particular items.

The profits on modern building contracts, instead of being "rapaciously greedy," as they seem to exist in the mazy ideas of a "D. S.," would more often than not appear to disinterested observers as though the builder had unselfishly executed the work for the client at its actual cost, and surveyors with any knowledge of prices at all know that such is the case.

Supposing the profits on certain classes of goods to range rather high, can a "D. S." deny that the fixing items on the same goods are often, by stress of competition, priced far below their actual value in view of these long discounts? Where, then, is the "rapacious greediness" he so enlarges upon? Again, when a provisional amount of rods of brickwork, or cube fir, is inserted, the term "net p.c." cannot be made to apply. A builder may make 50 per cent. on such items for all that a surveyor cares, and yet not be open to the charge of rapacity; but when the case is a stove or kitchener, the builder is not to be trusted to supply them without divulging his profit to the surveyor—i.e., the client's representative.

What builders maintain is that neither architects nor surveyors have any right to go behind the list prices, for the simple reason that they are the client's representatives, and, as such, have no right to abuse their position in taking advantage of the knowledge of trade customs which they gradually acquire to take a mean advantage of the builder on certain classes of goods. It is nothing less than "sweating," disguise it as you will—an attempt to obtain goods for their clients at a lower price than they can buy them themselves, and as such cannot be too strongly protested against by all parties engaged in trade.

Surely a "D. S." is aware that builders do not live entirely by building contracts. Perhaps he will feel more disgusted still when he is informed that it is no unfrequent job for a builder to have to supply and set kitcheners, stoves, or mantel-pieces, provide and hang wall-papers, and also do small, plain building jobs without the intervention of either an architect or surveyor; and yet this sapient "D. S." would have your readers believe that our clients have been little less than swindled because we show them "fancy catalogues" for their guidance, and then execute the work at charges based on the prices therein.

The sneer of interested motives comes with a very bad grace from one who is trying to defend the charges of his own profession, and had much better not been advanced. Nothing is gained by vituperation. What is wanted is some solid argument as to why the term "prime cost," with its twofold meaning, should be used instead of "value," which expresses far better what the amount ought to be. Some reasonable argument as to why such a term should be seen in an account, for, after all, a bill of quantities is an account of work required—some solid reason why surveyors ought to go behind the list prices; these are the questions at issue, not the charges of surveyors.

A "D. S." may not swallow the arguments I brought forward in the opening letter of this discussion, but he cannot deny that the present system is somewhat anomalous, and he has not attempted to refute the theory of these provisional amounts as there stated. I will advance yet another theory, and that is, the term "prime cost" is essentially a trading term, invented solely by those engaged in the occupation of buying and selling at a profit, for the purpose of distinguishing between the first cost and the cost after adding all the incidental expenses connected with the goods; used as such it has a definite meaning, in any other capacity it is out of place.

To those, therefore, who have nothing to do with the actual buying (i.e., paying) and selling, the term has no meaning. To put the case in its most absurd light, imagine a person going to a merchant and saying, "I want such and such an article, of which your *strict prime cost* was so and so—of course I must pay your profit if you want any—but still the amount I have stated is to be your actual prime cost." Yet this is the sort of thing which is being done every day by architects and surveyors, only they write it instead of going to the shop and saying it.

In conclusion, I should like to say that I have no sympathy with "Twice Charged" and "Another Builder's Manager," and I am sure builders generally do not sympathise with such "washing of dirty linen in public"; the responsibilities of quantity surveyors are such that they deserve all they earn, and if it were not for the opportunities which occur in most contracts of being able to charge three times on some items, the percentage charge on the whole job would doubtless have to be raised; but in saying this I still think "D. S." has no right to complain if "full fledged" contractors make reprisals for the harsh grinding-down treatment they sometimes receive, if not from him, from others in the same profession.—I am, &c.,

A BUILDER'S MANAGER.

SIR,—As "A Disgusted Surveyor" appears to have got rather mixed in reading the letters on the above subject, will you please allow me to say in answer that the case I referred to was not a provisional amount, but the whole of a roof-covering of a large building?

I can also refer him to several sets of quantities upon which 3 per cent. has been charged and paid.—I am, &c.,

ANOTHER BUILDER'S MANAGER.

## Intercommunication.

### QUESTIONS.

[10276].—**Speaking-Tubes.**—Will some one who has had experience in the matter be good enough to tell me how the following difficulty can be got over? There are several independent  $\frac{1}{2}$  in. compo. tubes of moderate lengths between various rooms. In any room anyone listening at the tube can hear a conversation in ordinary tones going on in the room with which the tube communicates, though this end is closely plugged. One of the tubes, by way of experiment, has been cut away for 2ft., indiarubber pipe substituted, but of no avail.—TUBE.

[10277].—**Oak Shingle.**—I have to cover a spire with oak shingling. Would some reader kindly give me particulars how to carry out same, stating the sizes and thicknesses, and whether lapped as slate, and how best secured, &c.?—E. X. D.

### REPLIES.

[10273].—**Fire Regulations.**—There are no regulations in the county of London affecting the doors of churches and chapels; such places would be death-traps in the event of a panic. Theatres and music-halls must be carried out in accordance with the regulations of the County Council.—H. LOVEGROVE.

### CHIPS.

New dormitories and dining-rooms have been erected at Stratford for the Great Eastern Railway Company, and special attention has been paid to the ventilation; the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's self-acting air-pump ventilator.

According to the Administration of the Fire Brigade of Paris, there were in that capital in 1889 one thousand and fifty-nine fires, destroying property valued at more than four and a-half millions of francs. Thirty-six of the fires occurred in the Exhibition buildings.

A strike in connection with the building trade at Cardiff is threatened, the employers having conceded an advance in wages, but declined to give way on the question of hours of labour.

The dissolution of partnership between W. R. Green, H. C. Walker, C. Day, and J. B. Nicholson, trading under the style of R. Waymouth and Co., Roberts-place, Falmouth-road, Southwark, and elsewhere, engineers, is announced in Friday's *Gazette*, so far as regards W. R. Green.

In connection with the London Society for the Extension of University Teaching, Mr. Arnold B. Mitchell, M.A., is delivering at Gresham College on Saturday afternoons a series of lectures on English Architecture. The object of the course is to give students such a practical knowledge of the subject as will enable them to date buildings belonging to any period of English Gothic architecture. Mr. J. J. Baddeley, C.C., occupied the chair at the first lecture, which was given on Saturday last.

### LEGAL INTELLIGENCE.

**CONTRACTORS IN ARBITRATION.**—At the Royal Hotel, Southampton, on Tuesday week, before Mr. S. W. Durkin, manager of the Southampton Gasworks, acting as arbitrator, the case of J. W. Roe and Co. v. Edward Cockey and Sons, Limited, was commenced. An action had been entered in the High Court and referred to arbitration. Plaintiff is a builder and contractor, of Southampton, and sought to recover from the defendant Company, who are engineers and contractors, of Frome, Somerset, the sum of £287 18s. 5d., balance due for work done and materials supplied. The gross amount of the claim was £601 5s. 5d., and from this was deducted £300 for cash received, and £13 7s. contra account. Defendants put in a counter-claim, in which, except as to £46 4s. 11d., paid into Court, they disputed the claim. The defendants contracted for the erection of gasworks for the Wilton Corporation in 1888, and employed the plaintiff as contractor for the building of a gas-holder tank. They alleged that by reason of plaintiff's carelessness and breach of contract they were compelled to complete the work, and expended a sum of £141 13s. 6d. in labour and materials, and that, further, they had incurred a penalty of £100, which sum had been deducted by the Corporation of Wilton. On Wednesday, when the case was closed, plaintiff gave evidence at length, and among other witnesses were Mr. J. Lemon, J.P., and Mr. W. B. G. Bennett, borough surveyor of Southampton, as experts. The Arbitrator announced his intention of making his award on June 1st.

**ALLEGED CONTRAVENTION OF THE BUILDING ACT.**—Charles Shepherd, builder, of Bermondsey, and formerly Chairman of the Building Committee of the late Metropolitan Board of Works, appeared at the Mansion House, before Alderman Evans, last Friday, to a summons issued by Mr. M'Lachlan, district surveyor of the Ludgate Hill district, alleging that in certain alterations he had made in the premises of Messrs. Samuels, at 57, Ludgate Hill, he had contravened the provisions of the Metropolitan Building Act in the erection of a certain roof upon the party-wall at a greater angle than forty-seven degrees to the horizon, the premises being used for the purpose of trade and manufactures. The summons also alleged that notice had been given to the defendant to remove the erection complained of, and that no notice had been taken of such notice by him. Mr. Selway, solicitor for the defendant, took a preliminary objection to the summons, contending that inasmuch as the work on the premises was completed in December last, even supposing he had infringed the law, he had no right to go upon the premises, as he would be liable to an action of trespass. He cited the case of "Boulton v. the Vestry of St. George's, Hanover-square," in support of his argument. The Alderman over-ruled the objection. Mr. M'Lachlan stated that a kerb roof should have been erected with two slopes instead of one. He admitted, in cross-examination, that similar roofs to the one erected by defendant had been passed by his predecessors in office, and that such roofs were common all over the City, and no complaints had been made with regard to them. Mr. Selway contended that the premises in question were used, not exclusively for the purposes of trade, but were part of a dwelling-house. The Alderman adopted his view and dismissed the summons, but refused costs to defendant.

A Local Government Board inquiry has been held at Littlehampton by Mr. J. T. Harrison, M.I.C.E., one of the inspectors, with reference to an application of the Littlehampton Local Board for borrowing £600 for works of water supply. Evidence was given by the surveyor, Mr. H. Howard, who also submitted plans and specification of the proposed works. There was no opposition to the scheme.

The British and Colonial Explosives Company, Limited, have commenced the erection of works at Perran, on the north coast of Cornwall, about 10 miles from Truro. There will be about 40 separate buildings, the largest being the nitric acid factory, 250ft. long by 40ft. wide. The danger buildings are separated from each other by immense earthworks. The present contract amounts to about £10,000, and houses for manager and workpeople will probably be added, the site being isolated. The contractor is Mr. A. Carkeek, of Redruth, and the architect Mr. James Hicks, Vice President, S.A.

In the Queen's Bench Division on Saturday, before Mr. Justice Wills and a common jury, an architect's draughtsman at Poole, named Sparks, was awarded £150 and damages for the loss of an eye by a shot fired by the defendant while rabbit-shooting. For plaintiff it was proved that, in addition to the personal injury and disfigurement, pain and loss of time, his salary had been reduced from 35s. to 25s. per week. The defendant will appeal to a higher Court on the ground that he displayed no negligence.



## Our Office Table.

THE erection of the new Public Library in Bethnal Green will probably now be soon commenced. Sir Thomas Fowell Buxton announced, at the last meeting, that Mr. J. Passmore Edwards, the proprietor of the *BUILDING NEWS*, the *Weekly Times* and *Echo*, the *Echo*, the *English Mechanic*, and other well-known papers, had promised £20,000 towards the project, quite unconditionally, and not, as is stated in some of the papers, contingently on any other sum being raised by public subscription. The matter is being warmly taken up locally. The Committee had already about £4,000 in hand, and it is hoped the building will be speedily finished for use.

THE report of the progress of the Ordnance Survey up to the end of last year, just presented to Parliament in the form of a Blue Book, states that plans of 23 towns were published during the year 1889. Plans of all towns in England and Wales have now been published. There have been published during the year 5,467 miles on the 1-2500 scale, and all England and Wales, with the exception of Lancashire and Yorkshire, have been surveyed on that scale. These were to have been completed by the end of March last. All the counties have been published on the 6in. scale, with the exception of Devon, Salop, and Wilts. The map of England and Wales on a scale of four miles to an inch is in the hands of the engravers, and the outline edition is in a forward state. The book also contains particulars of the work done in Scotland and Ireland. The cost of the Cadastral Survey was estimated in 1878 as about £1,900,000. The expenditure up to the end of 1889 was £1,697,078, leaving £202,322 to complete the survey from the beginning of this year.

AFTER holding a dozen sittings, and hearing a great mass of professional evidence for and against, the Select Committee of the House of Commons on the Central London Electric Railway Bill decided on Tuesday that the preamble had been proved, on the understanding, among other conditions, that a compensation clause should be inserted in the Bill similar to the one in the Midland Railway Bill, 1881; that stringent clauses should be inserted affording every opportunity to the engineers of the Corporation of London and of the County Council to inspect the works during their progress, lest any possible damage should be done to the sewers; and that until the City and Southwark Subway (of which, as well as of the proposed line, Mr. Greathead is the engineer) had been opened and used by the travelling public for a certain time no prospectus should be issued or capital raised by the Central London Company. The committee will meet again on Tuesday next for the discussion of clauses.

THE New York Chapter of the American Institute of Architects, at their last meeting, agreed to a protest, couched in dignified language, against a measure now before the Assembly, entitled "An Act for Fixing the Salary of the Commissioner of the Capitol." By this Bill it is proposed to appoint the present superintending architect of the new Capitol Building at Albany, Mr. Perry, architect to the State, at a salary of 10,000 dols., and to give him charge of all building projects for the State. They point out that the result of the Bill would be to throw the design and construction of all State buildings into the hands of one man, selected, as a rule, for reasons other than the highest æsthetic and constructional ability, and that, while such a measure would deprive the people of the State of New York of the services of the best members of the architectural profession, and provide an insufficient substitute, it would at the same time deprive the architects of the State of the natural rewards of eminence in their profession. It would further repeat the evils surrounding the constitution of the office of the supervising architect of the Treasury in Washington, as admitted in the official report for 1875. The scheme of an official architect is, the memorialists point out, more expensive to the taxpayers than if the State engaged the services of the best architects at the usual rates of remuneration. They suggest that the appointment of an architectural commission or advisory board, consisting of three architects and two State officials, would secure the best architectural results. The suggestion is a novel one in the

States, though following the practice in France, and it will be interesting to see how it is received.

MR. THOMAS WALSH, a well-known architect of St. Louis, died recently in that city at the age of sixty-five. Mr. Walsh was an Irishman, from Kilkenny. He emigrated to America in 1852, and soon settled in St. Louis, where he built up a prosperous business. He designed the Custom House, the Insane Asylum, the Poor-house, the Polytechnic School, the first University Building, the Four Courts, St. Xavier's Church, and many other important structures in that city. He leaves only one son, Mr. Robert Walsh, also an architect.

## MEETINGS FOR THE ENSUING WEEK.

TUESDAY.—Society of Architects. "Public Elementary Schools," by E. Tidman, St. James's Hall, Piccadilly. 7.30 p.m.  
Institution of Civil Engineers. Discussion on "The Screw Propeller." Paper on "The Kewick Water Power Electric Light Station," by W. P. J. Fawcens and E. W. Cowan. 8 p.m.  
WEDNESDAY.—Society of Arts. "Professor Elihu Thomson's Electro-Magnetic Induction Experiments," by Dr. J. A. Fleming. 8 p.m.  
THURSDAY.—Architectural Association Lyric Club. Concert at Mona Hotel (Ladies' Night). 7.30 p.m.  
Society of Arts. "Design Applied to Wood-carving," No. 3, by Lewis F. Day. 8 p.m.  
FRIDAY.—Architectural Association. Business Meeting to consider Report of Education Committee. 7.45 p.m.  
SATURDAY.—Municipal Engineers' Association. District Meeting at Hereford. 11.30 a.m.

Architectural Association, 9, Conduit-street, W.—May 16. Last Ordinary Meeting of Session. 7.30 p.m. Election of officers. Special Business Meeting (7.45 p.m.) for Members only, "To Consider Report of Special Committee on Education, &c."

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

The foundation-stone of a Working Men's Institute at Lostwithiel was laid on the 30th ult. The building is being erected at a cost of £800, from plans by Mr. A. E. Skentlebury, Messrs. Bassett and Brown being the contractors.

New church schools at High Brooms, Tunbridge Wells, were opened on Wednesday week. They are built of brick, with terracotta dressings and gabled roofs of red tiles, and comprise two school-rooms, each 45ft. by 21ft., and two classrooms. Mr. Elphick was the architect, and Mr. C. J. Gallard, of Southborough, the builder.

At the Manchester Consistory Court on Friday a faculty was granted for the restoration of St. Philip's Church, Bradford-road, Manchester, at an estimated cost of £1,000. The works will include reseating, provision of new pulpit and font, opening out of two windows in sanctuary, and decoration.

The Belgian Government has bought for the Brussels Museum, at the price of 80,000fr., the celebrated picture by Rubens representing four heads of negroes, which was formerly in the Demidoff Gallery.

The Schools and Chambers Committee of the Newcastle City Council have instructed Mr. Sherbrooke, of that city, to prepare plans and estimates for a proposed new Home for Incurables at the Moor Lodge.

A design by Mr. George Washington Browne, of Edinburgh, has been adopted for the rebuilding of the Y.M.C.A. premises at Kirkcaldy, as a memorial to the late Provost Swan. The proposed outlay, exclusive of site, which is given, is about £3,000.

The next two meetings of the Royal Society of Antiquarians of Ireland, till recently known as the Royal Historical and Archaeological Association of Ireland, will be held in the Town Hall, Kilkenny, on Tuesday, the 20th inst., and at Athlone on the 8th July.

A series of alterations and improvements have just been completed at the offices of the Gas-Light Company in Waterloo-place, Edinburgh, for the Joint Gas Commissioners, from designs of Mr. P. L. Henderson, architect, of that city.

Memorial stones of a Bible Christian chapel were laid at St. Austell on Friday, adjoining the present chapel, which will be converted into schools. Mr. F. C. Jury, of St. Austell, is the architect, and Messrs. W. J. Blamey and S. Hunkin are the contractors.

It is proposed to erect a new United Methodist Free Church in Newport, Mon. Plans are being prepared by Mr. Alfred Swash, M.S.A., of Friars' Chambers, Newport.

## Trade News.

### WAGES MOVEMENTS.

YORK.—The bricklayers' labourers' of this city are on strike for an advance of 4d. per hour—from 4½d. to 5½d. They have refused to accept an offer made by the Master Builders' Association of 5d. per hour.

### CHIPS.

Mr. Harvey will exhibit next Thursday, at seven o'clock, at the City and Guilds of London Institute, the model made by the Class of Masonry of a groined vault over the crossing of semicircular arches of unequal spans. Everybody is invited to come and see the model. To architectural students, Mr. Harvey will offer to give gratuitously a few lessons on this vault, in order to prepare them for the Masonry competition.

The Late Norman font in Brushford Church, on the Exe, has just been restored by Mr. Harry Hems, of Exeter, under the direction of Mr. C. H. Samson, of Taunton. A large new central shaft and four detached angle columns, all of Purbeck marble, have been provided, and also a new base of red Corsehill sandstone.

Messrs. Hosken, Trevethic, Polkinghorne, and Co., Limited, millers, corn, wool, and manure merchants, the firms having recently been amalgamated with a capital of £250,000, are about to erect central offices at Hayle, Cornwall, from plans by Mr. James Hicks, of Redruth.

Lord Justice Fry granted on Monday a writ of sequestration against the Corporation of Wolverhampton for disobeying an injunction restraining them from polluting Pendeford Brook with sewage, but suspended its operation for six months.

The bronze equestrian statue of the late Prince Consort, which has been presented to the Queen by the women and girls of the United Kingdom as a Jubilee offering, was completed on Monday on Smith's Lawn, Windsor, and is ready for inauguration by Her Majesty on Monday next. It is the work of Sir Edgar J. Boehm, R.A., and stands on a pedestal of Aberdeen granite, provided by Messrs. Alexander Macdonald and Co., of Aberdeen.

The personal estate of the late Mr. Thomas Andrew Walker, of 15, Great George-street, the contractor for the Manchester Ship Canal, the Barry Dock, and the Severn Tunnel, who died at Chepstow on the 25th November last, aged 61 years, has been sworn of the gross value of £982,243, and of the net value of £551,694.

A choir vestry is about to be added to Holy Trinity Church, Wakefield, from plans by Messrs. Simpson and Richardson, of that city.

Mr. Maclure, M.P., has received a donation of £2,500 from Mr. James Jardine, late high sheriff of Cheshire, for the restoration of the south porch of the Manchester Cathedral. The north porch has just been rebuilt by the generosity of three donors at a cost of £5,600.

A stained-glass window has just been placed in the Beach Mission Chapel, Broughton Ferry, N.B., as a memorial. The subject is Christ bearing the Cross, and Messrs. Powell and Sons, London, were the artists.

Mr. J. T. Harrison, M.I.C.E., held an inquiry at the local board offices, Walker-on-Tyne, on behalf of the Local Government Board, as to the application by the board for sanction to borrow £5,600 for the purpose of completing a recreation-ground, and for works of private improvement.

In consequence of the reduction of work, owing to the Flintshire County Council having taken over the supervision of main roads, the Holywell district highway board have reduced the salary of their surveyor from £150 to £100 per annum.

The Camlochie Institute, Great Eastern-road, Glasgow, was opened on Friday. It is Late Renaissance in style, cost £4,000, and contains a large and small hall, seated for 700 and 200 persons respectively.

The Wilton Town Council, acting as the urban sanitary authority, have decided to provide a new cemetery for the town. Mr. Fred Bath, F.R.I.B.A., F.S.I., of Salisbury, has been appointed architect for the work.

A "ladies' night" concert and exhibition of drawings will be given by the members of the A. A. Lyric Club at 9, Conduit-street, W., on Thursday, the 22nd inst.

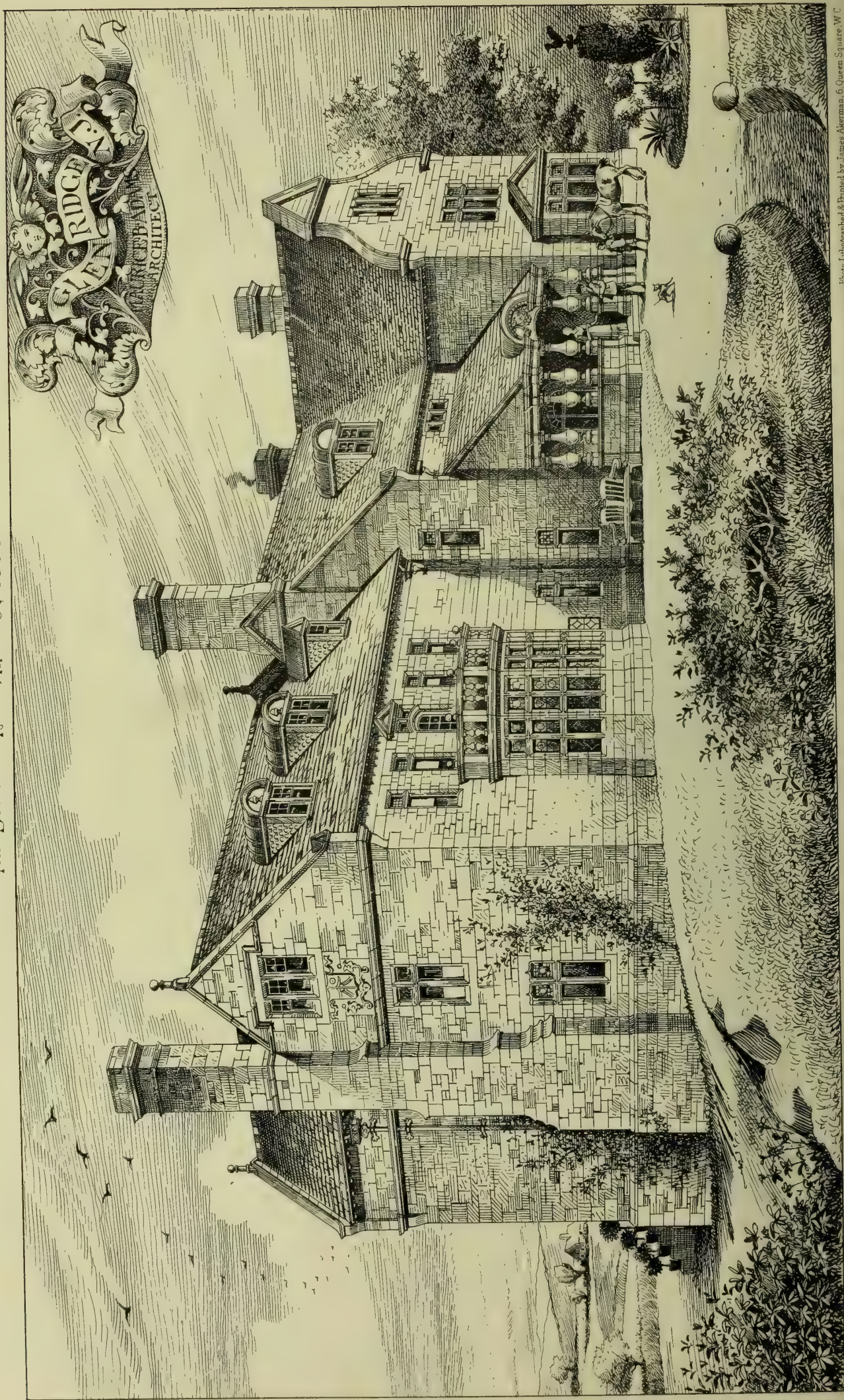
Holloway's Pills improve the appetite, strengthen the digestion, regulate the liver, and act as gentle aperients. Their pills are suited to all ages, and their inventor's fame has resounded through all the quarters of the globe. Wherever sickness exists, this medicine has made its way to be everywhere and justly appreciated.







THE BUILDING NEWS, MAY 9, 1890.





*New Banking Premises*

*Threadneedle St. E.C.*

*T. H. Smith Archt*

*7 & 18 Basinghall St. E.C.*





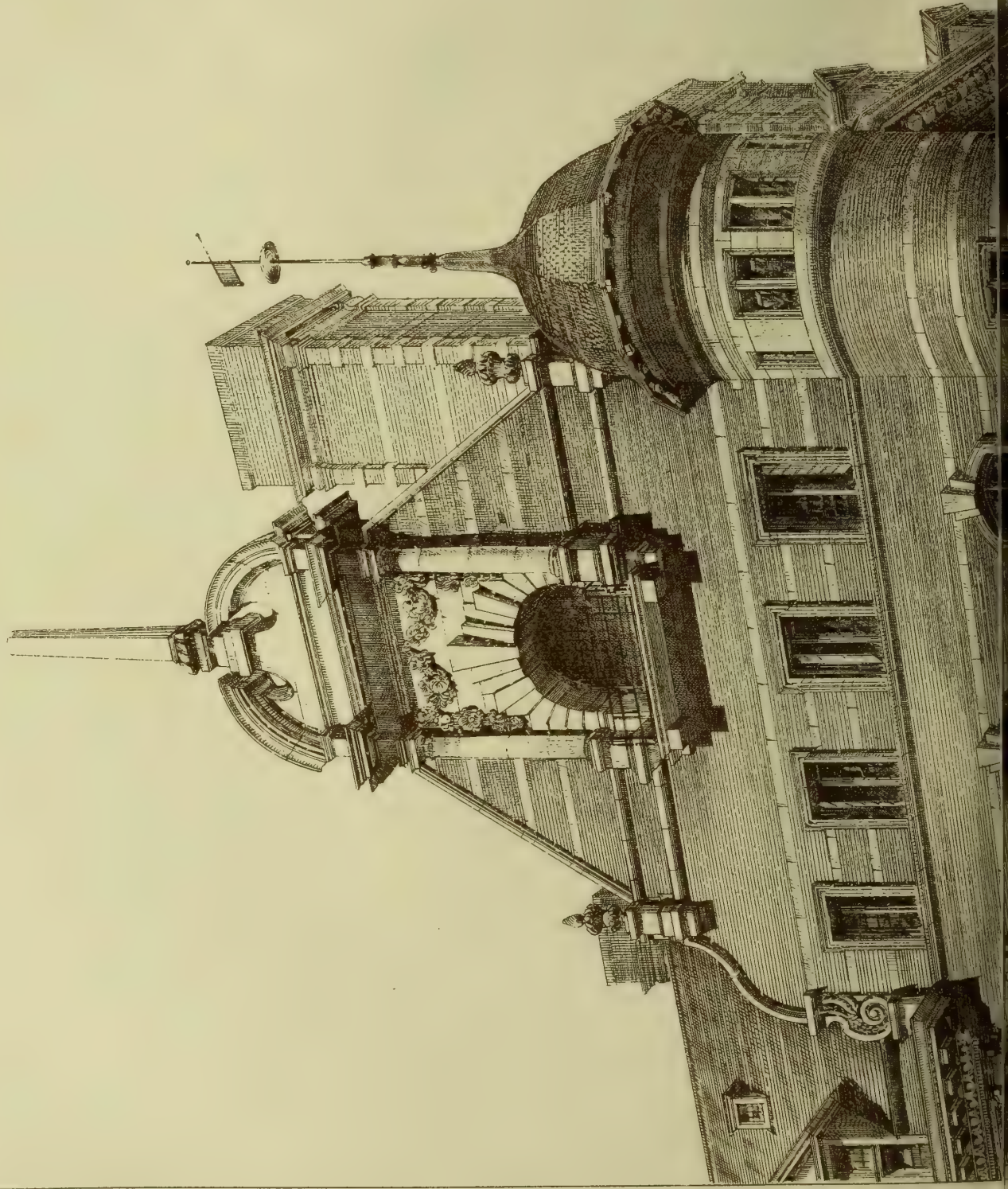




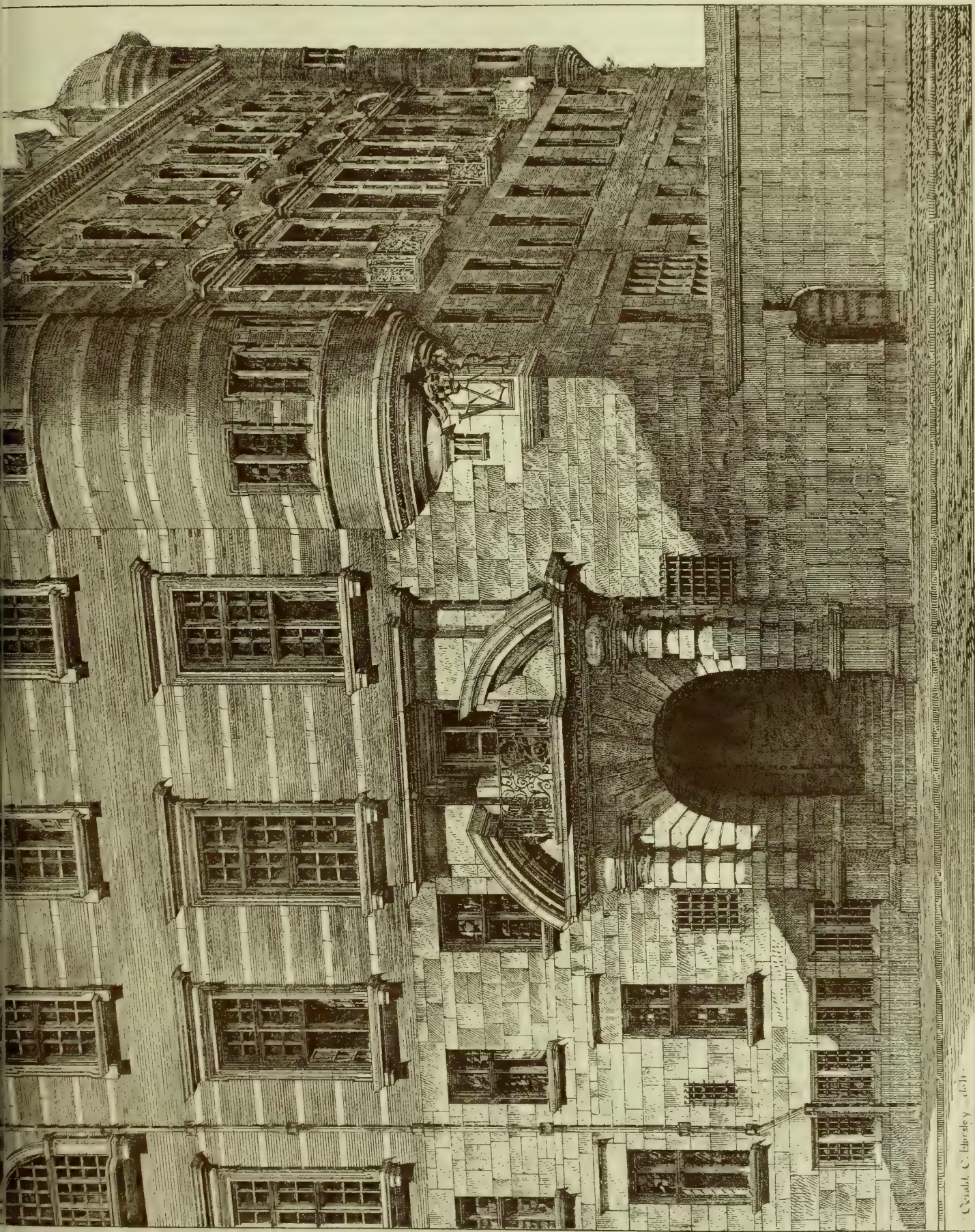




THE BUILDING NEWS, MAY 9, 1890.







View of South East Angle.

# NEW SCOTLAND YARD.

R NORMAN SHAW R.A. Architect

Engraved by C. Horsley del.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1845.

FRIDAY, MAY 16, 1890.

## CONTRACT PROVISIONS.

REFERENCE was lately made in these columns to the practice of inserting "provisional sums" into specifications and bills of quantities for works or goods of a special description over which the architect or his client wishes to exercise some control. As we pointed out, there are two sides to the question: the owner or his architect is justified in considering that the amounts in money provided shall be entirely appropriated to the goods for which they are intended, without deduction; and the contractor is not unreasonable in thinking that he ought to charge a profit on the same if the amount is expended. We discussed these two views of the question, and it is needless to say anything about them now. But there is another kind of "provision" found in quantities often with the consent of the architect, to which one or two correspondents have lately directed attention. These provisions take the form of "quantities," and are intended to cover any extra material or labour that may be required in the carrying out of the building or contract. Thus, for instance, it is common to insert so many cube yards for excavation in foundations over and above the quantity actually required according to the plans and sections, and so many yards "cube of concrete" or brickwork. In timber or stone it is often useful to introduce such a provision, allowing for, say, "100ft. cube fir framed," and taking care to state "as provision" after it. Now, there is nothing wrong or objectionable in sometimes introducing an extra quantity of material or of labour when the architect or surveyor has no means of finding out the precise quantity required. For example, in the excavation for foundations it may be a judicious course to adopt, as in many situations it is quite impossible to say at what depth the footings will have to go, or what quantity of yielding material will have to be excavated. On the other hand, it can be argued "Why make a guess? If the labour or material is uncertain, let it be charged as an 'extra.' Put down the calculated quantity, and let anything beyond be measured and valued." There are, however, good reasons sometimes for adopting the provisional item, and, in any case, the circumstances of the work will determine which is the more desirable course to follow. Yet it is well to bear in mind that the system of introducing provisions, whether of amounts or quantities, is one capable of abuse, and great care is necessary in inserting and adjusting them. In carefully-prepared bills these items are placed either at the commencement or at the end of the trade, and, for the general contractor, all provisional sums ought to be placed together, so that they may not be lost sight of or confused with the ordinary items. Then, of course, at the completion of the work the provisional quantity must be adjusted; that is, a fair calculation should be made as to the quantity actually used, the remainder, if any, being accreted.

A correspondent, "Twice Charged," has dealt, with a certain acerbity of tone, but with unmistakable clearness of perception as to where the shoe pinches the client, with the weak point of this system. He describes the reprehensible practice adopted by some quantity surveyors of inserting quantities of a provisional kind, and charging their commission of 2 per cent. on the amounts they produce, as if they were bona fide

quantities for actual work, and afterwards of charging another 2 per cent. for the same items in the bill of omissions at the adjustment of accounts. Thus the surveyor charges a double commission on quantities that do not actually appear in the building, and the employer is none the wiser. If there are extras against which the sums are deducted, the employer has still to pay 2 per cent. commission to the surveyor. In the first place, the sums put down for the provisional quantities swell the amount of the tender and the surveyor's commission. A "Builder's Manager" corroborates the statements of "Twice Charged" as to the existence of the practice, and brings a case forward as having come within his knowledge in which 2½ per cent. was charged three times—first for the commission on quantities, secondly on the bill of deduction, and thirdly on the measurement of the work. We cannot here call in question these statements, for we happen to know that the practice referred to is not uncommon among certain members of the profession. The surveyor's provisions are inserted, as many of our readers are aware, to protect the surveyor against mistakes or omissions. We will not suppose that they are introduced from any other questionable motive, such as that of increasing his commission. Mr. Henry Lovegrove and "A Disgusted Surveyor" both write on the subject, and show that something can be said on the other side, and we commend their letters to the reader. We quite agree that 2 per cent. commission charged on omissions is more than can be justified—1½ per cent. is more usual. The latter writer adopts the *Tu quoque* argument. He retorts on the contractor in his effort to make the employer believe he has paid the catalogue price for goods, as if that price was equivalent to the net prime cost. But there is a difference between inserting a provisional quantity and inserting a lump sum of money. The former are put in for the presumed purpose of protecting the surveyor. We will not go so far as to say with our correspondent, "to swell the amount of his commission," as our knowledge of the professional surveyors of reputation is, that they are too high-minded and independent to do that sort of thing; while the provisional sum of money is to give the architect or his client a means of selecting any special article. The sum of money so put down is expended or not, as the case may be, and the surveyor has only to add it to the sum of other worked-out items.

When, as "A Disgusted Surveyor" says, the surveyor makes it clear that the contractor is to add his profit to the sum or prime cost of any article inserted, there can be no question whatever as to what it means. It is not our object to take up the cudgels for either the surveyor or builder, as there are respectable members of both businesses who would repudiate any attempt to extort percentages from the employer. We are aware that contractors of doubtful reputation are found guilty of accepting commissions and discounts from manufacturers, and the same may be alleged against surveyors, and even architects; but this is no argument that, because some do these things, there are no honest builders and surveyors. Our object rather should be to ventilate the question of provisional items, and to dispassionately ascertain whether the system is desirable or otherwise. This is the point we wish to arrive at. The letters we have published represent fairly the two interested parties. "Twice Worked, Once Paid" very truly asks whether it is possible for a surveyor, in taking out quantities for certain things, like lead pipe or excavation, without knowing the site, to do so correctly?—a provisional length or quantity is inserted to meet a possible extra. Of course these provisional amounts, like the architect's

provisional sums, are supposed to be deducted if omitted, or not expended. The surveyor's intervention need not be required, as the architect deducts the sum or the quantity; and the same writer argues that it is rather ungenerous to grumble at a surveyor receiving commission on a money provision when he, for instance, is engaged to reduce quantities when tenders are too high, or alterations are suggested by him for reducing the amount, to say nothing of assisting architects in writing specifications, supplying tracings, and sundry other services rendered during the preparation of the contract, and for which he receives little or nothing.

"A Builder's Manager" says: "The responsibilities of quantity surveyors are such that they deserve all they earn, and if it were not for the opportunities which occur in most contracts of being able to charge three times on some items, the percentage charge on the whole would doubtless have to be raised." The surveyor may be well deserving; but he would not like to admit the principle of this argument, however ingenious, as we do not think it justifiable on such a ground as this to charge a commission twice or three times on a certain item. The same writer contends that neither architects nor surveyors have any right to go behind the list prices, for the reason that they are the client's representatives. He says, further, "that the term (prime cost) is a trading term invented solely by those engaged in the occupation of buying and selling at a profit, for the purpose of distinguishing between the first cost and the cost after adding all the incidental expenses connected with the goods. To those who have nothing to do with buying—i.e., paying and selling, the term has no meaning." But all this reasoning is beside the question raised by our correspondents—Whether it is right for a surveyor to insert provisional quantities, and to charge his percentage upon them to the employer, first on putting them in, and again in settling the accounts? The opinions expressed are conflicting. One surveyor says the practice alleged by our first correspondent is not known to him, and he will not believe that surveyors do anything of the kind; two other surveyors came forward not only to prove that provisional quantities are taken, but to justify them; and two builders' managers corroborate the practice, though they vary in their opinions as to the justifiability of the proceeding. Like many other things, the practice is one that admits of abuse. If a surveyor inserts an item to cover any contingency that he cannot properly estimate or measure, there cannot be any reason why he should not do so provided he does not omit to allow for the amount in the settling up of the work, and that he does not charge twice his commission. To insert provisional items in any other manner is certainly not justified, and is manifestly unfair towards the employer. That there is an inducement to provide such-and-such an extra amount of material and labour to make quantities as complete as possible is evident, and at the same time we can imagine a percentage being charged twice on it through no intention, but simply by neglect. The surveyor, or architect, engaged to measure up or adjust the accounts charges his commission on both extras and omissions, overlooking the items of provision. There may be no intention to do anything wrong; but yet the circumstance leads to one—it is certainly an abuse. We will not here allude to the grosser form of abuse that one or two correspondents have suggested—namely, that the amounts are inserted to swell the surveyor's commission—as we do not believe the practice would be tolerated by any responsible surveyor or architect, and, if it exists, the practice is only carried on by a few of the less reputable among the profession.



## THE PICTURES AT THE ROYAL ACADEMY.

[CONCLUDING NOTICE.]

**K**EELEY HALSWELLE, so consummate and subtle a master of atmosphere and mirror-reflecting lakes, has one of the few pictures worth looking at in Gallery VII. Of course, there is the rainbow, the silvery light and reflection, the prismatic hues—these are characteristics of Mr. Halswelle's landscapes, but they are always truthful and pleasing pictures. B. W. Leader's "Silent Evening Hour" (672) and Dudley Hardy's "Dock Strike" are in forcible contrast—one tranquil and full of repose and warmth of colour, the other exciting, animated, and murky. But we pass on to John MacWhirter's "Mount Etna, from the Greek Theatre, Taormina," the bay with its foreground of ruins, full of light, though less successful than the other pictures of this painter. Henry S. Tuke's fine picture, "Euchre" (709)—a group of sailors on the deck of a ship playing cards—is in a low key of colour; the composition and expression of the players admirable. In the next gallery commonplace incidents and work are in the ascendant. L. Malempie's "Venetian Fruit Seller" (735) is a dainty figure subject; the blue skirt, yellow scarf, and bare arms of the bright-eyed maiden, with well-shaped ankles, are points of colour and beauty, brilliant and sparkling with Venetian light. Gwilt Jolley's "Not Forgotten" is touching—an old man tending a grave, over which he is strewing rose leaves. Everything wears the aspect of spring—light-green grass and foliage, and the open sunlight. "Seeking Sanctuary," by Ralph Hedley—a terror-stricken man at the portal of a church, one hand on the massive handle endeavouring to gain admission, the other holding a dagger—has dramatic interest, and the details of the wrought hinge work and Norman archway are correct. "The Haunt of Coot and Hern," by Charles G. Morris (749), is a delightful study of wild marsh and colour; but near it we have a very doubtful example of pictorial skill—"Tulip Culture," by G. Hitchcock (750), formal lines of coloured tulips in a garden. No. 751, "The Music of the Eager Pack," is a wretched idea, a ferocious pack of hounds tracking their victim—a picture worthy the parlour of a country inn. S. Melton Fisher's "La Sposa" and Chevalier Tayler's "The Last Blessing" depict two very momentous incidents in human life. The first is a bridal preparation, the group of female friends evidently enjoying the appearance of the young bride, the handling and treatment in Mr. Fisher's best style. The last is the interior of a cottage, a young man lies in *articulo mortis*, propped up on a pillow, and is receiving the last benediction of the Church. The dark figure of the priest in cassock and amice, holding the crucifix, is conspicuously set off by the light of the window. The sorrowing mother rests her head against the sick man, but the unmeaning expression of the father or brother, with his hands clasped, kneeling, looking at the priest, is one more of wonder and surprise than betokening any feeling. The details of the room are well painted, especially the window, the accessories of toilet table, and medicine bottles. A very large and sunny landscape, "A Ford on the Wye" (780), by H. W. B. Davis, a shallow river with its background of hills, and cattle crossing, has scarcely the claim to so large a canvas. Next to it (759) is an overvarnished picture, heavy and dark. No. 760, "An Orchard, Kent," fresh in its spring-like green, is by R. W. A. Rouse. We cannot imagine how such a commonplace picture as that of 794, "A Rifle Match," could have been hung, and we may ask whether it is a caricature. Those represented with their rifles cannot be flattered: the faces are painfully ill-drawn. "An Incident of the

Restoration" (793), by Charles W. Bartlett, has a touch of irony, not unmixed with humour, in it. The Puritans are walking and conversing together down the pitched street of an old town, apparently turning a deaf ear to the jesting of the party of merry-makers outside a village inn, who are laughing and joking as they pass by. The two extreme elements of the Restoration are thus brought forcibly out, and the arrangement, grouping, and colour are successful. E. Blair Leighton's incident from Boccaccio, "How Lisa Loved the King" (774), is poetical, refined in composition and colour. Lisa, a beautiful girl, lies ill on a couch; her parents sit beside her on an open terrace, while the favourite musician of the King of Sicily is playing and singing to her at her request. There is a simple dignity and grace in the attitude and expression of Lisa and her father, mother, and attendant musician. Walter Urwick's large evening landscape, with hop-pickers, is full of sunlight and haze, and the colouring rich. Gallery IX, devoted to pictures of small size, has fewer works of merit than usual. Terrick Williams's "For Michaelmas" has nice feeling and colour; "A Frosty Morning," by Frank Whitehead, is cleverly handled, the effect of frost and atmosphere being suggested to the eye. Delicate tones are seen in Edward Holmes's "Marshy Land" (966); "Friends and Foes" (937), by Ernest A. Waterlow, is a fresh-coloured landscape, the sea, craft, cottage roofs nestling under hills, and the geese natural and forcible in colour. The "Thistlefinches" (951), by Bryan Hook, is a clever and subtle study of a green bank near the sea. The landscape of Mary Raphael Jones (906), a village green, is charming in its scheme of colour treatment, its grey sky, and broad handling. These are only a few of those we noted and which are worth attention in this gallery, but space forbids us to linger. A sensational picture in the next gallery is Lady Butler's "Evicted," a hilly landscape desolate and wild, the solitary figure, a woman, homeless and in sight of the ruins of her cottage, looking up as if in despair, while the police force are seen returning—a thrilling incident of the Irish tenantry, recorded in its simple and painful reality. The large central picture by Arthur Hacker, "Væ Victis! Sack of Morocco by the Almohades" (1005), is a picture of power. Bodies of dead women—others in despair—are prostrate over the marble floor; the ruthless despoilers have made havoc of the treasures and the palace. Forcible and dramatic the work undoubtedly is—the light is certainly cleverly thrown over the scene of devastation; but for the beauty and motive of the theme we cannot say much. F. Hamilton Jackson's "Apparition of St. Agnes" (1025) is nice in colour and in the arrangement of the figures. Phil R. Morris's "Poor Jack" is touching in its pathos and colour. James Hayllar's "Local News" (1027), as descriptive of a village incident and a study of character painting, is excellent. Notice the old man conversing with the younger, the little boy reading a newspaper, the old woman and young mother having a quiet gossip—all outside the prim cottage. The large canvas by William Logsdail, "The Ninth of November," a view of the Lord Mayor's procession opposite the Bank and Royal Exchange, is an important record of civic state. Here we have the gorgeous and cumbrous state carriages drawn by the richly-harnessed horses, preceded by the footmen in state liveries. The crowd, kept back by the portly civic custodian of the peace, who is in good temper, is painted with much care and attention to the details of a London group of sightseers in which the mob element is mixed. The blue tones of the Bank and Exchange are, perhaps, a little too blue, even for a wet day; the background selected is, at least, well chosen and dignified. Henrietta Rae's scene from "Hamlet," where

Ophelia says, "There's rue for you" (1041), is a very successful and characteristic embodiment of the incident after Laertes and the King's interview. The colouring is rich, the girlish figure of Ophelia graceful, and the background accessories well arranged. Ernest Normand's "Vashti Deposed" (1049), from Tennyson's "Princess," is a large and richly-painted subject—a dark, beautiful woman reposing on her couch, a black slave at her feet. The clenched fist indicates the anger of the deposed beauty, who turns her dark eyes towards the king, Ahasuerus, in a revengeful manner.

Solomon J. Solomon's "Hippolyta" (1063) is powerful in the conception and colour. The queen of the Amazons is seated on horseback, and Hercules is wrenching the girdle from her which had been given her by her father. The myth says that Hercules slew her, and it is this moment which the painter has chosen. The beautiful features of the queen whose head is falling back on her frightened steed, the indication of movement, and the modelling of figures and horses make this a masterly work. Upon the ground are the bodies of slain Amazons. The fine landscape of Yeend King, "Autumn's Wooing" (1098), with its fresh green foliage and water, is a work of undoubted merit, perhaps a little too verdant for autumn. Opposite to it hangs another landscape of considerable power and ability, a wild moorland tract with sheep, over which rainy clouds gather, while in another part of the sky the sun breaks through and illumines the partially clouded landscape. The handling is strong, and the tones and gradations pleasing. Alfred East's sunny landscape and river through pastures, near Yardley Woods (1104), is another charming study of bright autumnal tints and haze, and to these we may add Walter Osborne's charming subject, "The Ferry" (1113), an old country woman and her son, waiting for the boat which is to take them across the narrow river. The small craft make a busy scene. True sentiment breathes in the work, and the colour and tone are subdued and in perfect harmony, the foreground figures being the only bit of bright colour in the picture. We cannot admire Henry S. Tuke's "Perseus and Andromeda." David Murray's "Young Wheat" is too large a canvas for so simple a subject; it has luminosity and perspective. Of course by far the best picture here, which takes a high place in the Academy for its truth, pathos, and conscientious handling, is Stanhope A. Forbes' sale-room scene, "By Order of the Court" (1146). Perched on a table, hammer in hand, the village auctioneer is receiving bids for a timepiece which a man holds up to a mixed assemblage of people. A gentleman in black stands opposite who is evidently about to bid, and a woman seated holds up her hand. A round table has all kinds of articles on it—old china, candlesticks; on the floor articles for cooking, crockery, and a few books. But it is the expression on the faces of the visitors, from the lady who is seated opposite the auctioneer, to the old man to the left and the gossips behind who are chatting near the window; the two old gentlemen, one of whom whispers something to the other, and the dejected ladies of the family who have evidently come to watch the sale, that enlist our attention and sympathy. The light from the window behind is reflected on the polished table; the faces receive the reflection. The dark, sombre dresses and the low key of colour have been cleverly introduced as a foil to the counteranances. It was easy to make such a scene commonplace. Mr. Forbes has stamped every face with reality and earnestness, and we can read the thoughts and feelings of the visitors. W. Dendy Sadler (1034) has a delightfully-painted subject in his usual vein of humour, "The Hunting Morn," where three or four scarlet-coated gentlemen



are enjoying their breakfast in a comfortable inn parlour; one old gentleman in the corner, with a clerical cravat, appears rather uneasy amongst his boon companions. G. P. Jacomb-Hood paints a weird subject, "The Witches' Dance," the greys and neutrals in the colouring of which are appropriate to the strangeness of the scene, but hardly witchlike are some of the faces. One other picture, by C. Napier Hemy, deserves mention, "The Rescue"—a gallant crew going to the rescue of a drowning man who is clinging to the bottom of a lifeboat. A buoy has been thrown to the man, but there is a heavy rolling sea between. Handling and colour are alike successful. Stuart Lloyd's "Dittisham on the Dart" is a charming river scene, reposeful and radiant with softened mellow tones.

Though they suffer from comparison with the oil, the water-colours this year are above the average in merit. A coast with waves and sandy beach, in which still water lies, has been rendered by George Cockram with his accustomed skill and delicacy. "Where the Sky dips down to Sea and Sand" expresses very aptly the idea sought to be rendered. 1174 is clever; 1188, by Leopold Rivers, has some nice quiet colouring—the cottages by roadside illumined by a setting sun make a very pleasant picture. E. J. Gregory's "Fanny Bunter" (1186) is a delightful figure study—a symphony in colour and treatment; the screen is a nice background. Kate Hayllar, as usual, gives us a piece of still life, charming in its drawing and colour (1190); next a clever drawing of the central lantern tower of Ely, by R. Phené Spiers, may be noticed. Woodland and water, soft and mellow in tone, foreground of birch, are pleasingly rendered with a true sentiment by Reginald Jones (1200), "When the Brightness of the Day is on the Wane." In a stronger key of colour is the rocky coast, with its boulders and deep blue sea, "The Little Orme's Head" (1213), by J. Finnie. Edith Barrow's "Azaleas" is chaste and delicate, the beaten copper bowl making a nice contrast with the delicate bloom. As a study of colour and stratified rocks, Ernest E. Briggs's "Old Quarry" of limestone is clever, the grey tones and water well rendered. R. Fowler's "Leech Gatherer" (1232), a rendering from Wordsworth, is powerfully drawn and in strong colour, the treatment and touch pre-Raphaelite in the delineation of the marsh pools and weeds. "Our Lady of Roses" is delicate in its scheme of colour and decoration, and is by A. Macallan Swan. Henry G. Massey's "Bad News" is clever. An elderly woman is reading a letter in her clean little parlour or kitchen, while her daughter looks over her shoulder. The drawing and sentiment are both strong. Arthur G. Bell (1236) has a clever drawing of Yarmouth Market-place. Geo. Cockram's "Afternoon Light on the Sea" (1240) is a beautiful piece of silvery sea and limpid beach, the lights and clouds and reflection on the still water in sandy pools delightfully luminous and delicate. No. 1262, "A Dutch Homestead," is a charming study of cottage and atmosphere, the cattle well drawn. Arthur Croft's "Evening Mists," Valley of the Rhone, is softly painted; Leopold Rivers's "Cromer" is broad, the tranquil sea and sky forming a light ground to the dark purple hues of the landscape. Nos. 1372 and 1359, "The Last of the Ebb" and "An Evening Tide," by Harry E. James and Alfred W. Browne, are both clever seascapes. L. Raven Hill has a vigorous sketch of two young ladies preparing their dresses for a fancy dress ball in their bedroom—strong in colour and drawing. W. Follen Bishop's woodland is masterly, the roseate hues of sun in distant wood and hillside glade clever, with the foreground of bracken. No. 1312, "Robin Hood's Bay," by John Sowden, is also a masterly view of coast.

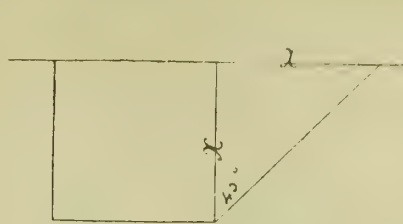


FIG. 1.

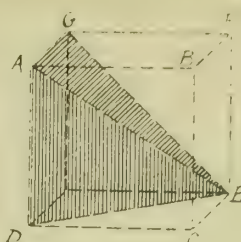


FIG. 2.

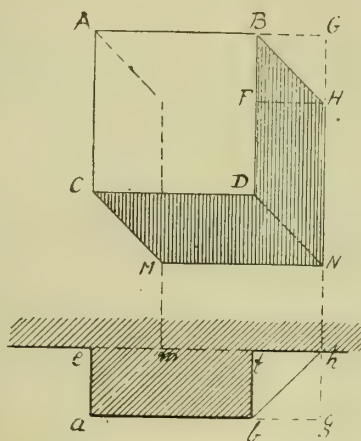


FIG. 3.

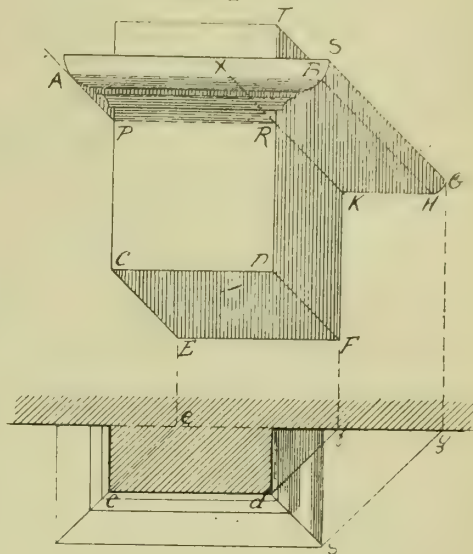


FIG. 4.

## SHADOWS.—I.

THE science of putting in shadows in geometrical drawings, little known or employed in England, is extensively practised on the Continent and in America, where the architectural training is conducted after French methods. In fact, a geometrical drawing of any kind would not be considered finished unless the shadows, carefully found by rules, were conscientiously indicated. The result of this practice is to do away with to a very great extent the perspective drawing, considered indispensable in England. A geometrical elevation with the shadows indicated and tinted supplies in a way the place of the perspective; the different projecting or receding planes of the building, &c., being as thoroughly shown by the shadows thrown as if the distances were marked thereon.

Let us begin with the first few simple rules for determining the shadows thrown by a projection to a vertical or horizontal plane, as the case may be, proceeding afterwards to the more complex shadows thrown by advancing or receding planes. The student who is acquainted with the rules of descriptive geometry will find absolutely no difficulty in understanding the system of shadows, it being no more than an application of these rules for the intersection of different planes. But although the knowledge of descriptive geometry facilitates the drawing of geometrical shadows, the study of the former is not absolutely necessary in order to understand the ordinary rules for the shadows which would be generally used in elevations.

The rays of light which cast the shadows are always supposed to shine on the object or building at a fixed angle of  $45^\circ$  to the horizontal and vertical planes. If we employ a source of light such as that of a lamp or candle at no great distance from the object, we find that the shadows are cast at all possible angles, thus leading to great complexity in the drawing. But in the case of the source of light being at an immense distance, as that of the sun, the difference of the angles of the rays of light on projecting objects is imperceptible and supposed to be *nil*. The angle of  $45^\circ$  is employed because by the property of this angle the shadow thrown by a projection to a vertical or horizontal plane is always equal to the amount of projection from these planes. Thus, in Fig. 1, supposing the distance,  $x$ , to be the shadow thrown by the projection,  $x$ , the angle being at  $45^\circ$ , the distance  $x$  is equal to the side or projection  $x$ . It is possible that shadows

thrown at any other fixed angle would produce an equal effect as far as the drawing is concerned; but this effect would be, so to say, false, on account of the inequality of the shadows thrown and the projection supposed.

**Reflections.**—Reflections are the rays of light projected or sent back from planes brightly lighted to the other parts of the building more or less in shadow. Shadows can receive light by reflection only from the earth or other lighted body. Thus a shadow which, near the cornice of a building, is dark, becomes gradually lighter as it descends and receives the light reflected by the earth. We will notice this effect further on in treating a bay of a façade. In tinting shadows another effect must be taken into account, and this is the effect given by distance.

The shadows thrown on an object nearest the observer appear much darker than those on a body further off, and these again darker than those of still more distant objects. This effect is due to the vapour contained in the air separating the different objects from the observer, diminishing greatly the effect and depth of the shadows. Thus when tinting an elevation, care must be taken to diminish the depth and tone of the shadows in proportion to the distances that each part of the building recedes from the "avant corps."

It is understood that we are to imagine rays of light to arrive at an angle of  $45^\circ$  with the vertical and horizontal planes. To explain this in the cube ABCDEFGH (Fig. 2), the line GE represents the light falling at an angle of  $45^\circ$  with the horizontal plane, and DE the angle of  $45^\circ$  with the vertical plane. The intersection of the planes of these two lines is AE, which forms the diagonal of the cube. Thus the light falling in the direction AE is at the same time at an angle of  $45^\circ$  with the horizontal and vertical planes. It is in the direction AE that the light is always supposed to arrive.

This understood, let us proceed to find the shadow thrown by a block of stone projecting from a vertical plane or wall (Fig. 3). We have in ABCD the elevation, and in *abef* the plan of the projecting block. Let us imagine a cube having its side equal to the project *fb* of the block from the wall, and let this be in elevation BGHE, and in plan *bghf*. Draw the diagonals BH and *bh* of the two squares. Now BH and *bh* represent the lines GE and DE of the cube (Fig. 2), and these two latter represent the diagonal AE, the direction the



light is supposed to fall. Thus BH and  $bh$  (Fig. 3) will represent the rays of light falling on points B and  $b$  at any angle of  $45^\circ$  to the horizontal and vertical planes. Thus we see that the shadow of a point descends vertically and horizontally to a distance equal to the amount of projection of this point from the vertical plane which receives the shadow. Now in the plan (Fig. 3) the light falling on the points  $a$  and  $b$  at an angle of  $45^\circ$  will throw shadows on the wall planes as far as  $m$  and  $n$ , the shadow  $fh$  being equal to the amount of projection  $f b$ . In the elevation shadows will be thrown by B and C at an angle of  $45^\circ$  to the horizontal plane. Now we see by the plan that the shadow of point  $b$  is stopped by the wall plane at  $n$ ; therefore by projecting the point upwards we get H, the corresponding point where the shadow is stopped in the elevation, and by projecting point  $m$  we get M, the shadow of point D; this point, being of the same distance from the wall plane as point B, is naturally stopped at N on the line  $hH$ ; then by drawing the horizontal line, MN, we complete the shadow thrown by the block ABCD.

Thus we see that by drawing the shadow lines at  $45^\circ$  in both elevation and plan, and projecting the intersections of the latter with the wall plane, we determine the shadow in the elevation.

Let us now add to the simple block a cavetto and quarter round, as in Fig. 4, and establish the shadow thrown by the ensemble. Let us draw the tangent A to the quarter round, the tangent will touch the moulding at the point A. Draw the horizontal line AB, separating the part in the light from that in shadow. The tangent touches the block at point P; thus the point A throws its shadow as far as P; by drawing the horizontal line PR in ABPR we have the shadow thrown by the moulding on the block. To determine that thrown by the whole body on the wall, we proceed as in the last figure, and find the shadows of the points CDS and T and  $c d s$ . These shadows meet the wall at  $e f$  and  $g$  in plan; by projecting these points we establish EF and G in elevation.

We remark that the mouldings from B to R being themselves in the shade cannot throw a shadow; the shadow of point R is at K for the same reason as that of B is at H (Fig. 3). A horizontal drawn from K determines the shadow of point B in H, KH being parallel and equal to XB. Thus in GHKFE we have the shadows of the points SBRDC or the shadow thrown by the whole block.

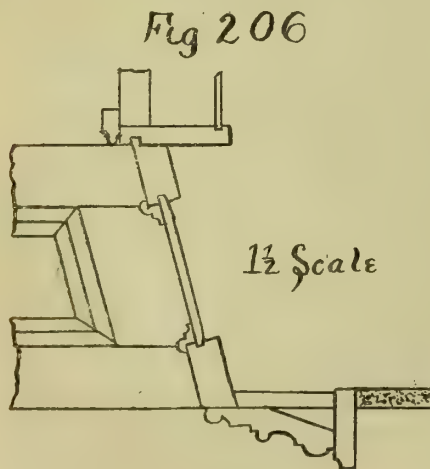
ARTHUR L. VYE PARMINTER.

Palais des Beaux Arts, Lille.

### CARPENTRY AND JOINERY.—XXX.

FINISHING OF WINDOWS.—(Continued.)

AND now before taking up windows finished with shutters, as an intermediate step framed jamb-linings would come in. The lines of the inside of sash frame and rough walls would be laid down on the board upon which the plan of finishing is drawn; allowance would then



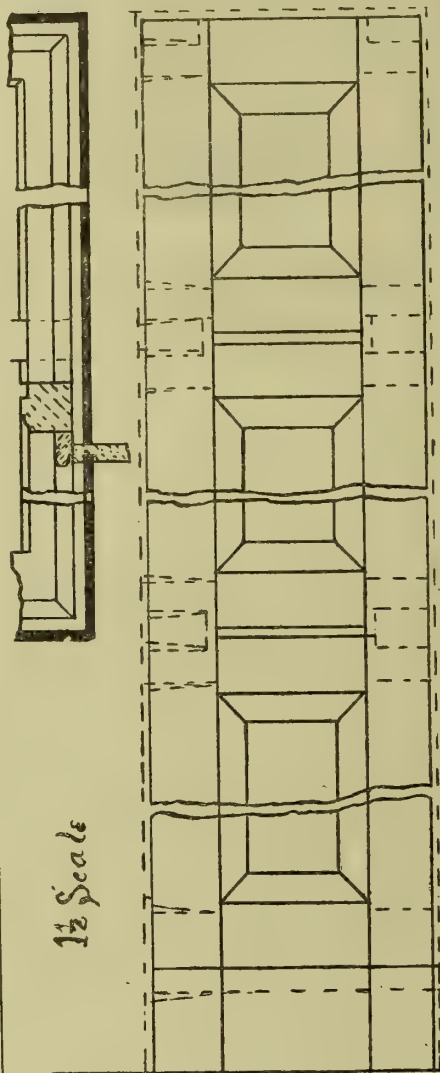
be made for plaster, and if the architraves are to stand out some distance beyond the line of the plaster that would have to be attended to (this is sometimes necessary in light walls in order to have a proportionate framing in the jamb-lining.)

The next step would be the amount of splay or inclination; 3in. to the foot is usual.

Fig. 206 gives a plan of such a jamb-lining as is being described. It will be seen that it is framed, and that the general design is similar to a plain jamb-lining. In regard to how it is framed, from floor to soffit is in one continuous length.

Fig. 207 gives an elevation of a framed jamb-lining as seen when the spectator is looking full at it—that is, when he is standing parallel to and in front of it. On the left hand is seen the sash in elevation, as the workman is guided by it in setting out the jamb-lining. The heavily-lined portion is intended to represent the groove in the casings and sill for the jamb-lining, soffit,

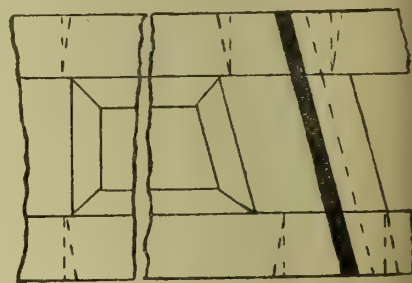
Fig 207



as shown in Fig. 207, is placed with its centre just opposite the centre of the meeting-rail, and here again a *reed* occurs, and in the centre of this rail, showing on each side of it a narrow rail. The top rail will, of course, be in line with the under side of the groove, or an allowance of 3in. above it may be made if let into the soffit. This jamb-lining is shown for a level soffit, which usually is the case when the window reaches well up to the ceiling, and there is room only for the top architrave and plaster cornice with a slight intervening space, so that cornice and architrave may be distinct. Of course, it will be readily seen that to elevate (splay) the soffit would require, say, 3in. or more—in other words, the frame would require either to be set 3in. lower, or it would have to be that amount shorter, or else a higher ceiling. The design of the framed jamb-lining may be altered from the above; one alternative design would be to have a square panel opposite the meeting-rail of the sash instead of the broad rail, and rails 2 1/2in. broad above and below this panel. To preserve uniformity, the soffit and back would require each to have a small panel in the centre. Another design would be to divide the portion of the jamb-lining corresponding with the shutter (that is, between the groove in the sill and that in the top casing of the frame) into three or four equal panels. Now, as the mortising and tenoning of framing has been fully explained previously, it is not necessary to again enter upon it, as no new principle is involved. The grooving or ploughing for the panels is usually 1/4in. or 1/2in. deep. Haunching requires to be left on the top rail, but need not be on the bottom rail, seeing that the stiles reach to the floor and the rail does not. Fig. 207 is self-explanatory otherwise. The framing of the soffit for these jamb-linings presents very little difficulty to the joiner who has attained a moderate degree of skill.

Fig. 208 gives an illustration of half the plan

Fig 208



1 1/2 Scale

of the soffit when it is level. The breadth of the front and back rails will be obtained from the plan of the jamb-lining (see Fig. 206). It will be noted that since the soffit is level and the jamb-linings splayed, the rails will be narrower than the stiles of the jamb-lining. The splay of the outer cross rails of the soffit will be the same as the jamb-lining, and for the purpose of setting them out, set a bevel to the splay of the jamb-linings in plan. The proper method of setting all out is to lay the front and back rails in their respective positions on the drawing-board where the plan of the window-finishing has been laid down, marking on their edges for the cross rails. The centre rail will, of course, be square to the front and back rails, but the outer cross rails, as has been stated, will be inclined at the same angle as the jambs, and, of course, the bevel will be used instead of the square to draw the shoulder lines by.

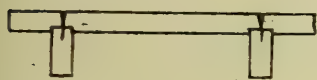
Sometimes it is the practice to lay the rails front and back in their respective positions on the plan of the window, face side uppermost, and on the top of these in their positions the cross rails, and then, by the aid of a simple apparatus shown in Fig. 209 with a *drawpoint* (its chisel end), draw the various working lines on the cross rails, and with a pencil mark the cross rails upon the front and back ones, the pencil being guided along the edges of the cross rail whilst the lines are being drawn on the face of the longitudinal rails. Then on the front and back rails make due allowance for the grooves in

and capping of window-back. The floor-line is the first to notice and fix on the rod or drawing-board, then the top of the groove in the sill, and this will give the under edge of the rail in the jamb-lining corresponding to what would be the bottom of the shutter, if such there were. Between this and the top rail of what would be the *elbow*, usually a bead occurs, and, as is shown, the bead extends along the rail only, and does not cross the stiles. The height to the top of the plinth from the floor line will determine the height of the bottom rail, which rail usually shows 3in. above the plinth or skirting; a portion of the rail should be beneath the top line of plinth so as to serve for nailing the plinth to; the plinth is also nailed to the stiles of the back and a piece fitted into the bottom rail, and reaching to the floor to which this piece may be side-nailed. The bead opposite to the groove in the sill, and which, by the way, is worked in the solid, the rail being a broad one corresponding to two narrow rails, and the bead above referred being in its centre. This bead is usually a 1/4in. or 3/4in. one. Strictly speaking, this is not a bead, but a *reed*. The rail in the jamb-lining above this one,



the cross rails for panelling, and also haunching; but this is not very necessary except the outer cross rails have been made so broad as that there will be no horns outside of them. It may be remarked that the outer cross rail should show the same breadth (measured square out from the jamb-lining) as the top rail of the jamb-lining, usually 3in. In Fig. 208 an attempt is made to show that the mortises through the front and back rails for the splayed cross rails are square through these rails, which will be found more convenient in wedging up, &c., as the workman will readily find out, but, of course, this presents a little more difficulty in setting out. It will be seen in the rail next the frame that the inner line of the mortise is just at the intersection of

Fig 209

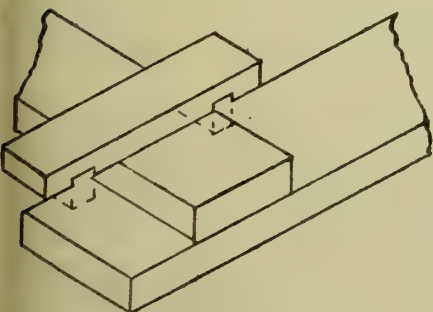


H Scale

the grooves of cross and longitudinal rail, and the length of the mortise will be guided by where the rail runs out. In the rail nearest the spectator, and furthest from the window, where the groove cuts the outer edge of the rail, will be the point to square in for the inner line of the mortise, and the breadth of the splayed rail will again determine the length of the mortise. Of course, if no horns are on the front and back rails, then haunching must be allowed. Fig. 209 is an illustration of a very simple apparatus, being made of pine 2in. by 1in. or  $\frac{3}{4}$ in., and the length is determined by the breadth of the splayed rails. It looks just like a little stool with two feet, the feet being dovetailed into the long piece, or they may be trenched in and nailed. The method of using it is to have the timber of the soffit laid in order as previously stated, the cross rails upon the top of the longitudinal rails, and let all the timber have its face side uppermost, in order to have the lines on that side; then taking the splayed rail to begin with, when it is in position according to the plan laid down in the drawing. Place the apparatus shown in Fig. 209 across the splayed rail with the two feet hard against the longitudinal rail, then with the chisel end of a drawpoint draw the line for the shoulder, proceed in the same manner to line all the others.

It will be found that the apparatus requires to be lightly, yet firmly, held, so as to keep it from shifting, and prevent the rails from shifting also.

Fig 210



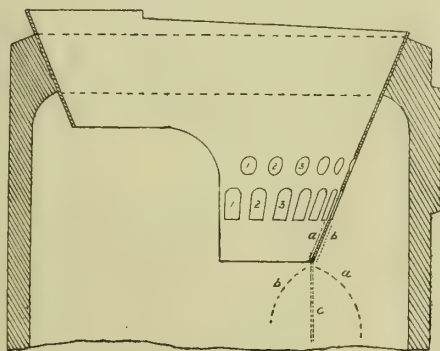
All splayed work can be set out in this way when it occurs in the form of doors or framing. It will be readily seen that the feet of this small stool must be less in length than twice the thickness of timber used for the framing.

Of course, it is not intended that the use of a bevel in setting out splayed work should be done away with; but it will be very often found that when the pieces of timber required have been laid in order on the plan of the proposed framing that it is much easier to line it out with the aid of the apparatus described than with a bevel. Much of the joiner-work for ships is set out in this way, and it is well known that ship-work is nearly all bevelled work.

Fig. 210 gives an isometric illustration to show the manner in which the rails are placed, one on the top of the other, and also how the apparatus illustrated in Fig. 209 is placed when in use for drawing shoulder lines in bevelled work.

#### FIELD'S NEW "1889 PATENT" SELF-ACTING SIPHON.

FOR the purpose of flushing town sewers and house drains, Mr. Rogers Field's new patented self-acting siphon claims the attention of all engineers and architects. This is no nominally new patent, but the result of careful investigation and experiment. We have had our attention drawn to the new siphon, which is being manufactured and supplied by Messrs. Bowes Scott and Western, the sole licensees, Broadway Chambers, Westminster, S.W., and, from an inspection of its operation, can say confidently that it is a great improvement on the old form of Field's annular siphon, which has attained a well-deserved reputation. The older form was found, when not very accurately set, to give uncertain results in its action, and to be slower. The first trickle of water down the conical-shaped lip did not invariably displace the air in the longer limb, but took a curved path impinging on the surface of tube. The new "1889 patent" obviates this risk for dribbles of water; the action is certain with the smallest trickle of liquid, so that the primary object of a siphon for flushing purposes is secured, as we shall explain by-and-by. It can also be more easily fixed, without requiring that most perfect adjustment of level of the upper



end of the limb. A flushing siphon to be of any practicable use should be capable of being put into action by an extremely small flow of water—a mere dribble, in fact; so that although the tap may be partially clogged, yet the action of the flush may be certain so as to avoid the waste of water by running away slowly into the drains. It is the sudden rush of water down the drains that is required to clear them. Mr. Rogers Field's new automatic siphon guarantees this action. The large tank may be fed by the constant flow from a small tap or drinking-fountain which takes a day or two to fill; but directly the level of water rises to the top of the longer limb, the contents are immediately emptied. The siphon is built into the tank, the longer limb dipping into water about  $\frac{1}{4}$ in. in a flushing chamber, which is kept at a proper level by a weir. The shorter limb of siphon is formed by an annular covering, dome-shaped at top, and the water rises in the annular space thus formed to the top of the longer limb. A few drops at first enter and expel the air in it, when a vacuum being partially formed, the siphon is brought into action, and the contents of tank discharged.

Considerable thought and ingenuity have been shown by Mr. Rogers Field in perfecting his siphon, especially in the adaptation of the adjuster to dispel the air in the discharge pipe at the onset. The old truncated cone inserted in the pipe at the upper end was found to be inadequate under certain conditions of setting. The first drops, as we have said, were found to take a circuitous course, and after trickling down the inside of cone to impinge on the inner surface of the pipe, rendering the action slow and uncertain. By the newly-invented adjuster, of which we give a section, the series of perforations, 1, 2, 3, &c., have the desired effect. The drops descending the cone pass through the perforations, and, meeting the drops at the inside of the lower edge of cone, cause them to drop perpendicularly downwards instead of impinging on the inner

surface of pipe. Thus the drops inside and outside of the cone *a* and *b* meet, and a resultant motion, *c*, is given to the water in the pipe, which produces the desired vacuum. The level of the water at once rises within the bell, expelling the air till a perfect vacuum is formed, bringing the siphon into full action, and the contents of the tank are rapidly emptied. By small notches at the bottom edge of discharge pipe which enters the flushing chamber, facility is also offered to the speedy outrush by allowing the air-bubbles free escape.

This valuable improvement gives a fillip at the commencement of the action of the siphon just when it is wanted, and is further secured by making the rim of cone or adjuster at its upper edge a trifle lower (see section) where the drops first enter to dispel the air, the greater rush of water after the vacuum has been formed finding an outlet on the side of cone opposite the perforations. These latter are also so ingeniously arranged that the first trickle of water must escape through them. They are pierced round half the cone, the other being cut away to form a large opening (see section). It does not matter if the first tricklings down the cone all go through the perforations, as the bottom edge of it will always be wet and allow the drops to fall plumb. Another point we noticed is the shape of the dome or outer casing; Mr. Field has greatly improved its shape. By reducing the diameter of the upper part, a better concentration of pressure is produced at the moment when the water attains the top of the inner pipe.

For the disposal of sewage from large institutions like workhouses, hospitals, and schools, the self-acting siphon is admirably adapted, as the liquid can be discharged at intervals over any land that may be available for surface irrigation. A galvanised iron flushing cistern with the "1889 patent annular siphon" is sufficient to flush house-drains, as the smallest dropping can be utilised.

#### CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—VI.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

THE "PALAIS DES BEAUX ARTS" AND "PALAIS DES ARTS LIBERAUX."

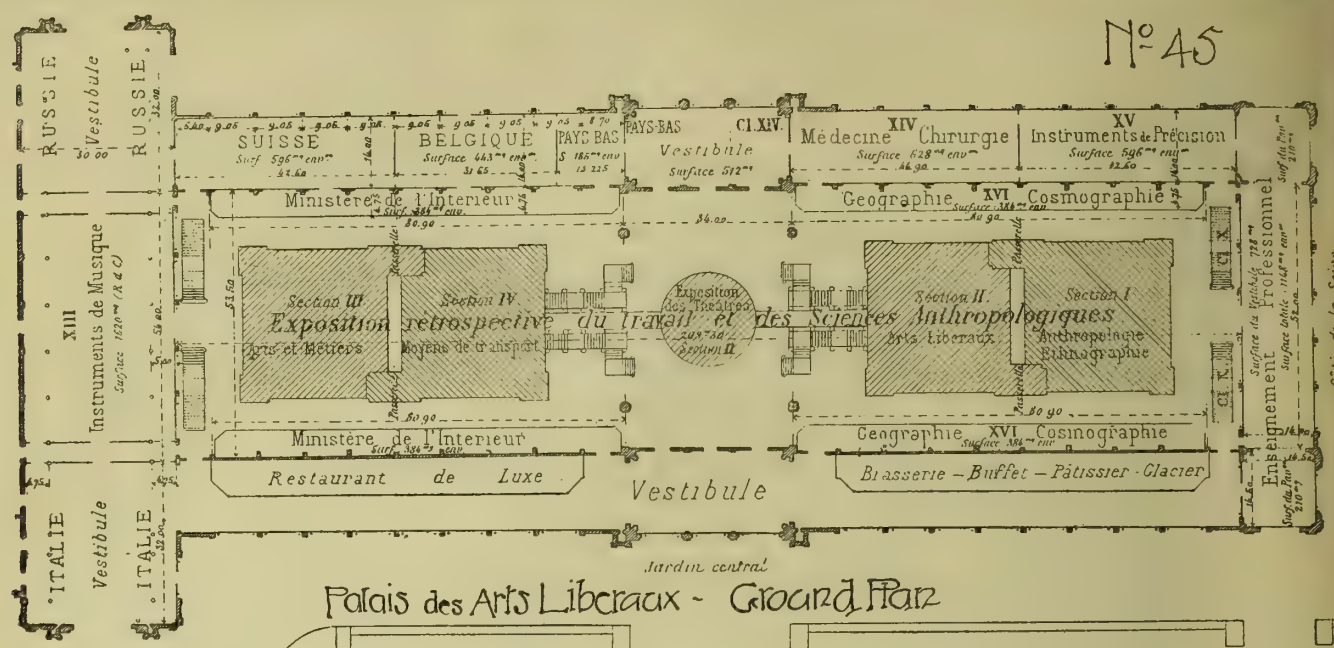
THESE two palaces are joined to the wings of the "Expositions Diverses," by means of the Galleries Rapp and Desaix respectively, and follow their central axis towards the Seine.

Before describing them in detail, it may be as well to give you the result of an interview I had with M. Formigé, the accomplished architect of these buildings. Amongst other things, he said that the great difference between the Exhibition of 1878 and the present buildings lay in the fact that in the Exhibition of 1878 the iron framing to the terracotta was hidden as much as possible, and the terracotta shown, whereas in the present Exhibition the ironwork, which is, as it was in '78, the framework, is everywhere plainly shown; even the cross-bracing of the standards is visible, and the terracotta work is placed behind it, showing by its position that it is not constructional, but only ornamental—he thought this a great advance.

He explained the construction of the great square standards carrying the outer aisles of the two palaces, the square standard being riveted up on three sides; the terracotta panels are then slid in on the fourth side. The tiling to the Fine Arts and Liberal Arts domes is of exceedingly elaborate construction, and M. Formigé explained the difficulty there was in keeping the water out, the tiles not lapping one another. A sketch of these is given further on. The ceilings of the galleries are built in rolled iron joists, and formed with brick arches and plastered underneath.

In examining the plan we find that it consists of a great central nave, 738ft. long by 175ft. 6in. wide, covered in one span, with side galleries the whole length on each side of the nave, about 50ft. wide, in two heights. These galleries are connected on their northern end by a vestibule 46ft. wide, at the junction of which there are square angle pavilions. At the southern end are the Galleries Rapp and Desaix. In the centre of the nave rises the central dome, which is carried on four lattice-work standards 105ft. apart. The exterior of the Liberal Arts dome is similar to the Fine Arts dome, but differs to some extent interiorly, which will be explained further on.





There are entrances to the building on each side of dome, that giving on the centre garden being more decorated than that on the outer side; the same arrangement is followed in the Fine Art building. These entrances are of the same width as the space inclosed by the standards supporting the domes, but are divided into three by terracotta piers. The Palais leads at its southern end by several doorways into the Galerie Desaix, and

great trusses, it is interesting to note the method of raising them into position. It was done by means of "scaffoldings" on wheels, which meet from one end to the other of the "Palais." The different scaffolding used for the "Arts Libéraux" and the Beaux-Arts are given (Nos. 47 and 48 from *Le Génie Civil*). The scaffolding for the "Arts Libéraux" was of necessity different, because of the projecting galleries. It

a clear span of 163ft. 3in., and a clear height of 92ft. 6in., and are spaced 59ft. 6in. from centre to centre. The principals, as M. Contamin, the engineer, explained, are articulated at three points: at the top and above the foundations on each side; and the trusses, although they do not appear to spring directly from the ground, do so to a certain extent, because the standards are riveted to really form part of the truss.

The vertical portion of the truss is 49ft. 2in. high, above which starts the curve of the intrados, which is formed by portions of two ellipses, the minor axes of which do not coincide with the axis or centre line of the roof itself; from which it follows that the roof is slightly pointed in the centre (see No. 49). The back of the principal goes up vertically to a height of 67ft. 3in., which is the height of the longitudinal gutters; from these gutters start the interior curve of the roof with a radius of 300ft.

On each side of the central articulation there are six purlins, the two uppermost of which are placed 5ft. 7in. apart, and carry the outside gallery, which is to be used for examination and repairs, then follow two groups of purlins in pairs, 5ft. 7in. apart, and then a single one at the bottom. The purlins are connected by intermediate rafters, to which are framed the cruciform bars.

#### CHIPS.

The parish church of St. Cuthbert, Edinburgh, rebuilt in 1773 on the site of one of the most ancient churches in Scotland, was occupied on Sunday for the last time prior to its reconstruction and restoration.

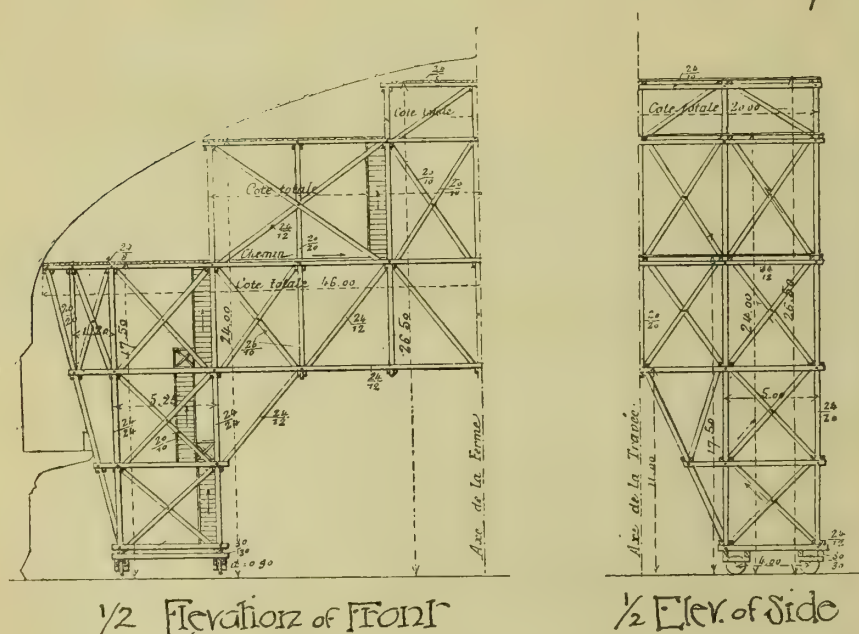
The memorial stones of a new church and school for the Swedenborgians of Haslingden, near Accrington, were laid on Saturday. The school-room, which will be on the ground floor, will hold 350 persons, and over it will be the church, which is arranged to seat about 300. Mr. Arthur Hindle, Haslingden, is the architect, and the building, which is Early English in design, will cost £2,700.

A chapel is to be erected from the designs of Messrs. Paley and Austin, architects, of Lancaster, in connection with Sedburgh Grammar School.

The Royal borough of Dumbarton was *en fête* on Saturday on the occasion of the public presentation of Knoxland-square, and a bandstand within it, to the town by the Denny family, and the laying of the foundation-stone of the William Denny Memorial Institute, now in course of erection at a cost of £5,000.

A large pavilion is about to be built in the Queen's Park, Longton, Staffordshire, at a cost of £5,000, from plans by Mr. John Taylor, architect. The building is of iron and glass, supported on a brick and stone base. The pavilion comprises, on the semi-basement floor, one large room, with annexe; gentlemen's and ladies' lavatories, two kitchens, and four large storerooms. On the ground floor there are a central hall and two ante-rooms and lavatories.

#### Palais des Arts libéraux.



Diagrams of Roof scaffolding.

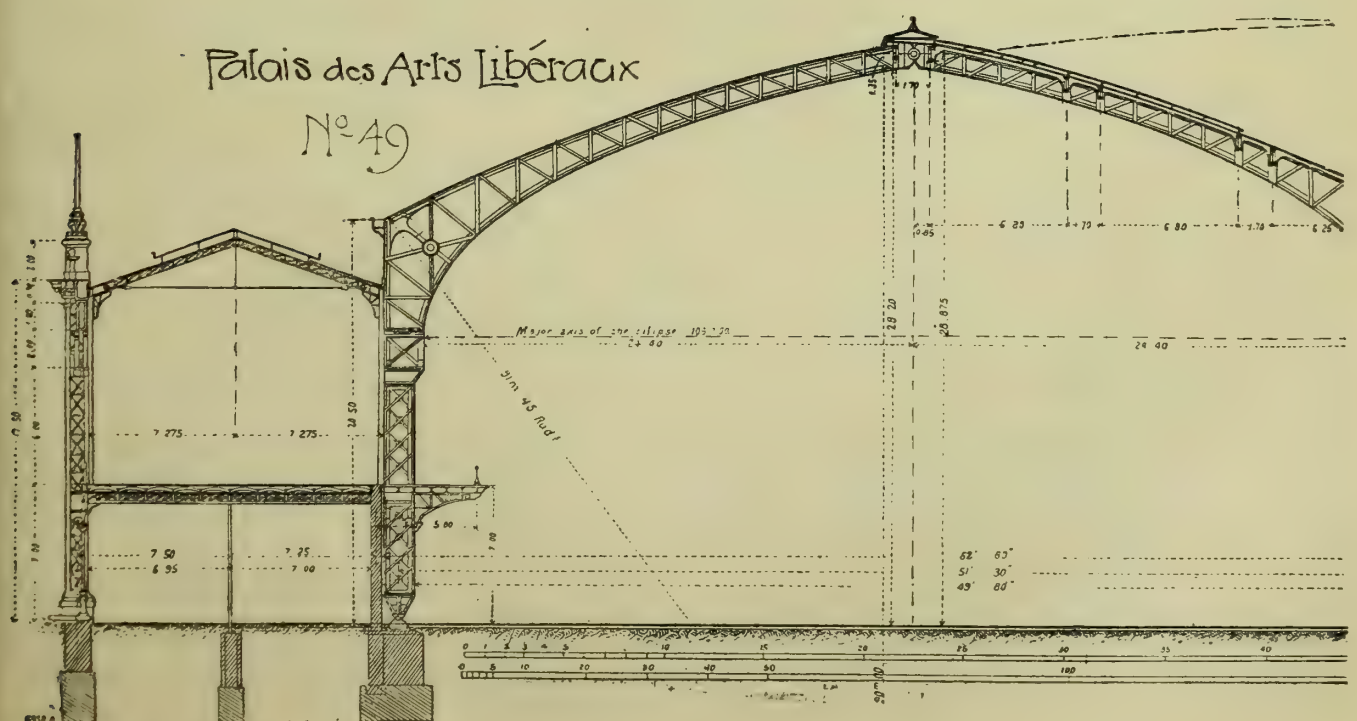
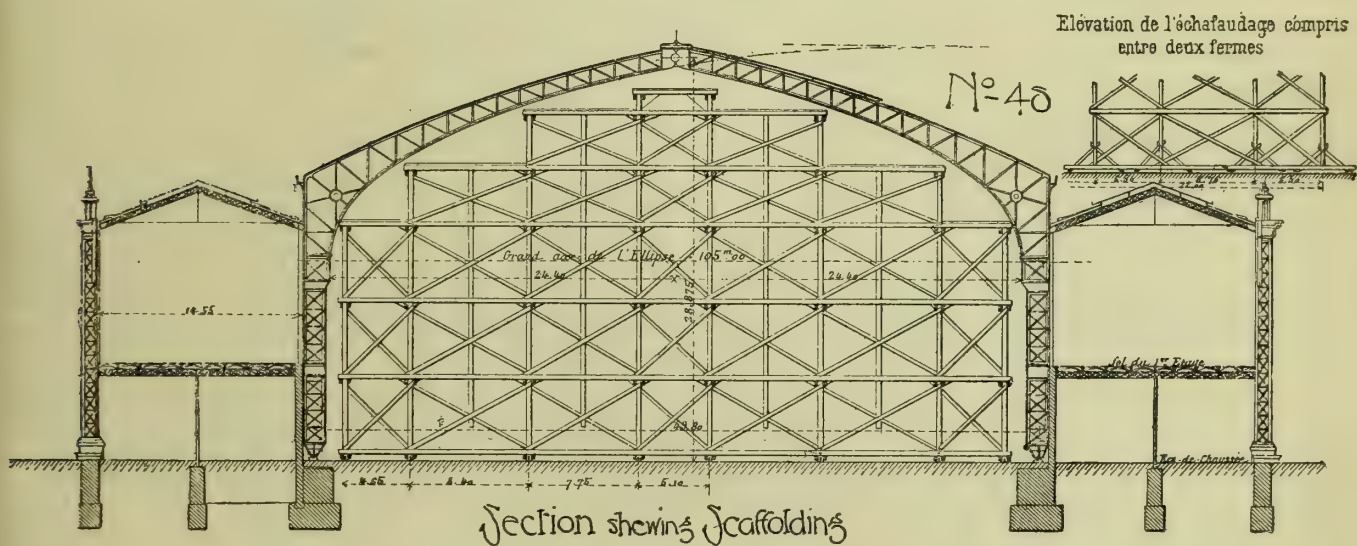
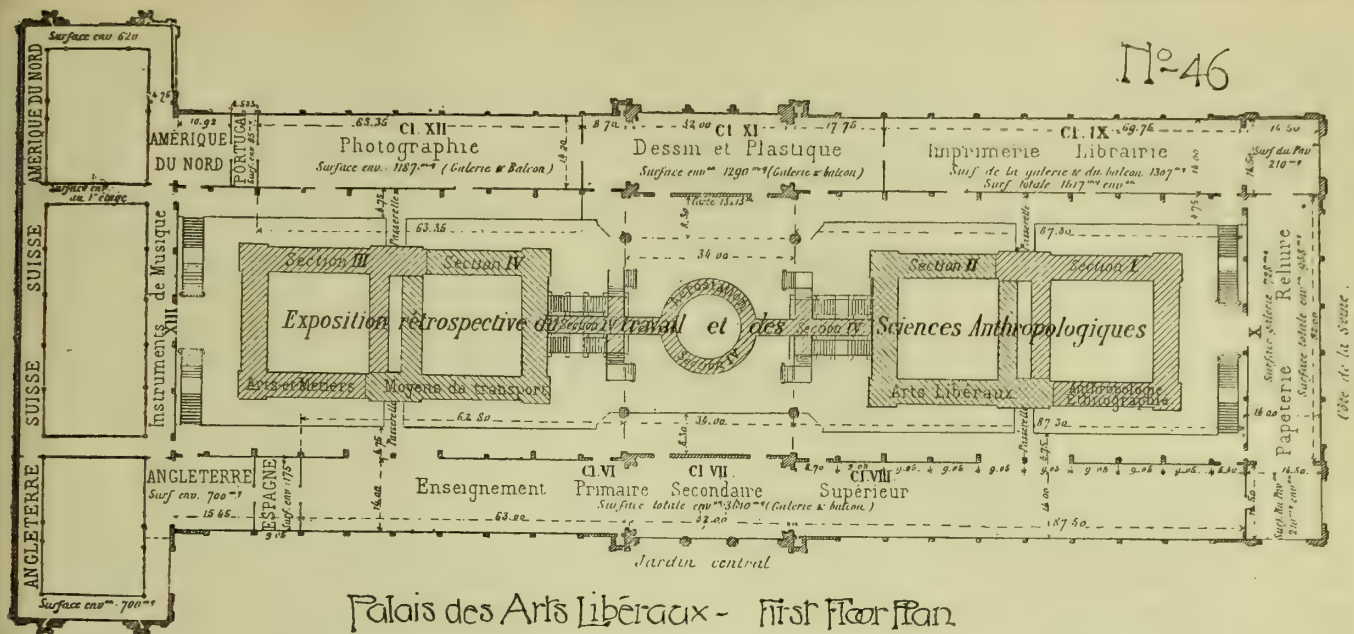
there is thus communication by the Palais des Expositions Diverses to the Palais des Machines at the back. Two staircases at each end of the building (carried on iron frames) lead to the galleries on the first floor, and also to the upper part of the Exposition Rétrospective du Travail, which, as seen by the two plans which follow, occupy the centre of the Palais, and are in two stories, the upper one being level with the side galleries.

Before proceeding to the description of the

is carried on sixteen cast-iron wheels of about 3ft. diameter. The "Beaux-Arts" scaffolding weighs 200 tons, and is mounted on thirty-two cast-iron wheels of about 1ft. 7in. diameter; the standards 55ft. 9in. high are raised first on the steel rollers and held in position, afterwards the two divisions of the spandrel, and the remaining part of the roof in six parts, by means of winches of wood, these parts not exceeding 8 tons in weight.

The roof principals of the nave (No. 49) have







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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—"BEQUEATH'D BY BLEEDING SIRE TO SON."—"PARTING."—NEW BUILDINGS FOR HERTFORD COLLEGE, OXFORD.—"PEVERY," SHROPSHIRE.—PALAIS DE BLOIS, FRANCE.—RESIDENCE AT SURBITON.—HILL'S MANSION, SHREWSBURY.

## Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 706.)

SCULPTURE: "BEQUEATH'D BY BLEEDING SIRE TO SON."—"PARTING."

The first group, by Mr. G. A. Lawson, was exhibited at the Royal Academy, and illustrates the above words of Byron. "Parting" is the Royal Academy Gold Medal group submitted in the recent prize competition, and to which the highest prize was given. The author of this highly-dramatic piece of sculpture is Mr. W. Goscombe John, of Elizabeth-street, Eaton-square, S.W. The blind old man is nursing the dying form of his only boy, his leading light and his stay. Both illustrations are from photographs supplied by the artists.

## HERTFORD COLLEGE, OXFORD.

ABOUT the year 1282 Elias de Hertford converted into a hall for students certain premises in Oxford, which were thereafter known by the name of Hertford, Hert, or Hart Hall. In 1740 Dr. Richard Newton, then Principal of Hart Hall, obtained a charter of incorporation for the Society, under the title of "The Principal and Fellows of Hertford College, in the University of Oxford"; but, the endowments proving insufficient, the college was in consequence dissolved in 1805. A part of the property of the dissolved college was transferred to the University, and the Hertford scholarship was endowed therefrom. The remainder was transferred to Magdalen Hall, which had previously existed in an ancient building close to Magdalen College. This building was in course of time required by Magdalen College, and Magdalen Hall was consequently removed to the site and buildings of Hertford College in 1822. In 1874 Magdalen Hall was dissolved and incorporated afresh as Hertford College, and the new foundation was richly endowed by the munificence of a member of the University. The old buildings soon proved insufficient for the increased number of students, and it became necessary to think of some mode of enlargement. Mr. T. G. Jackson was consulted as to the best way of meeting the requirements of the college, a task which the confined nature of the site, closely hemmed in by streets and other colleges, made somewhat difficult. The new buildings, which have been erected from his designs, consist of a large block facing the Bodleian Library, containing a new kitchen and a complete set of offices in a basement which, for want of space, is carried partly under the quadrangle. On the ground floor is a new gateway and porter's lodge, a bursary, a buttery, and a new study for the principal. The upper floor is occupied almost entirely by a new college hall, which is handsomely panelled with oak, and furnished in the usual collegiate style. Attached to this is a serving room, communicating by lifts

with the kitchen in the basement and the buttery on the ground floor. Above this is a lecture-room. A wide stair winding round a massive pier runs from top to bottom of the building, and the spiral lines of the ascent are marked on the outside by raking cornices and strings, and by the form of the arched windows. This is shown in the illustration which we reproduce to-day from the drawing in the Royal Academy. The north side of the quadrangle, which was occupied by the old kitchen and offices, has also been rebuilt, and now contains twelve good sets of rooms for Fellows and students. The work just completed includes also the restoration of the block adjoining the new hall southwards, which had been used as rooms, to its original use as a house for the principal, and several improvements have been made in order to fit it better to that purpose. The contractors were Messrs. Symm and Co., of Oxford, for the first block, and Mr. Halliday, of Stamford, for the rest. The carving was executed by Messrs. Farmer and Brindley, and Mr. E. Long was the clerk of works.

## "PEVERY," SHROPSHIRE.

This house is in course of erection for Sir Offley Wakeman, Bart., on a beautiful site near Baschurch. The walls are built of a fine local red redstone of good colour, and the roofs are covered with Westmoreland green slates; the terrace walls shown in the view are being built with the house, and the gardens are in process of being laid out by Mr. H. E. Milner; the works also include stabling, lodges, and kitchen-garden. The general contractor for the work is Mr. John Bentley, of Waltham Cross, Essex; and the clerk of works is Mr. Unwin. The garden terrace is to the south, and the principal entrance to the north.

## STAIRCASE ENTRANCE, PALAIS DE BLOIS.

ALTHOUGH we have given many drawings at various times of this famous chateau, this particular view, which we publish to-day, has not appeared before, and for the first time we give a plan of the building. The first Duke of Orleans, of the house of Valois, erected the buildings near the observatory; but besides these no other works of the period remain, either of this prince or of his successor, Charles. It is, however, to the third duke, Louis, and son of Charles, when he ascended the throne under the title of Louis XII., that we owe the *Corps de Logis*, or that portion of the palace represented by the darker parts of the plan. This *Corps de Logis* is a beautiful piece of architectural design, and our view to-day shows the base of one of the staircase towers, situated to the right on entering the quadrangle, as seen from under the arcade, the elaborated pillars of which form so important a feature in the picture. On the blank wall to the right on the opposite side of the arcade there was once painted a *Danse Macabre*, or Dance of Death. The kitchen has a single column in the centre to receive the vaulting, and by the side of this, entered from the portal archway, is a guard chamber. The use of some of the other ground-floor apartments seems uncertain. The king's bedchamber and sitting-room are on the first floor. The principal apartments have been renovated; but no remains of the original decorations exist. The Porcupine represents an order founded by Louis, first Duke of Orleans, who thereby sought to convince his rival, the Duke of Burgundy, that he would be found armed at all parts. The motto was "Cominus et Eminus"—from far and near—having reference to the fabulous power attributed to the porcupine to dart out its quills. Italian influence is evident in the carving of this building, and it is thought that the better wrought parts of the work were executed by some of those artists whom Philip de Commines informs us Charles VIII. brought from Italy to decorate the Chateau of Amboise. The acanthus leaf gracefully treated is frequently introduced, and the arabesques on the columns or piers of the arcade are typical of this character of workmanship, though they are not so good as the carved panels over the entrance-door, where the sculpture, and even the mouldings, are suggestive of Italian design. The *Basse Cour* in front of the *Corps de Logis* was formerly surrounded by inferior offices of the Palace, some hotels of the courtiers, and a large Conventual church, in which many royal personages had their obsequies celebrated before final transit to the Church of St. Denis. Louis XII. rebuilt the Chapel of St. Calais and incorporated

in its erection the remains of the former one before alluded to. From the part which remains of the chapel, it appears to have been of some length, and was terminated by an apse. The arms of Louis and his queen enrich the vaulting. The whole of the space now called the *Place des Jesuits* was at one time occupied by the gardens of the palace. We are indebted to Clutton's "Domestic Architecture of France" for the plan and particulars given in these notes. He published a view of the upper part of the main staircase, a sketch somewhat similar to ours of to-day, though by no means showing so much, and a capital study, with figures from the hand of the late Wm. Burges, representing the entrance gateway. The exterior of the greater staircase tower was illustrated by us on September 13th, last year. Other illustrations of the Chateau de Blois will be found in the BUILDING NEWS for June 25th and December 3rd, 1875; November 30th, 1883; November 20th, 1885; January 14th, 1887; March 22nd, 1889; May 3rd, 1889; measured details July 5th, 1889; and September 13th, 1889.

## RESIDENCE AT SURBITON, SURREY.

This house is now in course of erection within 10 minutes' walk of Surbiton Station. It is built of red bricks with Broseley tile roof, the upper floor being finished rough-cast. The exterior woodwork is principally of teak, merely oiled, whilst shutters are appended to the bedroom windows in front, which face due south. There are eight bedrooms, bath-room, housemaids' and linen closets, &c., on the upper floors, and the trimmings of staircase and best rooms are being executed from special designs prepared by the architect, Mr. J. Nixon Horsfield, 20, Market-place, Kingston-on-Thames.

## ROCHESTER SKETCHES.

THE central sketch represents the picturesque brick mansion called Restoration House, where Charles II. passed a night when on his way to London from Dover, in 1660, at his restoration to the throne. Amongst the surrounding views is one of Rochester Castle, which stands where a spur from the downs overlooks a sharp bend of the Medway on its inner side, guarding the spot where, at least since the days of the Romans, there has been a ferry or a bridge across the river. The outer walls of the castle are much dilapidated, but the keep is still comparatively uninjured, one of the stateliest and most perfect remnants of Domestic military architecture in Britain, unsurpassed by any, equalled only by Richmond. It rises to a height of about 100ft., its plan being a square, with a side of rather more than 70ft. The walls average four yards in thickness, and are pierced with round-headed windows, those on the inner side being more enriched than is usual in a structure of this kind. Some Norman fireplaces still remain. This present keep is assigned, with much probability, to Bishop Gundulf, the architect of the Cathedral, and of the White Tower of London. It has an interesting history, having been besieged more than once—the first time prior to the erection of the present keep, when Odo of Bayeux, Earl of Kent, was attacked there by William II., who took it after much difficulty. It was overcome by Louis of France, when he invaded England during the troublous days which closed the reign of King John, and was again attacked by Simon de Montfort in 1264. On this occasion, however, though the outer defences were won, the keep still held out, and after seven days' close siege the earl abandoned the attempt; but it was less fortunate when assailed by Wat Tyler. The remaining sketches show the picturesque remains of the old City gates, and a view up Bull-lane, with its quaint gables and undulating sky-lines, untouched at present by the sacrilegious hand of modern restorer or jerry-builder.—LEONARD MARTIN.

Sir J. R. Mowbray, M.P., as chairman of the Ecclesiastical Commissioners, will formally open at South Shields on Wednesday, the 25th June, two new parks. They cover an area of thirty-two acres on the south side of the pier promenade, and have been transformed by the Corporation during a long series of years from unsightly sand and ballast heaps into picturesque pleasure grounds. The works were designed and carried out under the superintendence of Mr. Matthew Hall, C.E., the borough surveyor, the North Park having been laid out by Mr. Burns, and the South Park by Mr. Peebles, landscape gardeners. The total outlay has been over £22,000.



## WAYSIDE NOTES.

THERE is a wise old saw that declares two heads to be better than one; and if ever there was a striking instance of its truth, it is to be found in the result of the Worcester competition. Among the authors of the six sets of designs that the assessor, Mr. Waterhouse, has selected for the final competition, I fail to discover the name of any gentleman competing in a single-handed manner. In all cases firms of architects have been successful, and young architects who competed single-handed will not fail to have noted the circumstance as worthy of regard. They will think less favourably of "one-man" work, and incline towards the co-operative system with a more willing heart.

I suppose there are few young architects who have entered into partnership, or some system of co-operative working, before they have failed on the single-handed tack. It is natural to imagine one is going to "set the Thames on fire" and carry off all the competitions as soon as the brass plate is fixed, or other legendary information vouchsafed to persons passing by the offices where our friend has settled down, to wait for the practice that may or may not come in the course of time. There are many young men who, had they the wisdom to know that this peculiar conceit is common to all humanity, and that mortification of the flesh is the only hope, would succeed where now they fail: instead of wasting years in futile endeavours to make a practice, they would accept a junior partnership or work on mutual terms with some old friend. But they wish to do all and be known to have done all—a very honourable desire, certainly, though at war with the results of experience and with known facts. Did they but seek the benefits of co-operation, and agree to work with others, they would find the path less thorny. There are always ways open to young men who have had ordinary opportunities of making friends in the earlier period of their careers. If they cannot get a junior partnership, they can get someone to share offices and participate in certain ventures, such as competitions. This latter system has been very much in favour of late years, and deservedly so, for it gives many of the advantages of partnership without its disadvantages; and if, as years go on, it be found mutually desirable to enter into proper partnership, the parties have had a time of probation—a wooing or a courting—that will insure a felicitous alliance. I venture these suggestions because nowadays co-operation, even on a small scale, is almost a necessary condition of success in business, and the incident of the Worcester competition is surely an index of the times, and not to be passed over as insignificant.

Certain individuals are born with an exceptional aptitude for "getting on," and such will find paddling their own canoe to be the best. As a general rule, however, a partnership can be made a more paying concern than the business of solitary practitioners. From an artistic point of view, partnerships are objectionable, and knowing the why and wherefore of this objection keeps the young architect, who fancies himself a William de Wykeham, or Christopher Wren, or both of these worthies rolled into one, from accepting positions which would doubtless advance his worldly position, but in his imagination obliterate his individuality. We all like to know who designed a certain building. It does not satisfy us to know that Messrs. Brown, Jones, and Robinson designed it. We then commence to speculate as to how much of the work Mr. Jones did, and whether there is a fair share of Brown and Robinson incorporated in the elevation. We cannot satisfy our artistic cravings. If we knew that Mr. Brown, say, conceived the whole design, we feel interest in the work; but there is something—difficult though it may be to express it in words—that repels us in the idea of a piece of architecture being the result of the efforts of Brown + Jones + Robinson.

New competitions announcements have been scarce lately, and the advertisement of the proposed Fleetwood Market hardly recompenses the confirmed architectural competitor, who lives but to compete. It is to be presumed that the market buildings will be fairly extensive, and that a sum of twenty pounds will be very scant remuneration. It is the old complaint—a beggarly £20 is offered for "plans, specifications, and estimates"

for and in consideration of a work which, from the nature of the buildings, must involve a serious amount of labour to the profession. In this case, moreover, the inaugurators do not bind themselves even to award the £20! Isn't this sort of thing getting a trifle beyond a joking stage? It is now a common affair enough for appeals for competition designs to be drawn up as though made to a gang of thieves. I wish that something could be done on similar lines to the action taken to insure the appointment of assessors to prevent this. It must be evident to all that the agreement among a large number of architects not to compete unless an assessor be appointed has been productive of most beneficial results. The majority of competition advertisements now appear with announcements to the effect that an assessor will be engaged to award the premiums. If similar measures to those which have brought about this marked reform could be taken to indirectly compel inaugurators to arrange competitions with a morsel of respect for the position of architects, I have no doubt but that it would be possible to defeat the ends of those persons, whose sole aim is to obtain a maximum of work from, with a minimum of pay to, the architectural profession. It is false to say that the state of things is referable to the competition of the times, &c., *ad nauseam*. The fault is with ourselves, and is only to be remedied by combined action.

Nothing like moving with the times! I have an idea, prompted by a visit to the Architectural room at the Royal Academy, whereby I hope to make that fortune for which I have long sought. Suppose next year I appended to a series of sketches on the R.A. walls, "Houses in this style £500; ditto ditto with back-stairs and less jerry-building, £550; schools as shown, £7 0s. 10<sup>1</sup>/<sub>2</sub>d. per head; churches, as drawn, £3,500, including architect's commission; cathedrals upon application!" Why not? I fail to see a vast chasm between a drawing of a "house costing £650" and what I propose.

I go to the yearly exhibition at Burlington House with a set purpose of enjoying the pictures and drawings, and when one puts oneself into an appreciative frame of mind there is a fund of enjoyment to be got out of even the Architectural room. A good show like the present one is interesting from two points of view—(1) regarding the architectural taste of the day, and (2) with respect to draughtsmanship. One of the most striking facts to be noticed in connection with the former is that only in one case is severe Classicism evidenced, and that is in regard to the Mappin Art Gallery; and the most noticeable feature of the draughtsmanship is one that I was glad to see you pointed out in your first notice of the exhibition, and that is a less amount of Yankee smartness, and, as a substitute, honestly-prepared drawings evidencing care and painstaking, in lieu of flick-and-dot and splash-and-dash. As regards the style of buildings illustrated, it might be imagined that Classic architecture is, at the present time, very much at a discount; but it should be remembered that a Gothic architect has been intrusted with the hanging of the architectural drawings. This, of course, greatly influences the nature of the whole exhibition. Mr. Pearson doubtless strove to be impartial as to style; but it would be impossible to entirely prevent style from influencing the selection. For my own part, I would rather the selection were plainly characterised by the taste of the architect intrusted with the hanging of the drawings; for it would add a special interest year by year over and above that of the drawings themselves.

In the course of an exceedingly instructive paper on "Public Elementary Schools," read before the Society of Architects on Tuesday evening, Mr. E. Tidman stated that it would be welcome news to many to know that the system whereby the Education Department's architect had to be fee'd by the architect submitting school plans had been abolished. The system was objectionable on every score, and the profession will be relieved to learn that it has thus been swept away. It never gave satisfaction, and caused much unpleasantness.

A museum of architecture is to be established at King's College. It is not stated whether it is to consist of models of light-and-air cases, and examples of schedules of dilapidations and bills

of quantities; but we shall shortly be hearing, I suppose. In any case, I fear much good is improbable. The dead-and-alive state of things at the Tufon-street Institution should be enough to frighten anyone from establishing another architectural museum. If a King's College student wants to study architecture, he can find plenty of examples of different classes of work within a short walk of Somerset House. Pictures and casts are of little educational value when compared with actual buildings; and in constructional matters, any earnest student, with his eyes open and wits about him, can learn more in an hour's walk through London streets than a day in a museum of examples. Models are mere toys. The best thing that could be done with the proposed museum would be to cram it full of the very finest photographs obtainable, of buildings from all parts of the world, arranged with regard to style and date. This would be in accord with a precept of Mr. Ruskin, which I call to mind, to the effect that if a student loves architecture he will study much from photographs of it. A well-collected, well-arranged exhibition of this nature would be the best kind of architectural "museum." It would not only be useful for educational purposes in connection with the college lectures, but would be interesting, and instructive, and useful for reference to all architects and students. Photography has reached a high pitch of excellence, and it is the best medium for the illustration of works of architecture. An architectural museum, I would repeat, is something which cannot exist, except in the city thoroughfares and country roadways. My advice to the promoters of the proposed "museum" at King's College is to rely upon photographs, and in so doing they have ample scope for the formation of a most interesting and valuable collection, which could be so arranged as to greatly facilitate the student's acquiring a clear knowledge of architectural history, which, after all, is the main thing required to be taught to probationers for an architect's calling. GOTH.

## CHIPS.

St. Edmond's Church, Exeter, was reopened on Sunday after being closed nearly six months for the removal of the old plaster ceiling, and a handsome wood one has been erected resting on carved stone corbels from the plans of Mr. F. J. Commin, architect; the carving was by Mr. E. T. Rogers; Messrs. Tree and Bolley were the builders, all of Exeter.

The Public Loan Commissioners have, on the recommendation of their consulting engineer, granted £13,000 of the £14,000 applied for by the Thurso River and Harbour Trust. Contracts will be advertised for as soon as the specifications have been prepared.

At "Tivoli" Theatre and Restaurant, London, in the theatre (and, we think, in some of the private rooms) "Anaglypta" has been used rather extensively by C. Dresser, Ph.D., &c., and H. René Rainger, artist.

The four-dial illuminated clock and a peal of tubular bells, which have been erected in the tower of the parish church, Blackley, at a cost of £700, were formally opened on Saturday. The clock, which has been erected by Messrs. J. Smith and Sons, of Derby, has four dials, each 5ft. 6in. diam., made of opal glass. The hours will be struck and the Cambridge quarters played on a series of metal tubes in suspension, manufactured by Messrs. Harrington, Latham, and Co., of Coventry. A stained-glass window, designed by Mr. J. Lowe, of St. Ann's-square, Manchester, has been erected in the south-east side of the chancel of the same church, the subject of which is "Aaron the High Priest."

The 15th-century church of St. Petrock, at Lydford, which includes all Dartmoor in its parish, is being restored and enlarged from plans by Mr. S. Hooper, of Hatherleigh. A north aisle is being added, and the roofs are being renewed. Mr. Harry Hems, of Exeter, is carrying out the carving.

In the course of the excavations now proceeding at Llandaff Cathedral for a new path from the Deanery to the cathedral the workmen in the employ of the contractor came upon a part of an ancient sword. The weapon is a contel-lache, of the early sixteenth century, and, although no marks can be discerned, is probably of Venetian workmanship. Its length over all is at present 14in., of which there is 9<sup>1</sup>/<sub>2</sub>in. of blade remaining outside the garde. The handle is of steel, welded into one solid piece, the cross-bar being plain, and having the strap-shaped contre-garde welded into one of its arms. The whole of the parts of the handle are thickly plated with silver, which has been damaged by the rusting of the under-lying iron and steel work.



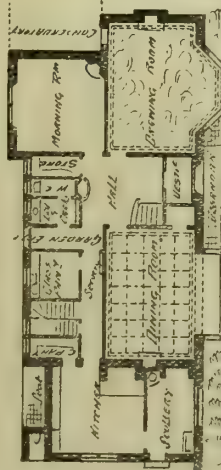




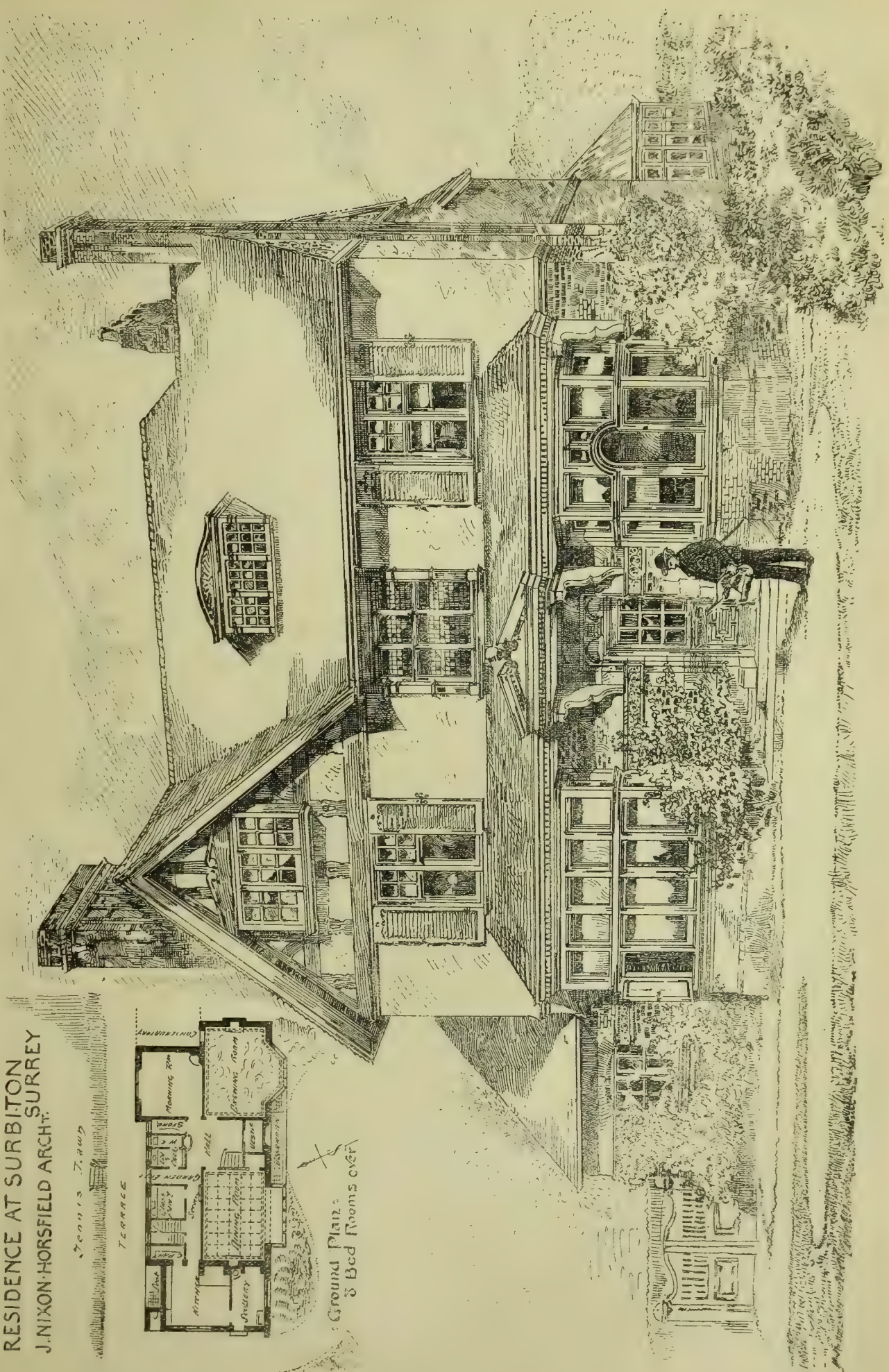
RESIDENCE AT SURBITON  
J. NIXON-HORSFIELD ARCHT.

SCOTT'S TOWN

TERRACE



Ground Plan of 3 Bed Rooms over





## CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

**T**HIS, the eleventh sheet of portraits of living architects, commences with Mr. John Taylor, F.R.I.B.A., who entered the office of Her Majesty's Works in 1859, as first assistant to the Surveyor for Royal Palaces, Public Buildings, &c., in the London District, and to which post he succeeded in 1866. The following are amongst the numerous works which have been carried out under his direction—viz., additions to Marlborough House, including the raising of the main building and wings; the erection of the Bow-street Police-court, Offices, and Station, and the Marylebone and Dalston Police-courts and Offices; the erection of the "White" wing and the Mausoleum Room of the British Museum; the construction of the new entrance, staircase, and exhibition rooms at the National Gallery; several works of restoration at the Tower of London. The new Bankruptcy Courts and Offices now in progress in Carey-street, Lincoln's-Inn-Fields, are also being carried out under his supervision, and from his designs. In addition to the above, he has executed many important works of a miscellaneous character, which include the exhibition fittings of the Natural History Museum at South Kensington at a cost of about £125,000 (sketch drawings of some of those of a structural character having been prepared by the architect of the building, Mr. Waterhouse, R.A.); the embankment of the gardens on the south side of the Houses of Parliament at a cost of about £25,000; the fitting of St. Paul's Cathedral for the "Thanksgiving Service" in 1872, and of Westminster Abbey for the "Jubilee Service" in 1887; the works at Hyde Park Corner, including the removal and rebuilding of the Wellington Arch, &c. His portrait is by Mr. Deneulain, of the Strand.

Mr. John Douglas, of Chester, was a pupil of Mr. E. G. Paley, of Lancaster. He began practice in 1860, his first important work being the rebuilding of the south front of Vale Royal Abbey for Lord Delamere, who afterwards gave him the memorial church of St. John's, Over, Cheshire, and other works. He has been much employed in Ecclesiastical and domestic work in Cheshire and other counties. Barrow Court, near Chester, is one of his works. He has built the following parish churches:—Aldford, Tattenhall, Dodleston, Pulford, Hartford, Altcar, Warburton, Colwyn Bay, Criccieth, and the churches in conjunction with his partner, Mr. Fordham, at Barmouth and Haydock. He has also restored the parish churches of Bangor Monachorum, Northop, Holt Llanaimon, Llanfechain, Cilcain, Bettws Gweifil Goch, Weaverham, Whitegate, and the fine old churches of Malpas and Tilston, St. Peters, and portions of St. John's Priory Church, Chester. His domestic work, besides grammar and other schools, includes the Grosvenor Club and County Offices, Chester, and consists of various buildings on the estates of several noblemen, notably the Eaton and Halkyn of the Duke of Westminster. He has also built the following mansions:—Appleton Hall, Oakmere Hall, Bronwyfawrygfair, Stratton Park, Shotwick Park, Elford House, Rowden Abbey, Llanerch Parma, the Gelli Malpas, Plas Mynach, Cornist Pabo Hall; additions to the Plas Tan-y-Bwlch, Jodrell and Glossop Halls, Halkyn and Hawarden Castles, and recently, in conjunction with his partner, Abbeystead, for the Earl of Sefton. He has built the memorial fountains at Whitchurch and Ruthin. The portrait of Mr. Douglas was taken by Mr. Watmough Webster, of Chester.

Mr. R. Rowand Anderson, LL.D., Edinburgh University, and F.R.S.E. His principal works are the New Medical Schools, Edinburgh University; the National Portrait Gallery and Museum of Antiquities, Edinburgh; the Central Station Hotel, Caledonian Railway, Glasgow; the Conservative Club, Princes-street, Edinburgh; Mount Stuart House, Bute, for the Marquis of Bute; and smaller houses in many other places. The Estate Offices in Greenock, for Sir Michael Shaw Stewart, Bart.; the Catholic Apostolic Church, Edinburgh; Roman Catholic Church at Galston; Episcopal churches at Edinburgh, Forfar, Cupar, Kelso, Helensburgh, Dunbarton, Culross, St. Andrew's, Stirling; Colinton, Dunfermline, &c.; the parish church at Govan, one of the most important of the new Presbyterian churches lately erected in Scotland. Considerable restoration works at

Iona, Jedburgh; Douglas, Lanarkshire; St. Vigean, Arbroath; St. Mary's, Hawick; Duddingston, Midlothian; the National Memorial to the late Duke of Buccleuch, High-street, Edinburgh; and a very elaborate monument in St. Giles's, Edinburgh, to the Marquis of Montrose, who was beheaded in the reign of Charles II. Large Board Schools at Stockbridge, Fountainbridge, and Causwayside, Edinburgh; and others at Kirkcaldy and Leslie, and the Norman Memorial Hall, Dysart. Dr. Anderson is now engaged in restoring Dunblane Cathedral, and the chapel of King's College, Aberdeen University, and in the erection of the Great Hall of the University of Edinburgh, the gift of Mr. W. M'Ewan, M.P. Dr. Anderson was one of the six architects selected to compete for the Imperial Institute. In 1878 he published a well-known folio of "Examples of the Municipal, Commercial, and Street Architecture of France and Italy." The portrait given herewith is by Mr. Marshall Wane, of Edinburgh.

Mr. John Burnet, the senior partner of the well-known firm of Messrs. John Burnet, Son, and Campbell, of Glasgow, has carried out several works of the first importance, and we subjoin a list of some of them. In Scotland his name as an architect is very familiar. He is a Fellow of the Royal Institute of British Architects. We give the following without particular regard to the order of their cost or scale:—In Glasgow, the Western Infirmary, the Clydesdale Bank, the Union Bank, the National Savings Bank; Glasgow Stock Exchange; the Merchants' House, Glasgow; and Woodlands Church, in the same city. Auchendennen House, Dumbartonshire; Arden House and Kilmahen House, in the same county; Kierallon House, Islay; Newfield House, Ayrshire; Balmaghie House, Kirkcudbrightshire. Mr. Burnet's portrait is the work of Mr. Stuart, of Buchanan-street, Glasgow.

Mr. Henry Tanner, A.R.I.B.A., the architect of the General Post-Office, was born in 1849. He was appointed a surveyor in the employ of the Office of Works in 1882, and since then has designed new post-offices at Bradford, Halifax, Wigan, Liverpool (Eastern District), York, Boston, Wisbech, Aylesbury, Newport (Monmouth), London (Eastern District), North Shields, South Shields, Newcastle-on-Tyne (extensions), Birmingham Head Post Office, Smethwick, Bilston, London General Post Office North; Savings Bank, Knightrider-street, E.C.; Parcel Office, Mount Pleasant, and at Sheffield; many new sorting offices round London, besides many extensions and other works; new Inland Revenue Office, Newcastle; Custom House at Swansea, and the Probate Registry at York. Other new post-offices from his designs have been built at Leicester, Watford, St. Alban's, Barrow-in-Furness, Douglas, and Warwick. Telegraphic factories and stores are about to be erected on Mount Pleasant, besides new Parcel Office at Manchester. Mr. Tanner's portrait is from the studio of Mr. Abel Lewis, of Douglas.

Mr. James Cubitt, a member of the family of that name, which furnished a former President and a vice-president to the Institution of Civil Engineers, was articled to Mr. J. C. Gilbert, of Nottingham, and commenced practice in London about 1864. Amongst his principal works is Union Chapel, Islington, the design for which was selected in limited competition, Mr. Waterhouse, R.A., acting as assessor. This chapel, opened in 1877, was completed a few months since by the building of the tower. Mr. Cubitt was also the architect of the Church of the Redeemer, Edgbaston; of the Congregational Church, Trumpington-street, Cambridge; the Welsh Presbyterian Church, Charing Cross-road; Westgate-road Chapel, Newcastle; Osborne-road Chapel, Jesmond; the Countess of Huntingdon's Chapel, Swansea; the Dulwich Grove Congregational Church; Union Chapel, West Bournemouth, lately begun; and, in conjunction with Mr. J. M. Brydon, he designed and superintended the Congregational Church, Castletown-road, West Kensington. Amongst his other buildings are the Morley Hall, Hackney; St. John's College, Loughton; the Loughton Board Schools; Mr. Spurgeon's almshouses, Newington, and part of the buildings at the Stockwell Orphanage; Haddon Hall, Bermondsey; and schools at Leytonstone, Lewisham, Dulwich, Urmston (near Manchester), and many other places. Mr. Cubitt published about 1870 a volume on "Church Design for Congregations," a great part of which had previously

appeared in the BUILDING NEWS. His other contributions to our columns from 1863 onwards include papers on the "The Conduct of Competitions," "The Workman's Share in Architecture," "The Avenue and the Central Area," "Notes on Tower Design," and numerous articles on architectural details and practice. Elsewhere he has published remarks (illustrated) on Late Gothic lead work, and on similar subjects; and in the *Contemporary Review* some time since an article on "Wren's Work and its Lessons." The photograph we reproduce is by Messrs. Debenham and Gould, of Bournemouth.

## THE SOCIETY OF ARCHITECTS.

**A** MEETING of this Society was held on Tuesday evening, at St. James's Hall, Piccadilly, Mr. W. H. Seth-Smith, past-president, in the chair. Messrs. George Buckley, Tower-chambers, Halifax; James William Dunford (architect to the Salvation Army), Pembroke-road, Walthamstow; and Charles Archer Pigott, Archer Lodge, Charles road, St. Leonard's-on-Sea, were elected as members. Mr. Edward Tidman, Member of Council, read a paper, entitled:—

## PUBLIC ELEMENTARY SCHOOLS.

The lecturer explained that, as he proposed principally to deal with the subject from the point of view of the Education Department, the rules and regulations issued by them for planning and fitting-up public elementary schools would be the basis from which his remarks would be built up. Some of the requirements of the Department which Mr. Tidman regarded as being, on the whole, fairly full and explicit were quoted, and the author proceeded to consider the planning. Having ascertained the number of children—boys, girls, and infants separately—which it was desired the schools should accommodate, the schoolrooms and classrooms would then have to be arranged in the following manner:—For the schoolrooms, accommodation should be provided for the required number seated at desks and benches—as floor space or cubic contents does not count in schoolrooms—and since the width must be 18ft., 20ft., and 22ft., the length must be provided to suit these widths, allowing three long desks deep of 20ft. or under, and five rows of dual desks of 22ft. wide. No groups of long desks must be more than 12ft., and 1ft. 6in. gangway must be provided within such group and next walls, the minimum space for each scholar being 18in. in long desks and 1ft. 8in. in dual desks, with 1ft. 4in. gangway between each group. The doors and fireplaces must be placed so that the whole of one side of the school is left free for groups of benches and desks; and classrooms should be provided for as many classes as there are in the schoolroom. These classrooms should not exceed 600 super feet, and are calculated at 10sq.ft. per each child, with a minimum of 18ft. by 15ft., and no classroom should be a passage-room from one part of the building to another, nor from the schoolrooms to the playground or yard, if it can possibly be avoided. Corridors connecting the class and school rooms should also be avoided. This can, as a rule, be best done by placing the classrooms at the end of the schoolroom, and much of the time lost by the straggling or disconnected positions of the rooms avoided. Classrooms may also be practically formed by dividing one long room by sliding partitions; but where this is used, care must be taken that thorough ventilation is not cut off. As to the number of floors, the author is much in favour of having only the ground-floor for all. As a rule, additional land is cheaper than high buildings, and the wear and tear, inconvenience, and danger of stairs are avoided; the schoolrooms can be kept more lofty, and thereby better ventilated, and with a purer atmosphere than when there is one floor over another, with in many cases windows at one side and one end of the room, and the walls may be kept to the minimum of 14ft. Of course, in London and large towns one-story buildings cannot always be carried out; but it is much better where it can, and he did not approve of more than two floors under any circumstances. Four elevations at least of the proposed school must be prepared on the same scale as the plans, of which one of each floor, in addition to a block plan, is required by the Department; also sections of the various floors and roofs, window-heads, ceilings, and the mode of ventilation. In preparing the elevation, care should be taken not to make it too elaborate or



costly. It is generally best to complete the plan before the elevation is considered. Long windows with a plain stone head brick-arch over, with keystone and stone sill, will generally be found effective, if stock bricks are used for the elevation, and red and blue bricks for the quoins, plinth, eaves, and stringcourses. The steps should be of granite, and a long length of ordinary 12in. by 6in. granite curb will be found cheap and efficient. The window-sills should be of hard York or Portland stone, as should all dressings within reach of the scholars. The plinth and other facing bricks should be very hard burnt; the ordinary red rubbers are quite unfit for plinths, &c., as the children in a year or two disfigure them by rubbing to sharpen their slate pencils; therefore hard stone or blue bricks are best for all dressings within reach, with ordinary Bath stone heads and facings when this stone will stand the weather. Where stone is the usual building material these remarks do not apply. Where red bricks are the usual facing materials, it would still be well to use granite for steps, and blue or other hard bricks or stone for plinths, &c. The window-sills should be about 4ft. from the floor, and the head as near as possible to the ceiling. All external walls must be of 14in. work if of brick, if of stone, at least 20in., and must have a damp course just above the ground line. No damp course is more effective than a double course of slate, laid to cross the joints and in neat cement; in some localities other impervious material may be used, such as glazed perforated bricks, &c., but on the whole, slate is most indestructible and satisfactory. All internal fence walls must also have a damp course, and the whole area of the schools have 6in. of concrete under ground-floor and air-bricks to ventilate joints. As the whole area applies to under walls, it would appear that although concrete is not mentioned separately as necessary under walls, yet that it is provided in this rule; but it will often be found that the local by-laws require 12in. concrete under walls. Some districts do not require concrete under the ground-floor of public buildings, amongst others Walthamstow, and as a school is described as a public building, this requirement cannot be enforced, although the authorities endeavour to do so, and often no depth is given for concrete, which is required to be of "sufficient" depth—a very unsatisfactory description. The height of schoolrooms is regulated by the area; if ceiled at wall plate must be 12ft., if over 360 super. square feet 13ft., and over 600 then 14ft. from floor to ceiling. If ceiled at the rafters and collar beam it must be not less than 11ft. to wall plate and 14ft. to ceiling from floor level. Roofs open to apex are not approved, as the ventilation and warmth of the school cannot be so well managed with an open roof. All roofs should be high pitched, that the water may get away quickly, and to give as much air space in school as possible. The silica wool will be found a good non-conductor on which to bed the slates, which should be strong and fixed with two copper nails with good lap. The Department requires that there shall be separate entrances for each department, and more than one to each is desirable, and should never be through a cloak-room, at any rate so far as the principal entrances are concerned. Cloak-rooms are usually considered of little importance. In many old schools the entrance porch is thought sufficient, three or four children having their coats, cloaks, and hats on one peg. This is not only bad from a sanitary point of view, but it causes confusion and inconvenience to the children when leaving. The Department requires all gangways in cloak-rooms to be 4ft. wide at least, and well lighted from the end, and that a separate numbered peg be provided for each child, placed 12in. apart, two rows tier deep fixed alternately, and not one below the other. Plenty of light and air are very essential, and although it is not imperative to have a fireplace in the cloak-room, there should be some means of drying the clothes on wet days. A good firm umbrella stand and tray is also an essential. A ½in. wrought-iron tube fixed with stays, T's, and flanges, strong and cheap, with a short inclined deal tray in 6ft. lengths to take the drip, makes a convenient fitting to remove for emptying and cleaning purposes. The cloak-rooms should be so arranged that they can be locked up during the time the children are in school to prevent the clothes being stolen, and the doors should have strong diamond-pattern galvanised-wire upper panels for securing ventilation and facility of super-

vision by the teachers. Many schools are now designed with an assembly hall, where the whole of the children are collected for prayers, drill, and instruction by the head master or mistress. The greatest drawback to carrying out this arrangement has been that hitherto no grant of money has been sanctioned by the Department for the erection of this hall, as it is not considered in the accommodation of the school; but by the new Code provision is made that a grant will be sanctioned of not more than £600 towards the cost of a central hall, and the difficulty of funds will now be got over if the Code passes as drawn. Mr. Tidman said he was not in favour of this hall, which is useless, except for a very few minutes each day, for school purposes; it certainly could be made available for public meetings, elections, concerts, &c., but for educational purposes is somewhat of a white elephant. In mixed schools a class may be, however, taught in this hall. The lighting of schools, next to convenient planning and plenty of air space, is of importance. The instructions are very clear:—Light should be admitted from the left of the scholar, and greatly influences the planning. Right light is next best, and failing this, from the roof or very high windows. Nothing but large clear glass should be used; in the lower panes, fluted clear glass may be used. Skylights are always objectionable, and plans are often thrown out where they are needlessly introduced. The form of window frames the lecturer had found most useful is a 4½in. by 4in. solid frame, rebated out at the back to take the weights, the top sash being made to slide down the depth of second division of frame, avoiding the inconvenience from rain, of pivot hung sashes, and their interference with blinds, &c. He had specially designed these frames for schools erected by himself to get over the difficulty with blinds, which is always the case with any other form of frame, except a double hung frame, which it would practically be impossible to make 12ft., a height to which this special frame is made. Staircases are best avoided where possible; but where required no winders should be allowed, the steps should be 12in. to 14in. broad, 6in. high, and in short flights, and any doors should open outwards. The author claimed to have been exceedingly fortunate in getting good ventilation without draught by the windows just described, the fireplaces, and the roof ventilators. The system is perfectly under control, and can be shut down in very cold weather; but he had never had any complaint of down draught even through the very coldest weather. He did not approve of any form of patent ventilators; nothing is better than a simple opening under control. Where there is not a block of sufficient importance to engage the constant services, if a care is taken to attend to a proper hot air system, tortoise stoves will be found most economical and efficient; for the babies' room open fires are a necessity. Lavatory basins, with a good supply of water and trapped wastes, are required, with flushed slate enamelled urinals, with combination "Unitas" or other good sanitary closets for the teachers. There has been a very great improvement in school desks of late years, and those now made leave little to be desired. Perhaps the best way to get good desks is to select four or five makers of repute, get samples from each and place them side by side: the construction, convenience, and general finish will be at once apparent. The dual desks are now much used, and the Department prefer them as a rule, and their adoption considerably increases the seating accommodation, as five rows are allowed as against three and four of long desks. Pitch-pine should always be selected. He need not dwell upon the other furnishings: the manufacturers' lists are well illustrated, and they nearly all supply a similar constructed desk of the various patterns, for master, mistress, and pupil teachers. School managers and boards, as a rule, like to select the desks, and a provisional sum based on the number and cost is sufficient to insert in the specification, as desks are always best procured from special manufacturers and not made by the builder. Dual desks cost from 14s. to 20s. each, and long desks about 3s. 6d. to 4s. per foot run, in pitch pine. All desks should be graduated to suit the various ages of the children. Play-grounds should be well paved, have good open sheds for wet days and for shade, and be fitted with some simple apparatus as climbing poles, horizontal bars, &c. In infants' schools the accommodation is calculated at 8sq.ft. to each child, and the width may be 24ft. There should

always be a babies' room, and it should have an open fire. Many school boards and managers now require a separate cookery room; this should be separate from or may be over a school room, be about 400 super-ft. in area, well ventilated, fitted with tables, 2ft. 6in. wide, and arranged in U shape, so that 24 girls can face the mistress at practice, and seats provided for not more than 72. There should be an ordinary cottage range and gas stove, and a small scullery fitted with copper, dresser, sink, &c., similar to an ordinary house. Masters' residences, and also those for mistresses, should not be placed close to the school for obvious reasons. There, however, should be a caretaker on the premises in all large schools, who should be made responsible for the cleaning, latrine flushing, &c. The cost of schools varies very much in different localities, and also in the same neighbourhood. A few years ago a very good infants' school was built by the author at £3 10s. per child, and recently another has been erected for over 800 which will cost about £4 per child, including a cookery-room; there were, however, some old buildings on the site which the builder valued at some £450, which would make the cost about £4 10s.; but there were exceptional circumstances in both these cases, and one-story buildings should be built in a substantial manner for £7 or £8 per child. Furnishing is included in these figures; but not land. The Department are prepared to recommend the Public Works Loan Commission to advance £10 per child, although they do not approve extravagant plans. More than this may be obtained, if desired, in the open market. All are aware that the plans have to be submitted to the Education Department for their approval, and they are examined by and reported upon by their consulting architect. Some time ago a circular was issued to school boards that efficiency and economy in school buildings is greatly promoted by means of suggestions made by the consulting architect; but as this was no part of his duties as consulting architect, and occupied a great part of his private time, a scale of fees was drawn up for such consultation; these fees varied from £3 3s. for schools for 250 children, £5 5s. for those holding over 500. Many architects, including myself, Mr. Tidman continued, took exception to this arrangement for many reasons, as it might be construed, and has been stated, that plans submitted to the consulting architect would not be passed unless he was paid, and that it was almost in the form of a bribe. It also suggested the idea that the architect designing the school was not competent to prepare a scheme without the assistance of the consulting architect, and this being the case the clients might reasonably say that the architect should pay this fee out of his (not now too liberal) commission. There are other reasons why it was objectionable that will suggest themselves to you. It is pleasing to note that in conversation one of the officials of the Department the other day stated that the circular was withdrawn, and no fees were now demanded or paid. This will probably prove welcome information to many. There are many rules of the Department that are not printed in the instructions with regard to the position of windows, distance from cross walls, scheme of the school block, position of cloak-rooms, with respect to class and school rooms, and other matters that some detailed instruction should be issued upon. Whilst the details of each room may be all that could be desired, yet the grouping and surroundings are often fatal to the plans, and what in one building is passed without comment forms a vital objection in another, and hence a more comprehensive and detailed circular of instructions is called for.

The CHAIRMAN observed that the class of buildings dealt with in Mr. Tidman's practical paper was the one in the architect's practice least fettered by precedents. The establishment of the School Board system had resulted, in the Metropolis, in the erection of buildings in an entirely new style, he thought of very effective as well as distinctive appearance. All who had drawn out the three classes of desks on diagrams knew that the dual form was the most useful in relation to cost; the single desk was even better, but the expense prohibited its use, except in very large schools. There were many objections to sliding partitions between classrooms. The cloakrooms could be placed between each pair of classrooms with advantage. He differed entirely from the lecturer in his objections to the central-hall system. A central hall provided a dignified feature to the group archi-



turecturally, was relatively inexpensive in proportion to its dimensions, and was greatly approved by teachers, as it afforded a place of assembly for prayers, examinations, and drills. Mr. Tidman's scheme of ventilation was very ingenious. As Professor Carnelly and Sir H. Roscoe had shown, schools ventilated by mechanical means possessed far purer atmospheres than those ventilated by natural means. He was glad to hear that the rule permitting the architect to the Education Department to offer advice on payment of certain fees, had been withdrawn, for although all professional men knew that the present occupant of that post would not do anything that was dishonourable, the general public, who were less well informed, were apt to form hasty and unfair conclusions.

Mr. ELLIS MARSLAND, in moving a vote of thanks to Mr. Tidman, said he concurred with the Chairman that the central hall was a valuable and useful feature in a school. The best arrangement for a school was to have a central hall with classrooms on either side, a large window at one end, and at the other the staircases leading to first-floor rooms, with cloak-rooms beneath. It was a mistake to provide steps of granite, as they wore to a polished surface. York paving was the best material for the purpose, as it retained a rough foothold to the last.

Mr. R. CRUWYS seconded the vote of thanks, which was supported by Mr. W. Allport and Mr. Alexander, all the speakers advocating the adoption of the central hall in school plans.

Mr. TIDMAN, in his reply, remarked that, although architects and teachers probably preferred the central hall if they could get it, he still thought, from the ratepayers' point of view, it was too costly a feature in proportion to the practical use made of it.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E.  
Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

##### DRYING SHEDS AND CHAMBERS.

**A**LTHOUGH drying sheds or chambers are used in many places in this country where the best class of bricks is turned out by the plastic process, their use is not nearly so general here as it is in America, where it is almost universal. These chambers are heated by steam, hot water, direct heat, and radiated heat. In permanent works the use of drying sheds can certainly be recommended, as it permits of making being pursued for a considerable portion of the year, and preserves the bricks from damage by storms and frost. In America ordinary drying floors, which necessitate considerable labour in handling the bricks, have given place to smaller drying chambers. In this case the bricks after moulding are placed on pallets, which are piled in tiers on iron trucks and run on rails into an inclosed heated chamber, where they are allowed to remain some twenty-four hours, when they are passed on to the burning kilns. There is a considerable difference of opinion as to the best method of drying; the advocates of steam claim that more uniform results can be obtained from steam than from direct heat, and that draughts, &c., can be more readily regulated. If direct heat be used, great care must be taken in regulating it, as some clays will crack and warp considerably under its action if of too high a temperature. A plan of radiating the heat through a brick or metal floor has been introduced considerably in America, and it is claimed for this arrangement that the heat can be so graduated that either tender or refractory clays can be successfully dried, and without damage to the bricks. There is no doubt that heat can be produced cheaper from fuel direct than through the medium of steam, which, in addition, requires a steam-boiler to be constantly going, the heat from which it is difficult to graduate, although it is never so intense as that from direct heat.

A combination of a drying-floor and tunnel system is also in use, in which steam-heating coils, covered by a perforated-iron floor, are employed. It is claimed for this arrangement that the perforation of the iron floor distributes the heat evenly, and obviates the cracking of the bricks. It has been found, however, that some clays will crack on hot iron plates, and concrete or hollow brick floors are preferred by many.

Ward, in his paper on "Brickmaking," recommends hollow brick floors in preference to iron or stone flags, as the moisture does not come through the joints so readily; he also says that a site should be chosen rising longitudinally, to allow the condensed water to drain away. A layer of concrete 3in. thick should be spread over the site. Flues measuring 6in. wide by 4½in. high are formed along the floor by laying rows of bricks on edges 9in. from centre to centre. The bricks are laid with open joints at the ends that steam may percolate freely everywhere under the floor. Paving bricks or tiles 1½in. by 2in. thick are used to bridge over the flues. A bed of neat cement covers the whole, and on this is laid the final paving-course of hard brick 2in. thick. This forms a hard-wearing surface, while the cement keeps the damp from rising, and does not appear to crack. The exhaust steam from the engine is taken between the sheds in a main-pipe, from which cross branches, controlled by throttle-valves, are led at intervals of about 40ft. These branches have holes opposite each flue, and should any section of the floor not be in use, the steam can be turned off. Live steam can be turned into these pipes when the engine is not at work.

In drying bricks, whatever system be employed, it is important that the drying is not too rapid, and that the heat is readily under control, or the outside of the brick will dry and contract much faster than the inside; the shrinkage would, therefore, be uneven, and the brick warp and crack. With the direct-heat system, if the heat is too great and the drying too rapid, the brick is partially baked, and its form spoilt. What is required is a steady heat, which will permit of a fairly even evaporation of the moisture all through the clay, and a little extra time spent in this way is more than recouped by the improved quality of the bricks, with greater freedom from "wasters." With the object of graduating the heat, drying-sheds are often divided into a series of chambers, separated from each other by iron doors, and with a tramway running through the whole of them. The soft bricks are placed on trucks, and gradually pass in rotation through each chamber. Under one end of the building a furnace is arranged, and hot air of increasing degrees of temperature is introduced successively into the series of chambers.

In one system of steam-drying an exhaust fan is employed to draw the moisture-laden air from the drying-chamber, and force it through a cylinder condenser back to the chamber. The condenser extracts the moisture from the air, which, liquefied, is discharged by a waste-pipe, whilst the air, which is now dry, is passed back to the chamber, and being heated by the radiation from the steam-pipes, is again in a condition to take up further moisture from the bricks. This operation is again and again repeated, till the drying is completed.

Whether the air used for drying is heated by steam, hot water, or fire, it will dry much more rapidly if kept in motion than if allowed to remain stagnant, although some may suppose it would thus be enabled to absorb a greater amount of moisture; the reverse, however, is the fact. It has been sufficiently proved that rapid drying is best effected by drawing considerable quantities of heated air through the chamber at a tolerable degree of velocity at the same time, the chamber being arranged with sufficient ventilation to allow of an easy escape of the moistened air. The air can be drawn through the chamber by means of an exhaust fan, or forced through it by means of a blowing fan; but the former arrangement is generally to be preferred. As a guide, I append a table showing the amount of water a cubic foot of air will absorb at different degrees of temperature (Hood):—

32° Fahr.	will absorb	2 grains of water.
60°	"	6
90°	"	16
97°	"	20
160°	"	160
212°	"	240

It will be seen from this table that the absorbent power of the air is largely increased as the temperature is raised, and that at 212° of heat 1 c.ft. of air will absorb over ½oz. of water. No rule can be given as to the best heat for brick-drying, as this will depend largely on the nature of the clay and the amount of water it contains, some clays being capable of standing a great deal more heat than others without damaging. The heat best suited to the nature of the clay can, therefore, only be correctly ascer-

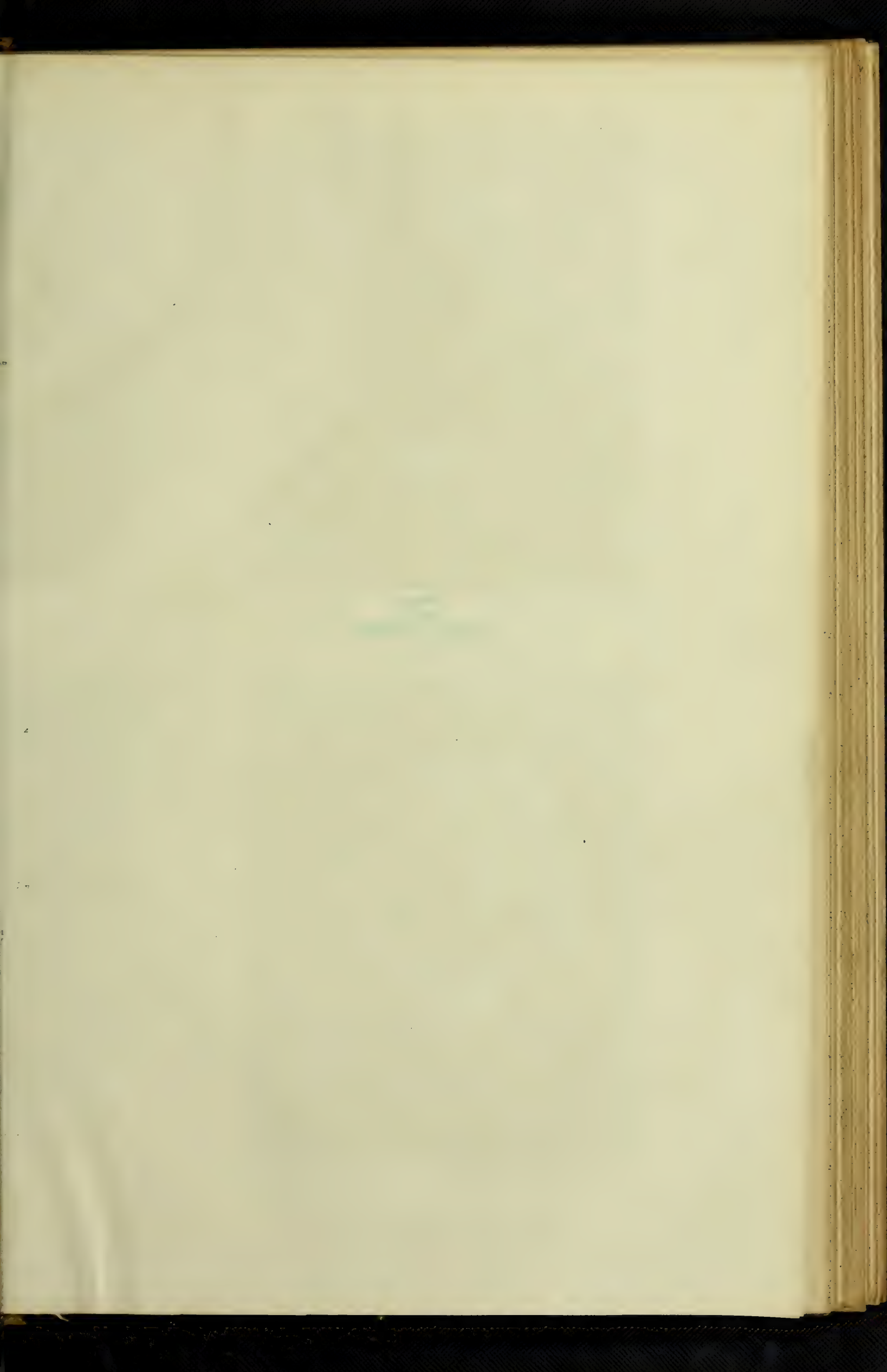
tained by experiment. Seagrave, in writing on artificial drying, remarks:—"Rapid drying is best effected by drawing or driving large volumes of highly-heated air in rapid motion through the chamber or other mechanical appliance containing the material to be dried, with due arrangements for liberal ventilation. Upon the ability to heat and maintain a given temperature of the air in high velocity effective and economic drying power depends. Rapid motion and free exit of the moistened air should not be impeded for the purpose or with the view of effecting its more complete saturation before leaving the drying-chamber, inasmuch as air in brisk motion at any temperature, and independently of saturation, plays an important part in mechanically carrying off vapour; thus the exit should be so regulated as to keep the drying-room free from ready-formed vapour. It is frequently supposed that a given degree of heat is all that is required, and ventilation is regarded as a secondary or even unimportant consideration, whereas the reverse should be regarded—ventilation being far more important than the degree of heat maintained in the room. There is, however, no reason why both should not be attained for efficient work. At low temperatures absorption of moisture, to the extent of complete saturation, is slow; therefore rapid drying at low temperatures can only be effected by large volumes in brisk motion, as in the case of natural open-air drying with a brisk wind. At high temperatures absorption is more rapid, and saturation more easily effected. With brisk motion of air at moderately high temperatures, say 150° to 170°, very rapid drying results, from a high degree of absorption as well as by the vapour being carried off as quickly as it is formed. Perfect ventilation cannot be too highly estimated, either when dealing with low or high temperatures. With liberal ventilation, air at a temperature of 60° to 70° will prove more effective in drying than 80° to 90° in a partially stagnant condition. Unless the draught or ventilation is sufficient to remove the saturated vapour as fast as it is formed, the drying effect is proportionately retarded.

Should a fan be employed, it is important that it is fixed so that the hot air is drawn as equally as may be through all the tiers of brick, so that they may dry evenly. The writer has found a fan blade speed of about 100ft. per second at the points of the blade suitable for most drying purposes. It will be found convenient to have an outer casing of the fan divided right through the centre just above the exhaust pipe, so that the upper half of the casing may be readily lifted off without disturbing the bearings, and the accumulated dust and dirt removed. The horizontal joint of the fan should, in all cases, be carefully planed and made perfectly air-tight. If pipes are employed, they should be as free from bends as possible, and never of less diameter than the inlet of the fan.

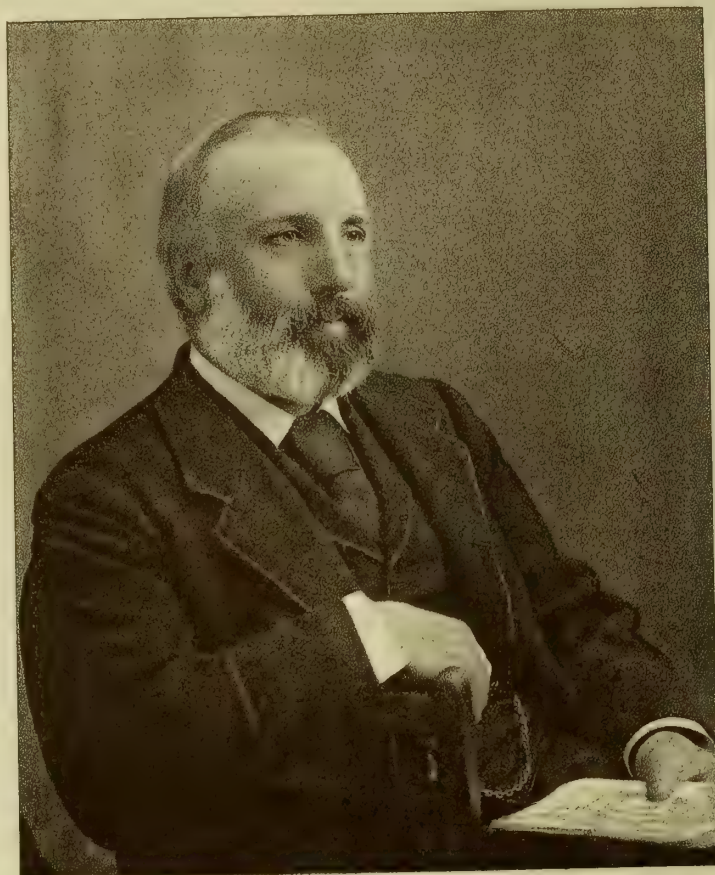
#### ARCHITECTS' REGISTRATION IN NEW YORK.

**T**HE text of the Bill now before the New York Legislature, providing for a Board to license architects practising in that State, has just come to hand. As a whole, it is clearly drawn, and seems capable of being worked smoothly, with the exception of Clause 2 in Section 5, to which we shall allude hereafter. It provides that the State Board of Architects shall consist of seven members, of whom two shall be selected by the Governor of the State from four to be nominated by the Western New York Association of Architects, and two others from four nominated by the New York Chapter of the American Institute of Architects, and one each by the Faculties of Architecture at Columbia College and Cornell University. The members are to sit for one or two years respectively, and are to serve without compensation or reimbursement. This board, five of whom will form a quorum, are to publicly examine applicants for leave to promulgate architecture, and are to grant licenses to such as pass, and also to publish the names and addresses of successful applicants in at least two architectural journals. The total fees for examination are twenty dollars—about \$4— to a successful, and five dollars to an unsuccessful, candidate, and a file is to be kept in the office of the Secretary of State of all licensed architects, provision being made for recording any change of address. Licenses may be revoked for "gross negligence, recklessness, or dishonest practices," after formal hearing of the charge by the Board,



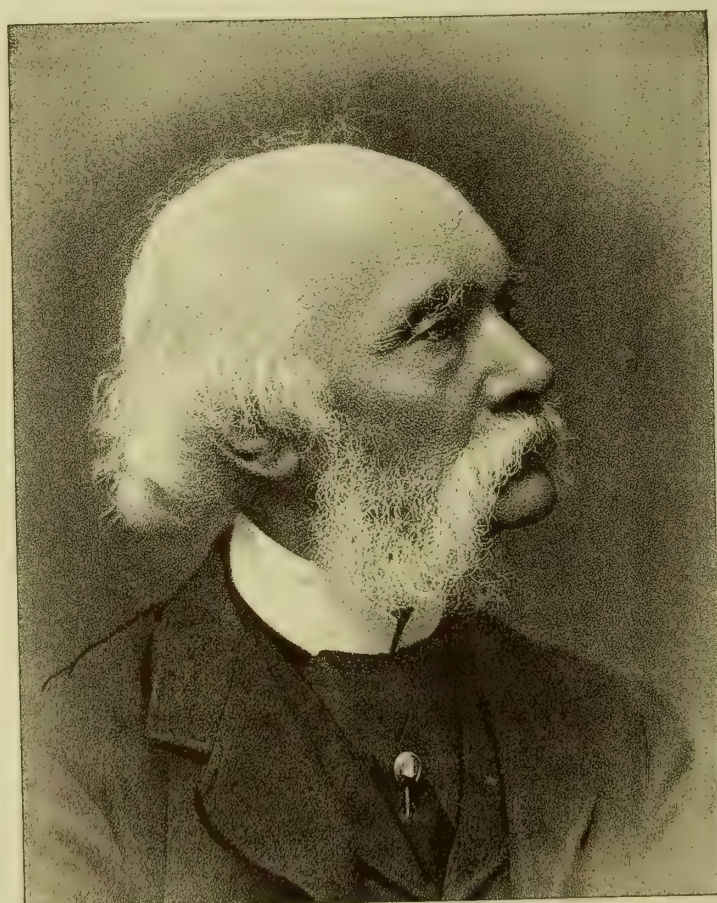






*Wm. Haydon*

JOHN TAYLOR FRIBA.  
ARCHITECT TO THE NATIONAL GALLERY



*John Burnet*

JOHN BURNET FRIBA (BURNET SON & CAMPBELL)  
ARCHITECT OF THE WESTERN INFIRMARY GLASGOW



MAY 16, 1890.



*John Douglas & Fordham*

DOUGLAS & FORDHAM)  
D. LANCASHIRE.



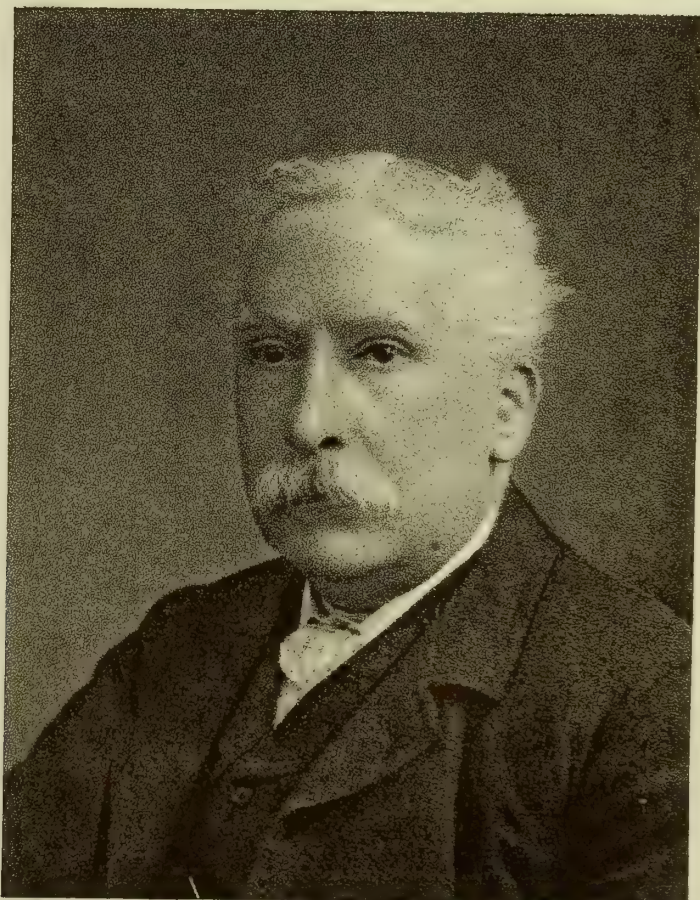
*R. Rowand Anderson*

DR. R. ROWAND ANDERSON.  
ARCHITECT OF EDINBURGH UNIVERSITY BUILDINGS.



*H. James*

PARIBA.  
R. POST OFFICE BUILDINGS.



*James Cubitt*

JAMES CUBITT.  
ARCHITECT OF ISLINGTON CHAPEL.

ISH ARCHITECTS.

"PHOTO-TINT" by James Akerman & Queen Square London W.







sitting as a court of record, having full powers to compel attendance and testimony, but no license is to be revoked except by the unanimous vote of the Board. The important section is No. 5, making it a misdemeanour to practise as an architect without a license. It reads thus:—

If a person shall pursue the practice of architecture in this State, or shall engage in this State in the business of preparing plans, specifications, and preliminary data for the erection or alteration of buildings, or shall advertise or put out any sign or card designating himself as an architect having an office or doing business within this State, without a license therefor in accordance with the provisions of this act, he shall be guilty of a misdemeanor, and upon conviction, shall be fined not less than 50dol., nor more than 5,000dol. But nothing herein contained shall be construed to prohibit any person in this State from acting as architect of his own building, or as architect for any person employing him with full knowledge on the part of such employer that the person so employed is not a licensed architect in accordance with this act; nor to prohibit architects residing in other States, and not having an office or carrying on a general business in this State, from competing for a special building, or from visiting the State for such purpose in person; nor to prohibit students or employees of licensed architects from acting for or upon the authority of such licensed architects.

The last clause is the weakest one in the Bill, and will need amendment to prevent unlicensed outsiders from carrying out all the duties of professional men.

## PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXV.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.—  
ABSTRACTS (CONTINUED).

JOINER AND IRONMONGER.

If the floors open to 1-16in., they are to be taken up and relaid.

All floor boards to be stacked on the site one month after signing contract.

### FRAMES, &C.

Cube. Fir wrought all round and framed.

9 8	Do. and twice beaded.	
18 10	18 10 Do. framed rebated and beaded.	
9 8	9 8 9 9 Do. and do. do. moulded.	
18 10	28 6	16 0
57 0		28 8
		6 10
		8 0
		12 0
		3 6
		3 2
		11 11
		4 1
		1 11
		1 11
		5 8
		1 5
		4 6
		109 7

### FLOORS.

Sup. 1½in. yellow batten floor, ploughed and tongued with hoop iron and splayed headings.

431 5	Do. and bearers.	
91 3	2 3 Run. Raking, cutting, and waste.	
1088 1	16 0 Cutting and fitting or notching	
602 4	16 0 to iron stanchions 2ft. 6in.	
7 0	6 6 girt.	
390 6	38 6 4	
153 9		
217 10		
2992 2		

Sup. Flooring with 3in. deal blocks laid in Stockholm tar.

1112 1	Deduct.	
616 4	14 0 Run. Raking, cutting, and waste.	
390 6	14 0 16 0 Cutting and fitting as before.	
2118 11	28 0 16 0 2	
28 0	32 0	
2090 11		

### WINDOWS, &C.

Sup. 2in. moulded sashes in small squares with stout bars, fixed.

132 2	2in. do. casements, do. do., hung on butts.	
263 3	117 11	
81 4	122 2	
162 0	66 8	
7 6	47 10	
616 3	59 0	
	88 6	
	28 0	
	24 0	
	77 0	
	15 4	
	15 3	
	55 3	
	10 5	
	29 6	
	756 10	

### DOORS AND FRAMINGS.

Sup. 1in. proper edged and beaded door.

100 0	2in. three-panel doors, the lower panels moulded both sides, the upper open and prepared for glass, including beads.	
210 0	2½in. door, the lower part in four panels, moulded both sides, the upper part sashed with stout bars in small squares with elliptical corners.	
51 11	2in. moulded, both sides framing for panels high, hung to slide.	
	162 8	
	324 0	
	162 8	
	324 0	
	973 0	

WINDOW AND DOOR FINISHINGS, INCLUDING BACKINGS.

Sup. 1½in. rebated linings tongued at angles.

4 6	1½in. rounded window board.	
2 8	1½in. framed and double rebated jamb linings.	
26 3	Do. cross-tongued.	
	134 2	

### THICKNESSES, &C.

1½in. wrought, one side fascia.

85 6	Do. in S.L. fitted between rafters.	
17 6	1in. do. and cross-tongued louvre.	
30 1	1in. do. framed and do.	
56 4	13 7 1in. twice beaded lining	
86 5	3 8 plugged to wall.	
17 3	25 5 1in. beaded casing	
	50 10 to iron stanchion	
	21 8 and backings.	
	43 4 244 0	
	141 3 208 0	
	452 0	

Sup. 1in. clean deal w.c. seat and riser, and stout fir dove-tailed bearers.

58 6	1½in. mortise clamped, flap hung.	
20 3	Moulded cornice with dentil course to design, glued and blocked.	
	42 0 Mitres.	
	4	

Run. Labours.

Groove.		
5 9	Do. cross grain for 1in. louvres.	
9 0	18 0 Splayed edge on 1in.	
80 0	32 0 19 0 Scribing 2in. to brickwork.	
21 0	50 0 5 0 13 0 Notching 1in. louvre	
9 0	3 2 13 0 boards.	
124 9	27 2 8 0 18 4	
	8 0 52 0	
	42 0 3 8	
	74 0	

Rounded edge.

18 0 Do. nosing on 1½in.

13 6

Run. Labour and materials.

Glued and mitred margin to hearths.

7 6	Mitred head.	
8 6	9 4 ½in. squared skirting 4½in. high, plugged	
8 0	to wall.	
6 3	40 0 Tongued angles.	
6 0	12 0 Fair ends with rounded	
39 3	corners.	
	12 0	

¾in. narrow framed and splayed grounds.

39 6	Do. and beads and do.	
61 0	234 0 4½ and ¾ framed and moulded grounds.	
91 6	25 9 Do. do. moulded both edges.	
	28 11 31 0 Ends fitted.	
	52 0 52 0 16 0 10 and ¾ do.	
	170 0 12 4 32 0 6 2 Ends fitted.	
	15 0 15 6 8 0 7 9 4 0	
	24 6 31 0 8 0 13 11 4 0	
	28 0 9 0 16 0 8 0	
	10 0 4 0 4 0	
	10 0 10 6 2 0	
	377 11 95 0 6 0	
	250 4 92 0	

7½in. by ¾in. wrought one side eaves board.

171 0	2 by 1 stop planted on.	
40 8	3 by 1 rounded window lining, tongued	
82 0	at angles and to frame.	
122 8	90 4 2 by 1½ chamfered fillet as	
	160 8 skirting, including mitre.	
	24 7 226 6 3 by 1½ rounded	
	27 9 478 6 window board	
	49 8 705 0 tongued to oak	
	22 7 sill.	
	13 10 6 2 M. & R. E.	
	26 10 4	
	416 3	

1½in. rounded window board, 4½in. wide, tongued to oak sill.

29 0	M. and R. rounded ends.	
58 0	8 Notchings.	
12 5	16 8 3in. by 2in. wrought bearers.	
12 5	2 16 12 0	
19 0	2 2 23 0	
6 8	2 2 6 0	
13 4	4 2 41 0	
25 8	4 30	
7 3	22	
7 0	2	
8 6	2	
7 0	4	
206 3	2	
	70	

Moulding 3in. by 1½in. planted on.

6 8	Mtd. and returned moulded ends.	
4	Moulding 2½in. by 2in. do.	
30 0	M. and returned moulded ends.	
60 0	8 3½ by 2 moulding.	
12 5	16 17 0 Mitres.	
12 5	2 4 Moulding out of 4in. by	
19 0	2in.	
6 8	4 23 0 Ends do., scribed	
6 8	4 46 0 and fitted to stone.	
25 8	4 11 0 8 Do. out of 3	
7 3	22 11 0 16 by 2½.	
7 0	2 16 0 2 6 4 Mitres.	
7 0	2 4 8 4	
6 2	4 4 8 4	
4 0	2 14 8 4	
8 6	72 5 9 4	
212 9	11 0 22	
	147 9 2	
	4	
	68	

Moulding out of 4in. by 3in.

20 4	Mitres.	
4	Do. 4½ by 3 spiked on.	
31 0	Scribed ends.	
4	3in. moulded and mitred architrave.	
95 0	Ends fitted.	
31 0	16 Moulding 4in girt.	
170 0	32 30 6 Ends fitted.	
52 0	16 61 0 6	
25 9	8 26 0	
24 8	8 52 0	
28 11	16 10 6	
15 6	4 179 0	
15 6	2 102	
52 0		
31 0		
35 8		
31 8		
185 0		
23 9		
7 9		
15 0		
4 0		
24 6		
28 0		
18 2		
10 6		
19 8		
366 6		
1311 6		

Fir wrought and moulded out of 9 by 4½ moulded 14½ girt.

42 0	Mtd. and returned moulded ends.	
19 0	12 Do., plugged to wall.	
80 0	4 19 0 Moulding out of 8in. by 7in.	
42 0	12 24 4 Mitre.	
80 0	12 4 Do., 9in. by 6in. as cornice.	
263 0	12 97 0 Scribed and fitted	
52	ends.	
	24	

3in. carved and swelled frieze, 1ft. 4in. wide, tongued both edges.

19 4 Mitres.

4

Numbers. Notchings in 1½in. window board.

2	Mitred and returned rounded ends to do.	
2	Perforation through 1in. ledged door for ventilation.	
18	Do. 9in. by 13in. do. 1in.	
2	Attend plumber to w.c.	
7	Do. to lavatories.	
1	Seat hole cut and dished.	
¾	Extra to seat and riser screwed	
	to remove easily with brass	
	capped screws	
6		

HONDURAS MAHOGANY AND FRENCH POLISHING.

Provide the sum of £— for desks and other fittings.

Sup. 1in. seat and riser on, and including stout fir dove-tailed bearers.

12 2	1½in. mortise clamped flap hung.	
3 5	Run. Labour rounded edge.	
3 9	Do. nosing to 1½in.	
2 3	¾in. square skirting and	
	grounds plugged to wall or	
	to partitions.	
7 5	F. A.	
2	F. E. with R.C.	
2		

Hole cut and disclosed.

1 Extra to seat, &c., ab.

1

OAK.

Run. Groove.

46 0	5in. by 2½in. sunk, weathered, grooved, and	
20 0	throated sill.	
15 0	40 0	
4 8	80 0	
9 4	20 0	
14 8	20 0	
5 9	20 0	
5 0	15 0	
5 0	9 4	
7 0	11 4	
4 10	29 4	
137 3	10 0	
	5 0	
	5 0	
	15 0	
	4 10	
	282 10	



## STAIRS IN DEAL.

## Sup. 1in. tongued riser.

4	4	1 1/2 in. treads with rounded nosings, and 1 in. risers tongued together, glued, blocked, and bracketed on, and including strong fir carriages.
135	0	1 1/2 in. cross-tongued landing on strong bearers.
	14	0

## Run. 1 1/2 in. by 1 1/2 in. balusters framed both ends.

119	0	1 1/2 in. tongued and rounded nosing.
39	8	7 6 1 1/2 in. beaded wall string.
158	8	23 9 Fair beaded end.
		2 Extra to ramps.
		3 Cross-tongued heading jnts.
		2 1 1/2 in. skirting to match and plugging.
		7 6 T. and M. A.
		1

## 1 1/2 in. framed and beaded outer string.

23	9	2 by 2 rebated and moulded capping.
	23	9 Ends housed.

## 4 in. by 4 in. fir framed newel.

8	4	End stubbed to floor.
11	4	2 Turned pendants 12 in. long.
19	8	
	2	

## 4 in. by 3 1/2 in. oak framed and moulded handrail, including joints, screws, and polishing.

32	3	Oak ornamental turned terminations to newels
		6 in. by 6 in., stubbed or framed to newel.
	4	

## Notchings.

6	Ends riser broused to string.
4	Do. tread and riser do.
48	Extra to forming chamfered panels on newels 2 1/2 in. by 2 ft. 1 in. high.
	12
	3
	15

## IRONMONGERY, INCLUDING SCREWS AND FIXING.

## Pairs 4 in. wrought-iron bolts.

3	Do. 3 in. brass do.
10	16 Do. 18 in. strong cross garnets.
13	32 6 9 in. iron barrel bolts.
	8 2 Brass flush handles.
	12 6 Norfolk latches.
	4 16 6 in. mortise locks and brass furniture both sides.
	4 16
	22 38
	4 2
	2 10
	2 12
	2 2
	2 6
	1
	131

## Tonks' brass wedge casement fasteners.

8	Do. Stays.
16	8 Elsley's patent openers for casements, 11 ft. from ground (averaged).
4	16
4	4
6	4
4	16
2	2
11	2
2	11
2	2
2	2
4	2
2	11
2	2
4	2
2	4
67	2
	65
	59

## Run. Galvanised iron tongue and groove in oak and white-lead, bedding sill in do.

40	0	Smith's or other approved water bar and fixing.
20	0	36 0 Iron dowels, and mortises in fir.
20	0	18 0
9	4	16 8
9	4	16 8
29	4	12 6
10	0	4 8
5	0	16 6
5	0	4 6
15	0	4 6
4	10	134 4
4	6	
252	4	

## FOUNDER AND SMITH.—CAST IRON AND FIXING.

## Sup. 1 in. stanchions (No. 8).

310	0	Holes cast and rymed for 3 in. bolt.
31	0	32 Hoisting and fixing stanchions, 15 ft. 10 in. high, 1 1/2 in. metal, and 2 in. top and bottom plate and brackets.
28	0	16 high, and weighing about 83 1/2 cwt. each, at ground-floor level.
203	4	24 4 Do., about 31 1/2 cwt. each, at first-floor level and 15 ft. high.
28	4	84
4	6	
3	0	
731	2	
29,247	15	
261	0	15

## 5 in. moulded eaves gutter, with proper red-lead joints, bolted together and securely fixed to eaves fascia.

51	6	Stopped ends to do.
48	0	2 Outlets.
35	0	4 2
36	0	4 2
170	6	4 2
	14	2
	8	

## 4 in. square rainwater pipe with ornamental collars, and jointed with red lead and tow.

114	0	Shoes.
14	0	4 P. M. moulded ornamental head to design.
57	0	2 4 P. M. swan-neck bend.
185	0	2 2
	8	2
	8	2
	6	

## Gal. wire gratings and fixing over outlets and heads.

8	Grates.
8	14
16	

## WROUGHT IRON AND FIXING.

## Run. 2 1/2 in. by 1 in. chy. bar with ends split and turned up and down.

49	0
1	3
9	

## 1 in. screw bolt.

## 4 4 H. N. and W.

## 4 1/2 in. do.

20	0	H. N. and W.
13	4	30 2 in. by 1 in. strap.
26	8	20 45 0 lin. bolt.
13	4	40 20 0 22 0 H. N. and W.
10	0	20 65 0
21	4	10 50 0
39	0	32 24 0
2	0	52 52 0
145	8	6 256 0
		210

## Total 13 cwt. 0 qr. 7 lb.

## Rolled iron joists—lbs. per foot and fixing at 15 ft. from ground level.

39	2	Do. 30 ft. do.
22	0	39 2 Holes through do. for 1 in. bolt.
61	2	22 0 9 Do. 1 in. do.
	61	2 12 24 1 in. bolt 5 in. long, with head nut and washer.
	21	

## 9 1/2 in. do. 4 in. do. do.

## 12 24 Do. 6 in. do. do.

## 21 16 Do. 9 in. do. do.

## 8 Do. 10 in. do. do.

## 16

## Run. Iron runners and fixing in block flooring, with screws and countersunk holes.

## 40 0 Iron guide and do. for do. fixed to wood.

## 100 0 20 0 Do. fixed to brickwork.

## 40 0 20 0 Hatfield's patent rollers sheaves on wrought-iron knees, fixed with screws and countersunk holes.

## 100 0 40 0 10 0

## 280 0 40 0 20 0

## 120 0 10 0

## 60 0 16

## 8 Ornamental rest for fire-irons let into stone fairly, and run with lead.

## 16 2

## 48 2

## 4

## BELL.

## 18 in. diameter bell of good tone, Warner's manufacture, as described.

## 1

## CHIPS.

The London and North-Western Railway Company have withdrawn the Bill for the extension of Euston Station by bringing it out to Euston-road.

A memorial tablet in terracotta of the late Mr. Samuel Morley was unveiled in the Waterloo-road porch of the Morley Memorial Hall, adjoining the Victoria Hall, on Wednesday. Mr. George Tinworth modelled the work, which represents Mr. Morley among his students.

Alterations have been made to the torpedo works of Messrs. Thornycroft and Co., Chiswick, and special attention has been paid to the ventilation, which is now carried out on the Boyle system.

The newly formed County Council for the Isle of Wight have adopted a design by Mr. Percy Stone, architect, of London, for the county seal.

The Duke of Westminster opened on Saturday the new public baths and washhouses in the Buckingham Palace-road, which have been erected at a cost of £28,200. The building consists of two swimming baths, the larger being 90 ft. long by 30 ft. wide, and capable of holding 84,300 gallons, 76 private baths, and a public laundry, the whole of which are lighted by electricity. They have been built for the Commissioners of Baths and Washhouses for St. George's, Hanover-square, from the designs of Messrs. Lee and Smith, chosen in competition, and were illustrated in our issue of September 7, 1888. Messrs. J. Mowlem and Co. were the contractors.

## Building Intelligence.

**CHELSEA.**—Holy Trinity Church, in Sloane-square, Upper Chelsea, was opened on Tuesday. It consists of a wide and lofty nave of five bays, with aisles on each side. Beyond that on the north side is the morning chapel, covered in by a series of barrel roofs running north and south. A continuation of this chapel eastwards forms the organ-chamber and vestries. The chancel, which is of the same width as the nave, is separated from it by a low screen of green marble. The chancel floor is paved with black and white marble. The stained oak choir-stalls are elaborately carved, and have angels and other figures of cast brass inserted in the panels. The stall elbows are also ornamented with angels. These figures were modelled by Mr. F. W. Pomeroy. More steps lead up to the altar, which has a carving by Mr. Harry Bates. The body of the pulpit is of white marble with coloured panels, supported on columns of alabaster and red marble, and approached by a flight of alabaster steps. At the west end of the nave is a gallery. The bowl and shaft of the font are of Mexican onyx with steps of golden-veined marble. The church is lighted with the electric light, on the incandescent system, and the lights are inclosed in wrought-iron lanterns, which are surrounded by filigree work of wrought iron gilded, and are suspended from the ridge of the vaulting. Externally the whole effect is centred in the west front. The most striking feature is the west window, of flowing tracery, on each side of which are two turrets. The architect is Mr. J. D. Sedding, and the builders Messrs. Higgs and Hill, of Crown Works, South Lambeth-road, S.W. The oak chancel stalls have been executed by Messrs. C. Trask and Son, of Norton, Ilminster, Somerset, and the marble work generally by Messrs. Farmer and Brindley. The cost of the church has so far been £22,000, and will be £40,000 when the entire scheme is carried out.

**DAWLISH.**—New premises are now in course of erection for the Devon and Cornwall Banking Company at the foot of Teignmouth Hill. The main plinth and ground floor pilasters are of bunch-faced dark Chudleigh limestone, the plinth chamfer blocks and main pilasters are of Barton light limestone. The whole of the dressings are of Ham Hill stone, and the terminal vases of buff terracotta from the Tamar Works. Mr. Hy. Webber, of Paignton, is the contractor; Mr. G. Soudon Bridgman, M.S.A., of Torquay and Paignton, is the architect.

**DENTON.**—The church at Denton, in the diocese of Durham, which was only built in 1830 on the site of an ancient church, is now being demolished, and a new and more substantial fabric erected in its place in the Early English style. It is to consist of nave, chancel, south porch, vestry at west end, and organ-chamber on the south side of chancel. The walls are to be faced with random blockers from Houghton Bank, and lined with buff pressed bricks from Normanby, the internal jamb and arches being of stone. The pulpit, choir fittings, reredos, and chancel screen are all to be of Austrian oak, the rest of the woodwork being of pitch pine. The gangways and chancel are to be paved with mosaic tiles, the rest of the floors being laid with wood blocks. The windows are to be glazed with cathedral-tinted glass, having coloured roundels and margins. The warming is to be by hot water, and the lighting by coronæ. The architect is Mr. J. P. Pritchett, of Darlington.

**EDINBURGH.**—After being closed for a month for rearrangement, the Scottish National Portrait Gallery was reopened to the public on Monday. Externally the Gallery has now been finished. The two wings and the balustrade surmounting the walls have been completed, and nothing remains to be done save the carving of the corbels under the niches. Between the first and second windows to the west of the central doorway, the Board of Manufactures have inserted a moulded panel, on which will be carved in sunk letters the following inscription:—"Dedicated to the Illustration of Scottish History, this edifice, the gift to his native country of John Ritchie Findlay, was erected Anno Domino 1890, by the Honourable the Board of Trustees for Manufactures. R. Rowand Anderson, LL.D., Architect." Internally great progress has been made with the fitting up of the eastern half of the



building for the accommodation of the Scottish Antiquarian Society's collection. Several additional works of art are now hung in the Gallery. Among these are a cabinet portrait of Dr. John Brown, the author of "Rab and His Friends," executed by Mr. George Reid, R.S.A., in 1881, a year before Dr. Brown's death; and a cabinet painting by the late Andrew Geddes, A.R.A., containing portraits of Daniel Terry, the actor (who, like the younger Mathews and Henry Irving, was trained as an architect), and his wife. This work has been obtained on loan from the National Gallery in London. Other additions include crayon drawings of Horatio McCulloch, the landscape painter, by Sir Daniel M'Nee, and of Professor Joseph Black, a silhouette of Alexander Wilson, the ornithologist and poet, a portrait study of Lord Jeffrey, by John Fairman, and a kit-cat portrait in profile of Lord Clyde, by Jones Barber. A bust has been added of Sir John Leslie, Professor of Mathematics, and afterwards of Natural Philosophy, in Edinburgh University. It was carved by Mr. John Rhind. A bust in marble of the late Mr. Charles M'Laren, executed by Mr. John Hutchison, R.S.A., after the late Mr. Brodie's work, and another also in marble of Professor Aytoun, by Mr. John Rhind, after Mr. Patrick Park's bust in the University, has also been presented.

KIRKSTALL, LEEDS.—The Wilkinson Memorial Schools, which have just been erected in connection with St. Stephen's Church, Kirkstall, were formally opened on Friday. The new schools cost £1,700, and accommodate girls and infants. The infants' schoolroom is 50ft. 3in. long by 26ft. 6in. broad. The infants' classroom is 26ft. 6in. by 20ft., and there is a girls' classroom of similar dimensions. All these rooms are 22ft. 3in. high. The infants' school is entered through a large porch, which also does duty as a lavatory and cloak-room. The building is faced with broached sandstone, and has lancet-headed windows arranged in triplets. It has also dormer windows, the ceiling level. The roof is covered with stone slates from Idle. The floor of the new school is 13ft. above the level of the adjoining street, and this has afforded an opportunity of providing a covered playground under the whole, the arcade walls being lined with white glazed bricks and the floor concreted. The whole of the works have been carried out by Messrs. Eddison Brothers, Kirkstall, to the designs of Messrs. Smith and Tweedale, South-parade, Leeds.

PERTH.—Caledonian-road Board School is about to be built at a cost of £14,000, and will accommodate 1,250 pupils, including infant department, in addition to which there are cooking, chemistry, drawing rooms, &c. The plan has been arranged on the central-hall principle. On the ground floor the infant department comprises a large schoolroom, with classroom at each end, separated by sliding glazed partitions. The classrooms have throughout an average accommodation for 65, but are arranged in pairs with sliding glass partitions. The staircase is placed in the middle of the central hall, with separate flights for the different sexes. Headmaster's, headmistress's, male and female assistants', and pupil-teachers' rooms are provided. The heating is to be accomplished by means of hot-water pipes carried round the outside walls of the rooms. Each room has a separate outlet grating for vitiated air, and a flue carried to central roof. The stone used is of a warm red colour from Corncockle Quarry. The style is a simple rendering of Flemish Renaissance. The building is designed by Mr. Andrew Heiton, F.R.I.B.A., and the contractors are:—Masons, Fraser and Morton; joiners, Pullar and Falconer; slater, James Buchan; and plumber and heating, James MacLeish.

The Royal Cornwall Gazette says: The new institute buildings at Blackwater, Mithian, are being proceeded with rapidly. Hopes are entertained that the donor (Mr. Passmore Edwards) will be induced to perform the opening ceremony.

Colfe's Grammar School, Lewisham-hill, was opened on Tuesday. The new buildings have been erected from the designs of Messrs. Giles and Gough, and will cost between £6,000 and £7,000. They will accommodate 200 boys, and are planned with a view to convenient extension in the future if needed. They comprise a large main hall with five separate classrooms (three of which can be thrown into the main hall), masters' rooms, laboratory, and other accommodation, and a gymnasium shortly to be erected.

#### COMPETITIONS.

BROMLEY.—The Bromley School Board recently invited a limited number of architects to compete for their new schools at Raglan-road for 700 children. On the award of their referee, Mr. R. Norman Shaw, R.A., the design of Mr. Charles Bell, F.R.I.B.A., of 3, Salters' Hall-court, E.C., has been adopted, and the works will be commenced at once.

WHITECHAPEL.—A free library is to be erected at Whitechapel at a cost of about £4,000, a sum, however, somewhat inadequate to the amount of accommodation required, judging from the conditions issued to competitors. Plans have this week been sent in by about eight or ten firms invited to compete. Among those who have submitted designs are Messrs. E. W. Mountford, John Johnson, J. M. Brydon, Smith and Potts, and Sulman and Hennings.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The third annual meeting of this society was held at the School of Art last Tuesday night. The report of the secretary and the treasurer's statement of accounts were read, and showed that the society now consisted of 44 fellows, 24 associates, and six students, and that the balance in hand is £55. The meeting next proceeded to ballot for the election of officers and council for the coming year, Messrs. W. C. Fenton and C. Gibson acting as scrutineers. The following were elected for the season 1890-91:—President, Mr. F. Fowler; vice-president, Mr. C. J. Innocent; treasurer, Mr. J. B. Mitchell-Withers; hon. secretary, Mr. C. Hadfield; council, Messrs. T. J. Flockton, E. M. Gibbs, W. F. Hemsoll, W. H. Lancashire, and W. C. Fenton.

#### CHIPS.

The memorial stone of a new school which is being built by the Manchester School Board in Johnson-street, Bradford, was laid last week. The school, which will accommodate 1,000 children, will have two floors, 500 boys occupying the upper and 500 girls the ground floor. A peculiar feature in connection with the school is that no playground will be attached to the building, but by arrangement with the Corporation the children will have the use of a public recreation ground which is now being laid out immediately to the rear of the school. The builders are Messrs. Robert Neill and Son, Strangeways, Manchester, and the cost will be about £9,300.

The first stone of the church of the Convent of Our Blessed Lady of Good Counsel and St. Augustine was laid at Hayward's Heath by the Bishop of Southwark. Among those present were the architect of the convent and new church, Mr. Edward Goldie, of Kensington, and the builder, Mr. Goddard, of Dorking.

A memorial to the late Hon. F. J. Tollemache, M.P., is about to be erected at the north end of St. Peter's-hill, Grantham. The pedestal will be polished grey Aberdeen granite, 11ft. high, and the figure surmounting it will be of bronze, and 10ft. in height. Mr. G. Simmonds, of St. John's Wood, N.W., is the sculptor.

The pastoral staff to be presented to the Bishop of London will cost about £720 instead of the £350 originally proposed to be expended upon it. The designer is Sir Arthur W. Blomfield, A.R.A., and Mr. Gilbert, A.R.A., will execute the crook, the tabernacle, and the figure work. It is proposed that the staff shall remain permanently at St. Paul's.

Mr. Ira Hendy, of St. Columb, has been elected surveyor to the West Powder highway board.

The local board of Newtown, Mon., received the resignation of Mr. John Owen, their surveyor, who is emigrating to America, and, on the motion of the chairman, decided to send a written resolution expressing their confidence, regret, and good wishes.

The town council of Burton-on-Trent at their last meeting appointed Mr. J. E. Swindlehurst, Assoc.M.I.C.E., engineer and surveyor to the Rawtenstall local board district, and late deputy borough engineer of Barrow-in-Furness, their borough engineer and surveyor. There were 107 candidates.

The parish churches of All Saints and St. Nicholas, Cardiff, have just been provided with handsomely-carved oak eagle lecterns in the Norman and semi-Norman styles respectively, the order in both cases being entrusted to Messrs. Jones and Willis, of Birmingham, London, and Liverpool.

#### TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

#### NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—W. I. C.—J. G.—S. and Co.—J. G. and Co.—S. R. and Co.—G. and Co.—J. C. and Son.—W. H. and J. S.

## Correspondence.

### "UNIVERSAL PROVIDERS'" ARCHITECTURE.

To the Editor of the BUILDING NEWS.

SIR,—I have just seen some house-plans with the name and address, as architect, of a great general store-keeper who undertakes seemingly work of all kinds, and, in fact, thanks to the absence of Registration of architects, he acts also in this capacity, taking the bread out of the mouths of those who, in the ordinary course of things, for every good reason ought to be employed to do architectural work. I need hardly say that the work shown by the drawings to which I refer was thoroughly bad, even as a sample of practical building, to say nothing about good taste or design; indeed, the whole thing—plan, elevation, and section—is so bad that I need not waste your space by describing it.

I may add that a w.c. was contrived to enter out of the ladies' sitting-room! Of course, in a free country, people can have accommodation of this kind in the centre of their dining-room if they choose; but I do think you are right in advocating such measures of reform as shall prevent publicans, universal providers, and other unqualified people from undertaking building operations like this—not only to the disadvantage of professional architects, but to the loss and sanitary risk of the public. Pray, persevere in your good work.—I am, &c.,

F.R.I.B.A.

(Not a Member of the Society).

#### PROVISIONS IN QUANTITIES.

SIR,—“When rogues fall out, honest people come by their own.” Any attempt to apply this old saw to the correspondence on “Provisions in Quantities” would probably be considered by



"A Builder's Manager" and "A Disgusted Surveyor" as "vituperation," which they bandy to and fro without strict regard to its significance. Still there is not much to choose in the other horn of the dilemma, taking Carlyle's division of humanity into rogues and fools, which the correspondence seems to support, although, perhaps, reversing the preponderance that he suggests.

A rapid glance at the different communications may help to winnow the corn from the chaff, and aid in checking a very lax code of morality.

"A Builder's Manager" opened the ball by a very shallow and fallacious attempt to show that "prime cost" and "nett" do not mean prime cost and nett as understood by every one but builders and their managers and architects that are willing to be hoodwinked; or that prime cost, instead of being what the builders pay, should be what they wish to be paid, and that nett should be the actual cost plus the ever-varying discount of trade catalogues of from 5 or 10 to 50 per cent. or more. Then 500 sovereigns "imply £500 worth of goods," not that 500 sovereigns should be paid for the goods, which is puerile trifling, and implies that truth and honesty are at a very large discount—but it is to be hoped not with a very large class of builders or managers if with any of large business and good standing. The Manager's ordinary rule of logic is somewhat extraordinary when equally applied to arbitrary prices, only checked by a builder's view of what profit he would wish to get, and prices checked by competition with others for the job. The architect need not know the prime cost of the latter; but he certainly should take good care to know the real prime cost of the former, if he intends to fulfil his duty to his client; and he as certainly should not submit to the insult of being told that when he writes prime cost or nett he intends it to have two meanings—one for honest men, the other for Carlyle's minority.

Following your article on the subject, "Twice Charged" takes up the running, but on a loop line for very nasty traffic, that if tolerated is liable to increase and fructify, and which his exposure may tend to check. That his complaint as to "surveyors' provisions" was needed is very clearly proved by the two angry replies that it elicited, which are both ill-tempered and illogical. Mr. Lovegrove answers by queries beside the mark, and a plea of character, and "no benefit"; but he is probably right, that the matter is not large yet. "A Disgusted Surveyor" twits "Twice Charged" with inconsistency very erroneously, and pleads justification and moderation of charge that implies the foot of the ladder. No doubt some surveyors properly charge a less rate for omissions taken from the quantities and not remeasured when the amount is large. It is also true that drawings and specifications may fail to define work so that a surveyor can take it accurately; but a surveyor is only accountable for what is defined. "Stabbed in the back" and "cowardly fashion" are bosh, and the complaint of *nom de plume* comes badly from "A Disgusted Surveyor." "Builder's Manager" (a second Richmond probably) shows that "surveyors' provisions" are not ideal, or their charges trifling. "Twice Charged" parried and countered Mr. Lovegrove's silly query, and offered him a worse choice than Hobson's, asked for information, and left "A Disgusted Surveyor" to deal with "Builder's Manager," if he could; and in this he was anticipated, for "A Disgusted Surveyor," after a fling at "blackening characters," carries the war into the enemy's camp, leaving his own deserted and exposed; but he gives one "Builder's Manager" a very plain Roland for the other's Oliver as to "net prime cost" and "coloured catalogues," which he paints in true, if repulsive, colours. That should teach architects who may have had any doubt on the matter to ignore trade lists, and to avoid, as far as possible, those who issue or produce them, and to insist on the full sum provided being actually expended for their clients, or deducted from the contractor as far as not expended, with a proportionate share of the added profit. It is lax dealing in such matters that may be considered only generous liberality that prompts and encourages claims that are scarcely disguised swindling. "A Disgusted Surveyor" can see this clearly, but cannot see that charging fees on the same work three times over should not be set off against loss of fees in other cases.

Mr. Lovegrove toes the line again, and again

misses the mark, as to the information asked from him, which certainly was not to repeat what he said before; but to explain any cause for surveyors' provisions, or, if there was none, to condemn the practice; for it is offensive to deny it in the teeth of the statements made, and the plea in abatement by "A Disgusted Surveyor," and it is hard to conceive how Mr. Lovegrove cannot know of it, even if he does not practise it, or to account for his ill-temper as to "anonymous scribbles" and "stab in the dark," if he has not been touched on a sore spot. He should remember that all do not desire a cheap advertisement of their names and addresses unnecessarily, and that some, at least, desire to uphold what is just without the spur of personal interest. He is, however, probably right with "Twice Worked, Once Paid," as to the practices complained of being confined chiefly to a certain class of builders and surveyors; but that is no reason why they should not be exposed and condemned, and certainly no reason for over-charging for one thing because something else is not paid for.

"A Builder's Manager"—the real original one, I think—tackles "A Disgusted Surveyor" with a will, but is himself disgusted at a builder being asked to add profit to a provisional amount, and appears quite unconscious of the unblushing dishonesty that he advocates, and that, as he asserts, some architects permit and practise. He reiterates his blunder as to a builder's prices or profits for works checked by competition being the same as prices paid for, or profits on, provisional works without competition, and which he pretends to think that it is derogatory for an architect "to go behind the back" of a builder about, whatever that means. Possibly it is a verbal equivalent for the old story of putting a lock on the milk-can. And to do him justice, he is rather opposed to any limitation all round, for bad as "A Disgusted Surveyor" is, he does not agree with "Twice Charged" or (another) "Builder's Manager" in washing even surveyors' dirty linen (much less builders') in public. He is evidently for live and let live (at the client's expense) and honour amongst thieves. But the other "Builder's Manager" briefly points out quite correctly that "A Disgusted Surveyor" has become confused by the two Builder's Managers and the blending of right and wrong.

But, Sir, it rests with architects to root out or encourage this fungus growth of moral delinquency. Whenever a surveyor's provision appears it can only be caused by neglect on the part of the architect by not properly defining the work, or neglect, or worse, on the part of the surveyor, in not properly taking what was properly defined, in the interest of dishonest builders. And, certainly, an architect who entertains a juggling question as to his meaning in specifying nett or prime cost, belongs to either of Carlyle's divisions of humanity. If a builder had a nett price quoted to him, would he look for a further discount? An architect who includes a provisional amount is bound in honour to see that his client is only charged the actual price paid by the builder, with such profit as he added in his tender.

M. M.

Sir,—I thank "A Builder's Manager" for his generous remarks at the close of his letter in your columns last week. I promise him in return not to "vituperate" any more.

Certainly another "Builder's Manager's" letter which followed was surely not complete. Why did he not state that the roof in question was in "yards cube" in the said quantities? As to why it was taken "Provisional," a possible explanation is that the architect was doubtful as to whether a roof would be required or no! I wish "A B. M." would remember that "all is not gold that glitters;" likewise surveyors are made up nowadays of all sorts—old and effete, or young and pushing builders' clerks, who, when got rid of by contractors, usually start as surveyors; and architects, when they wish to get rid of a clerk who has no knowledge of art, always promise him, as a sop, their quantities; and architects, again, who find their families increasing and their "jobs" not so numerous, always begin to argue that the architect is the only man who can properly "take out" quantities, and they plunge into it accordingly, and "leave out" quantities also accordingly.

Your readers, I have no doubt, will remember the able instances collected by a surveyor, I think, in your columns some five or six years ago, and they went to prove that the commission

charged by the above gentry was always in inverse proportion to the accuracy of the quantities and the amount of paper in the said bills.

With your kind permission, I will now proceed to examine the misty arguments of "A B. M." or "value versus prime cost." I notice that he does not try to explain away the "catalogue" question, neither does he give us the historic origin of this gigantic swindle with their red-ink slips. It is, without doubt, the foundation of the whole matter. I ask, Why do not these catalogues for chimney-pieces, stoves, and wall-papers show on their faces the true value of the things sold?—and it is odd that these are the catalogues which most frequently come before a client and his architect to choose from. "B. M." carefully explains that "prime cost means in trade the first cost before adding incidental expenses, and, used as such, it has a definite meaning." Precisely so, and that is exactly what a surveyor means when he states that a range is to cost £20 prime cost, and the contractor is requested to add his profit. What has it to do with the argument or with the client if the contractor chooses to ignore the latter request, because he fears one of the competing contractors may not add a profit, and thereby get the job? Why does not "B. M." instead of arguing that black is white, prevail on the trade to understand that, when a thing is described as "prime cost," it simply means what the contractor pays for it in cash, and that the contractor's profit is to be added to it.

"B. M." is quite right in thinking that a surveyor would not care if 50 per cent. were added; neither would the client, if the particular tender happened to be lowest. If the contractor were the manufacturer of the range or the wall-papers he would, no doubt, have a right to mulct the client in any profit he chose, or could get; but he is not. Therefore, what right has the contractor to a difference in value caused by lessened cost of production?

I will suppose a case. A merchant takes a moneyed man into partnership, extends his premises, buys new and improved machinery, and, to do a larger business, sends out a circular that, instead of, say, 25 per cent. discount off first prices, he will give 35 per cent. In the name of all that is honest, what right has the contractor to this difference in value? Again, a store merchant. The price of iron goes down, and men agree to accept a lower wage. Again, a circular is issued that prices will allow a larger discount. This also is schemed, according to "B. M.," entirely in the interests of the contractor, and the whole should go into his pocket.

When "B. M." prices the brickwork in a surveyor's Bricklayer's bill, how does he do it? Does he not take the current price of stocks, and add cartage, lime, sand, labour, and then his profit? Or does he hunt back to find out the price of bricks when one of our "winters" happened to occur in the "summer-time," and then, because bricks were much dearer, does he argue that he is being "jockeyed" out of a profit because those concerned will not pay the price?

I do not agree with "B. M." that there is anything anomalous in the way most surveyors treat this question; the only anomaly is in the special pleading which contractors indulge in over this simple matter. Apologising for the length of this letter—I am, &c.,

A DISGUSTED SURVEYOR.

#### SCULPTURE AT THE ROYAL ACADEMY.

Sir,—Nos. 2046—2050 in the lecture-room, represent "a series of five niche figures in marble forming part of a reredos erected in St. Mary's Church, Aberavon, in memory of Mr. Llewellyn, of Baglan Hall, by Henry H. Armstead, R.A.,"—so reads the catalogue. An elevation of the reredos in question—one of Early character—may be found in the Architectural room just under Sir Arthur W. Blomfield A.R.A.'s careful pencil sketch of his proposed interior treatment of St. Saviour's, Southwark. It is designed and exhibited by Messrs. Kempson and Fowler, architects, of Llandaff.

I have read Mr. Harry Furness's clever skit "Royal Academy Antics," but I was scarcely prepared, upon going into the Sculpture department, to find anything approaching to these five statuettes in marble. Although they are draped up behind, so that the best possible effect may be obtained, they are so utterly unlike any architectural figures I ever saw in my life before, that



I venture to call attention to them. Is such work really what London experts call excellent? Pausing for a reply, I am, &c.,  
A VISITOR FROM THE COUNTRY.

## Intercommunication.

### QUESTIONS.

[10278].—**Force of Gravity.**—A difference of opinion arose the other day between two men in an office in which I am employed, concerning a gymnastic display, which took place some years ago at the Crystal Palace, during which display a member of the German Gymnasium ascended, hand-over-hand, to the roof of the structure by means of a rope suspended from the centre transept roof—the ascent occupied a quarter of an hour; and the contention of one of the men was, that, supposing the descent took the same time, and was performed in exactly the same way—viz., by the arms, and not the arms and legs of the performer combined, the physical strength exerted in each case would be identical. Going on to a more mechanical illustration, one of the men held that a pin in a shackle in a line or chain employed in raising a weight, would have to be stronger than if the tackle was exclusively used in lowering an exactly similar weight, assuming that the motion of the weight up and down was rapid, or even fairly appreciable. The question is, it seems, this—viz., Whether exertion required to overcome the force of gravity in moving a given weight in an upward direction, is the same as that required to regulate the speed of a similar weight (in its obedience to the law of gravitation) travelling earthward!—A. F. CUTLER.

[10279].—**Italian Oak.**—In the Honours grade of the City and Guilds examination in carpentry and joinery, held on May 30, No. 1 question is as follows:—"Give particulars of the following oaks, stating for what purposes they are best adapted, and how you would distinguish them:—'Dantzie,' 'Italian,' 'White,' 'Riga.'" I should be glad to know through the medium of your valuable paper for what purpose "Italian" oak is used, having failed to discover any particulars from works on this branch of building.—H. J. P.

[10280].—**Provisional Amounts.**—Whereas an amount is included in quantities stating that the work is to be executed by a specialist (who has tendered for same), and stating that the amount is to be paid to him by contractor on architect's certificate, can the contractor fairly claim from specialist a trade discount? This has been attempted, and, I believe, acceded to in more than one instance in my experience.—FAIRBANK.

### REPLIES.

[10274].—**Hot-Water Apparatus.**—As there has not been a reply to "Canadian Architect's" query, perhaps I may aid him. The connection or feed-pipe from the expansion tank, or supply cistern, should be to the return pipe or boiler, and not to the flow-pipe, unless the expansion tank is for hot water; but if a cold-water feed cistern, the pipe from it should dip or siphon under the flow-pipe or the boiler before its connection with either, to prevent the hot water ascending to the expansion or feed cistern. And it would be well to have a draw-off cock (or screw-plug if the pipes are iron) at the bottom of dip or siphon to let off sediment, and to empty the pipes if below the boiler, which is only done when a cold-water pipe from the supply cistern passes near the boiler for other purposes. The reason for not connecting the feed-pipe with the flow-pipe is that the water entering by the feed-pipe, being, of course, colder than the water in the flow-pipe ascending from the boiler, would check the circulation and descend to the boiler. Whereas if connected with the return-pipe, it would unite with the current returning to the boiler, and rather increase than check it; but if connected with the boiler, the water would get quickly heated, and scarcely affect the circulation.—M. M.

[10276].—**Speaking-Tubes.**—Perhaps the tubes are plugged with a whistle. If a whistle is not required at that end of the tube, I would recommend your correspondent to plug with a cork, and see that the mouth-piece is well screwed up.—C. F. M.

A deputation waited on Monday on Mr. Chaplin as to the formation of a School of Forestry. It was stated that, with the exception of Spain, there was no other nation in Europe which was without a School of Forestry. Mr. Chaplin said it was not in the power of the Agricultural Department to establish a School of Forestry; but he would put the matter before the Government.

A stained-glass window and a marble and stone reredos are being prepared for setting-up as memorials at the east end of the chancel of the new parish church of St. Michael, Aberystwith, now building, from the designs and under the direction of Messrs. Nicholson and Low, architects, Hereford. The window at the east end of the morning chapel is also to be filled with memorial stained glass.

The memorial stones of a new mission church for the parish of St. George's, Birmingham, were laid on Monday. The building is being erected in William-street North, between Hospital-street and Summer-lane. It will consist of a hall 50ft. by 30ft., which will accommodate 250 worshippers, and two classrooms at the back, each 24ft. by 18ft., with a basement containing hot-water apparatus, &c. The front will be of brick and terracotta. The architects are Messrs. Dunn and Hipkiss, and the builder is Mr. John Webb, of Villa Cross, Birmingham.

### LEGAL INTELLIGENCE.

**REPAIRS UNDER THE BUILDING ACT—IMPORTANT DECISION.**—(Divisional Court, Queen's Bench. Banister Fletcher, district surveyor, v. Briant and Son).—An important judgment on what has been a vexed question for years, defining what are exempted repairs, was given by the Lord Chief Justice and Mr. Justice Grantham on May 2nd. The case was an appeal from the decision of Mr. Biron in the Lambeth Police-court, reported in our issue of November 1st, 1889. Mr. McCall appeared for the appellant, and Mr. Willis, Q.C., and Mr. Bernard Coleridge for the respondent. The works in question were done at 8, Crampton-street, Newington Butts, and were stated by the magistrate to consist of "taking down and rebuilding the upper portion of two chimney-stacks and the upper portion of an external wall which inclosed the upper part of the said building. The length of the portion of the wall so taken down and rebuilt was about 22ft., and its depth or height about 5ft. 6in.; one of the chimney-stacks containing three flues, and the other two flues. The said work was done entirely by way of necessary repairs, and the wall and chimneys were not altered in height or width, and the work done was by way of substitution merely of new material for old, and I held that the work did not affect the construction of any external or party-wall within the exception of section 9, and that notice need not be given."—Mr. McCall argued that all alterations are under the regulation of the Act, and referred to the various sections.—The Lord Chief Justice: Has not the magistrate ruled you out of Court? The work done was entirely by way of necessary repairs.—Mr. Justice Grantham: The 10th section says: Notwithstanding that, if it is beyond an extent exceeding one-half of such building, then, although it is for repairs, it is to be considered as new work.—Mr. McCall contended that would be rebuilding, and referred to the sections regulating the construction of flues. He also referred to length to the case of "Badger v. Denn," and argued that this case was different. The wall might have been improperly bonded, or even built without cement or mortar. Could such not be a work contemplated by a provision of the Act?—The Lord Chief Justice: When that arises I will tell you, or, at least, I will give you my opinion.—In giving judgment the Lord Chief Justice said: The learned magistrate has stated the case perfectly fairly and in good sense, and quite independently of the authority of Lord Campbell, to which I defer most entirely, and has upon the words of the Act of Parliament stated Mr. McCall out of court. The words are substantially that an alteration or addition done for necessary repair, not affecting the construction of an external or party-wall, is not within the Act. I do not mean those are the words, but that is what the section comes to. I must say that to say the works here done shall be brought within the section would be doing gross violence to the Act, and introducing a most unreasonable and vexatious power of interference which might be used bona-fide, but most vexatiously, against builders who are doing small repairs, which everybody ought to be allowed to do if they do not really affect the character of the house, without interference from a public authority. These Acts are passed for the general benefit of the public, and I am the last man to narrow their construction. But where a man simply puts a few new bricks for a few old ones, and does not in any manner alter the character of his house, it would be monstrous to say he must give all these notices and invite interference where none is wanted. I think the magistrate is perfectly right, and his decision must be affirmed.—Mr. Justice Grantham: I am of the same opinion. To give full effect to the contention of Mr. McCall would be to say if the owner of a house takes one brick out which is rotten and puts in a new one, if it is in an external wall, he must give notice to the surveyor before the work is done, and go through all the formalities exactly as if he were going to build a new house. It cannot be contended that was the object of the Legislature. I think the magistrate was right.—The appeal was dismissed with costs.—Mr. McCall thought the district surveyor should not pay costs.—Mr. Willis said it was to get fees these proceedings were taken.—Lord Chief Justice: There is no reason why you should not have your costs.

**IN RE T. QUINN.**—The debtor, Thomas Quinn, M.P. for Kilkenny, has been engaged in extensive building operations in Islington and other parts of London. He petitioned the Court in January last, the liabilities being returned in the statement of affairs at £75,948, of which £9,079 only will probably rank, with assets estimated at £919. An application was to have been heard on Monday for the approval of resolutions passed by the creditors accepting a composition of 5s. in the pound, payable by two instalments, the first forthwith, and the second six months after approval; but, on the debtor's application, an adjournment for a week was granted.

**RE W. J. FEARY, JUN.**—Under a receiving order recently made in the case of William James

Feary, the younger, of No. 251, Goswell-road, builder and contractor, a statement of affairs has now been furnished showing total liabilities £22,801, of which £20,850 are fully secured, and no available assets.—The debtor states that he commenced business in 1883 with a capital of about £100, and he attributes his failure primarily to the loss by non-fulfilment of an agreement for a mortgage loan; also to depreciation in the value of house properties, and to his expenses having been in excess of his profits.

**WANTED, THE BUILDING OWNER OF A CHURCH.**—The "owner" of All Saints' Church, Lower Marsh, Lambeth, was summoned to Southwark Police-court, on Monday, by Mr. Roberts, of the Solicitors Department of the London County Council, to show cause why an order should not be made against him to take down the loose and defective portions of the tower and spire, which had been certified by the district surveyor to be a dangerous structure within the meaning of the statute.—The Rev. Dr. Lee, the incumbent of All Saints', asked for a postponement of the case, on the ground that he was engaged before a select committee of the House of Lords to support a petition against the London and South-Western Railway Company, whose works had interfered with the security of the spire.—Mr. Roberts said Dr. Lee's presence was not absolutely required at the hearing of the summons.—Dr. Lee said his only anxiety was that he should not be made personally responsible for the cost of the repairs.—Mr. Roberts said the late Metropolitan Board repaired the church some six years ago, and attempted to recover the expenses from Dr. Lee; but the Court of Appeal held that they could not do so; and, in face of that decision, the County Council had no intention of asking the incumbent to pay the expenses.—Mr. Slade made an order for the execution of the necessary repairs on the "owner."

**ALLEGED INFRINGEMENT OF THE METROPOLITAN BUILDING ACT.**—At the Mansion House, on Monday, Mr. William Shepperd, builder and contractor, of 101, Bermondsey New-road, appeared before Sir R. N. Fowler to answer a summons at the instance of Mr. Hugh McClachlan, western district surveyor of the London County Council, charging him with having failed to comply with a notice with respect to the erection of party-walls at 65-67, Ludgate-hill. Mr. Sydney appeared for the defendant, and Mr. Reynolds, who appeared in support of the summons, in briefly stating the facts, said the contention on the part of the defendant appeared to be that the district surveyor had misread the section of the Act dealing with party-walls, and therefore they had to come to a magistrate for a decision. In November last Mr. Shepperd gave notice that he had replaced the old roof of the premises for a new one, and, consequently notice was served upon him to erect two party-walls, which were intended to form a safeguard in case of fire. This notice had not been complied with, the defendant differing in opinion with Mr. McClachlan as to the meaning of the Act. Mr. Sydney said the question was whether these walls should or should not be raised, and if so, were they party-walls? He contended they were not, and, in support of his argument, he cited the judgments of Mr. Justice Mellish and Mr. Justice James in the Bristol case, "Weston v. Arnold," which he submitted entirely governed the present summons. Mr. Reynolds interposed; but the Alderman held that Mr. Shepperd was quite right in quoting from two very eminent judges upon a point of law which he, the Alderman, thought ought to go to the High Court. Upon the summons, however, he had made up his mind: it would be dismissed. Mr. Sydney applied for costs. He said Mr. Shepperd had been put to great trouble and annoyance by this and the other summons heard last week in respect to the same matter. A guinea costs was allowed.

**MANDATORY ORDERS IN LIGHT AND AIR CASES.**—**LAWRENCE V. HORTON.**—(Chancery Division. Before Mr. Justice Chitty.)—This was a case which raised the question as to the circumstances under which the Court will grant a mandatory injunction for the removal of a building completed or almost completed before complaint made or writ issued. The plaintiffs were owners in fee of a shop, 25, Queen-street, Wolverhampton, and four cottages at the back. On the west side of the plaintiffs' premises was a yard about 32ft. long and about 12ft. wide. On the opposite side of the yard, facing the back windows of No. 25 and the cottages, where the yard narrowed down to about 6ft., stood a warehouse belonging to the defendants. No. 25 was let to a milliner, and two of the rooms were used as a show-room and a work-room. The cottages were let to weekly tenants. In March, 1889, the defendants pulled down their warehouse and commenced a new and loftier building on the same site. On May 23, 1889, when the new building was up to the third story, plaintiffs objected to it on the ground of its interference with their ancient lights. On May 24 the defendants abandoned an intended fourth story, levelled up the existing brick-work, and put on the roof. The plaintiffs claimed a mandatory order requiring the defendants to



remove so much of the new building as exceeded the height of the old one. The defendants paid £50 into Court. Mr. Whitehorse, Q.C., and Mr. Underhill, for the plaintiffs, submitted that the plaintiffs were entitled to the relief claimed, notwithstanding the completion of the building ("Smith v. Smith.") Mr. Romer, Q.C., and Mr. Wurtzburg, for the defendants, submitted that it was not the practice of the Court to grant a mandatory order in the case of a completed building except under very special circumstances, or where there had been fraud or trick. Nothing of that kind was alleged here, and damages would be an ample compensation. Mr. Justice Chitty said that no hard-and-fast rule could be laid down as to when a mandatory injunction would be granted and when not. It was clear, however, that a man could not be allowed to run up a building so as to interfere with another man's lights, and then by way of defence say that he had finished the building by the time the writ was issued. If the building was not finished when the writ was issued the plaintiffs were entitled to have it pulled down; and the fact that the building had reached a certain height by the time complaint was made and before the writ was issued did not entitle the defendants to say that they might, at any rate, keep their building at that height and that no order could be made to pull it down. In his opinion it was indisputable that serious damage had been inflicted on the work-room and show-room. It was the defendants' duty to have stopped the work as soon as they knew of the plaintiffs' objection, and it was impossible they should be allowed to obtain any advantage by running up the building before the plaintiffs could come to the Court. A mandatory order must be granted, following the form in "Yates v. Jack," and the defendants must pay the costs of the action. The operation of the order would be suspended for three months. The £50 paid into Court by the defendants would be returned to them.

#### STAINED GLASS.

**CHRIST CHURCH, BATH.**—Six three-light memorial windows were dedicated in this church on Ascension-day. The first one nearest the east end contains three pictures of Our Lord as the Good Shepherd, and in the tracery above are angels rejoicing. The second window illustrates three scenes from the parable of the Good Samaritan, while the tracery is filled with foliage ornament and scrolls bearing the texts of the Eight Beatitudes—all these subjects being set in rich 15th-century ornament. The other four three-light windows illustrate the Te Deum of angels, apostles, prophets, and martyrs. In the first is St. Michael, with angels in acts of praise and adoration; in the second SS. Peter, James, and John; in the third Isaiah, Daniel, and Jeremiah; and in the last SS. Stephen, John the Baptist, and Paul. The work has been designed and executed by Mr. Alfred O. Hemming, 47, Margaret-street, Cavendish-square, W.

#### CHIPS.

"The Funeral of the First-born," by the late Frank Holl, R.A., has been presented to the Dundee Picture Gallery by an anonymous donor.

The annual meeting of the Association of Municipal and Sanitary Engineers and Surveyors will be held in Liverpool on Thursday, Friday, and Saturday, the 26th, 27th, and 28th of June.

By the death of Miss Annie Walters, the sum of £1,000, left under the will of her late brother, Edward Walters, architect of the Free Trade Hall at Manchester, becomes payable to Owens College.

At a general assembly of Academicians and Associates held last evening at the Royal Academy of Arts, Mr. Hubert Herkomer, A.R.A., was elected an Academician. Mr. Herkomer, whose advancement is well deserved, was elected an Associate of the Academy in 1879.

The Joule Memorial Committee have appointed Mr. Alfred Gilbert, A.R.A., as the sculptor of the marble statue to be erected in Manchester, in commemoration of the distinguished scientist.

About 200 builders' labourers at Cork went out on strike on Monday. Three of the employers gave the 2s. demanded, and the men in these cases resumed work.

The new North Sea Wall and Marine Promenade at Scarborough has been completed, and will be opened by Prince Albert Victor in the latter part of June.

Mr. Thomas Trewwhitt Wharrier died on Sunday at his residence, Byker-terrace, Walker-on-Tyne. Deceased was for over twenty years surveyor to the Walker Local Board, which position he resigned a few years ago, and immediately after his resignation he was elected a member of that board. He was 66 years of age.

A new temperance hall was opened at Drighlington, near Bradford, on Saturday. It is of red brick with stone dressings, and the contractors were Messrs. Pawson, of Morley.

## Our Office Table.

THE arrangements for holding the third annual congress of the Association for the Promotion of Art, which will be held in Birmingham in November next, are being completed. The congress will be opened on Tuesday, November 4, by the presidential address to the members. The Wednesday, Thursday, and Friday following will be devoted to the meetings of the sections for the reading of papers, to be followed by discussions, and, after the first general meeting on the Saturday, the usual excursion to places of interest will take place. An afternoon reception will be given by the Royal Birmingham Society of Artists on the Thursday, and the Mayor will give a reception on one of the evenings. The Town Hall will be lent by the corporation as head-quarters, and Mr. Whitworth Wallis will act as hon. secretary.

THE Wells collection of pictures by Landseer were dispersed by auction at Christie's on Saturday, and fetched high prices, the sum of £43,000 being realised for the thirty works. The highest prices were obtained for the picture of fighting stags, known as "None but the Brave Deserve the Fair," which sold for £4,000; that of a young stag and hind, which fetched £4,042 10s.; and "Not Caught Yet," a fox looking at the trap, which went for £3,150. The National Gallery collection will be enriched by two of the works sold, the picture of Landseer at work modelling his colossal lion in the studio of Baron Marchetti having been allowed to be purchased for that purpose by Mr. William Agnew, without opposition, at fifty guineas, while M. Rochefort bought for presentation to the same gallery Sir Francis Grant's characteristic portrait of Landseer, the price paid being 120 guineas. At the same sale the highest price yet publicly given for a work by Turner was realised for his "Sheerness," which was bought by Lord Wantage for £7,450.

At the examinations of Plumbers for Registration, held at the Guilds' Institute on Saturday, there was a very satisfactory attendance of candidates, not only from London and the suburbs, but from Kent, Essex, Oxfordshire, Hertfordshire, Suffolk, Cambridgeshire, Salop, Berkshire, and Staffordshire. The examinations were such as to test the qualifications of the applicants in both the practical and theoretical branches of their craft, each applicant being required to execute a given amount of manual work, such as joint-making, pipe-bending, lead-laying, &c., besides answering a number of questions relating to the properties and qualities of the various materials used by plumbers, external and internal construction, sanitary arrangements, and water supply. One-fourth of the masters and two-thirds of the operatives succeeded in passing the full examinations.

#### MEETINGS FOR THE ENSUING WEEK.

**SATURDAY (TO-MORROW).**—St. Paul's Ecclesiological Society. Visit to the church of St. Peter ad Vincula and Chapel of St. John in the Tower. 3.30 p.m.

**MONDAY.**—Royal Institute of British Architects. "German Technical Museums," by Frank Granger. 8 p.m.

**TUESDAY.**—Society of Arts. "The Industrial Arts of Japan," by Lazenby Liberty. 8 p.m. Institution of Civil Engineers. "The Keswick Water Power Electric Light Station," by Fawcett and Cowan. 8 p.m.

**WEDNESDAY.**—Society of Arts. "The Mannesmann Process for Making Seamless Tubes," by J. G. Gordon. 8 p.m.

**THURSDAY.**—Architectural Association Lyric Club. (Ladies' Night). Concert and Exhibition of Drawings. 9, Conduit-street, W.

The Ladies' Night concert and exhibition of drawings arranged by the Architectural Association Lyric Club, has been postponed from Thursday in this week to Thursday next, the 22nd inst., and will be given in the galleries of the Nineteenth Century Art Society at 9, Conduit-street, W.

The name of Richard Arthur Bullivant, of Shadwell and Leeds, architect, appears in Tuesday's list of adjudications in bankruptcy in the *London Gazette*.

Two blocks of schools are being built for the Hanley School-board in Cauldron-road and the Grove respectively, from plans by Mr. E. E. Scrivener, of that town. The contracts have been taken for the former school by Mr. T. Godwin, also of Hanley, at £2,700, and for the latter by Mr. N. Bennett, of Burslem, at £2,550.

## Trade News.

#### WAGES MOVEMENTS.

**ACCRINGTON.**—The joiners resumed work on Monday morning at the advanced rate of wages. The bricklayers were also at work at the increased rate, but the labourers with the bulk of the masons are still out.

**ASHTON-UNDER-LYNE.**—The strike of stone-masons at Ashton-under-Lynde district, after lasting a week, terminated on Monday, the advance of a halfpenny per hour demanded, making 8½d., having been conceded.

**WEST BROMWICH.**—The strike in the carpenters' and joiners' trades has ended, the men having accepted the employers' offer of an immediate advance of ½d. per hour.

**YORK.**—The master-builders of this city have acceded to the demand of the carpenters and joiners for an advance in wages of ½d. per hour, and a threatened strike has thus been averted. The advance will come into operation on the 1st of June.

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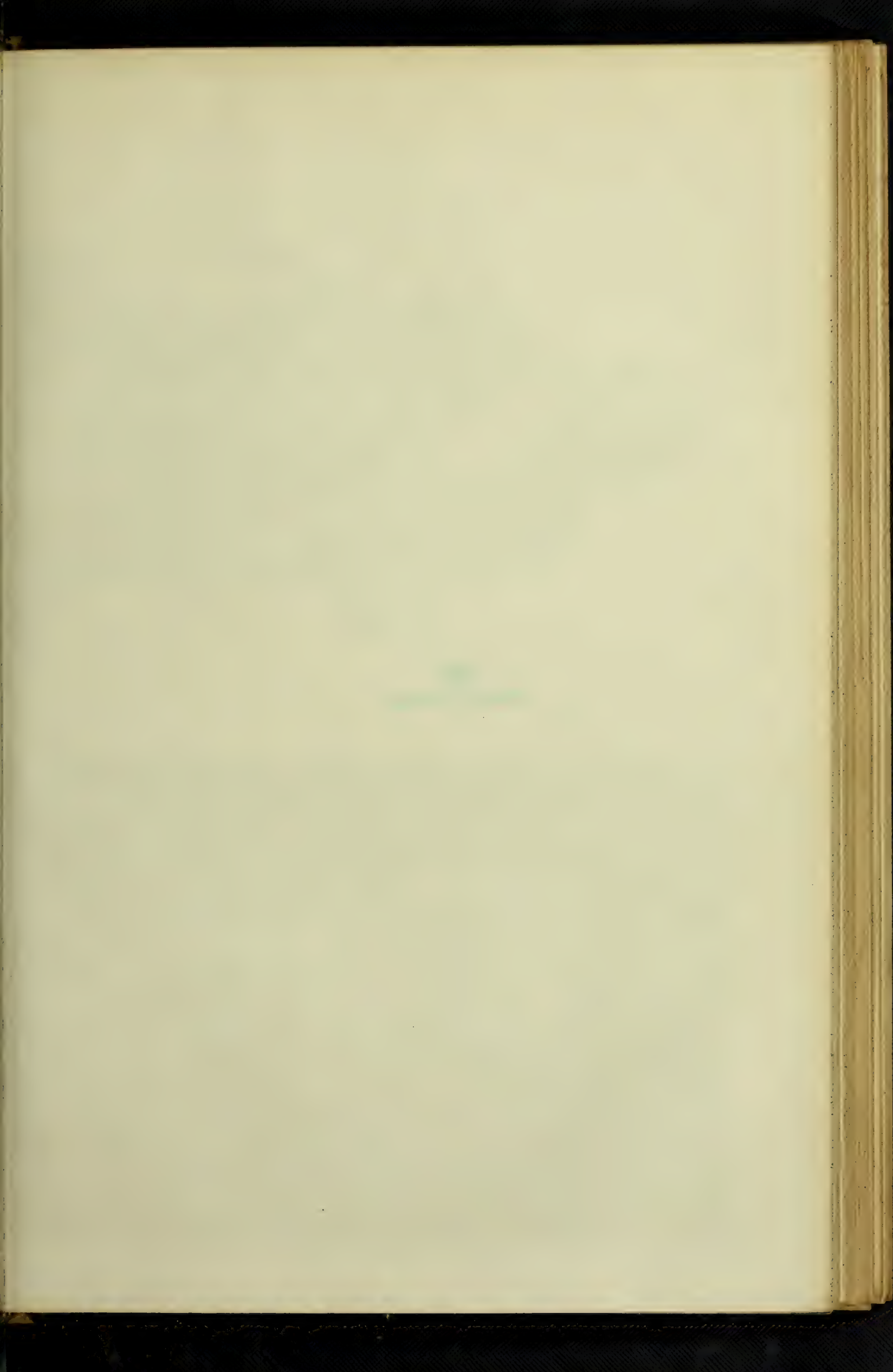
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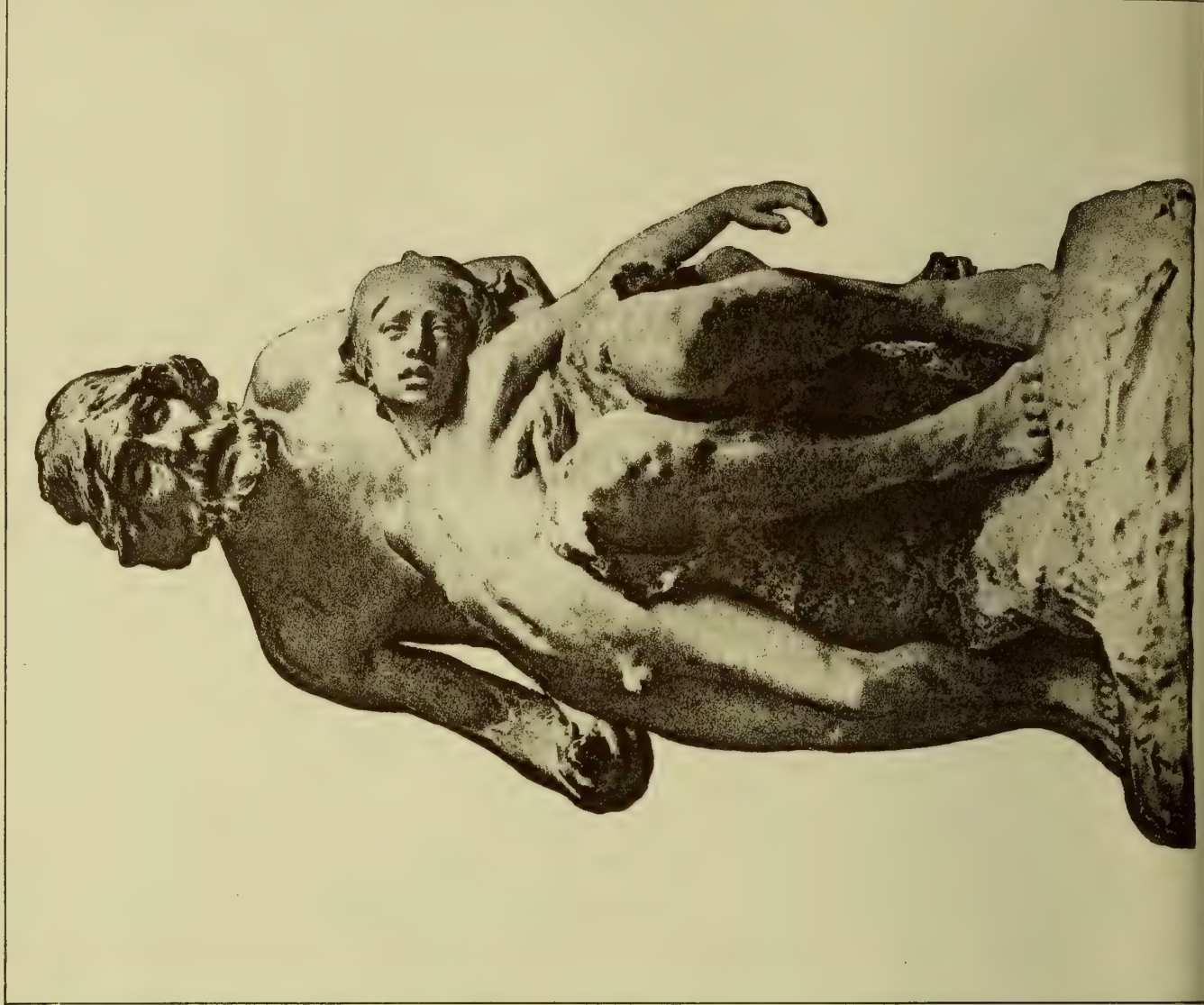
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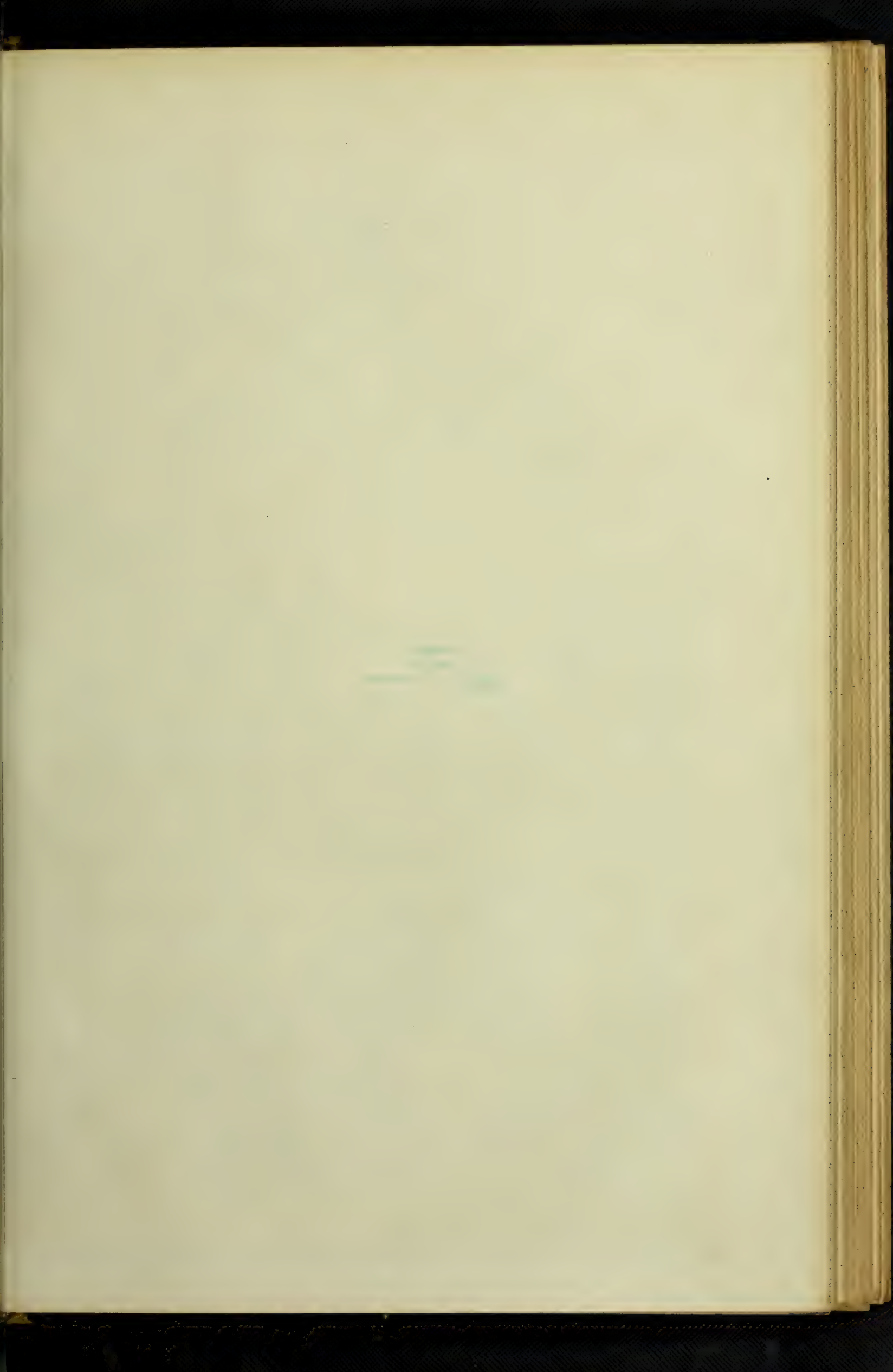




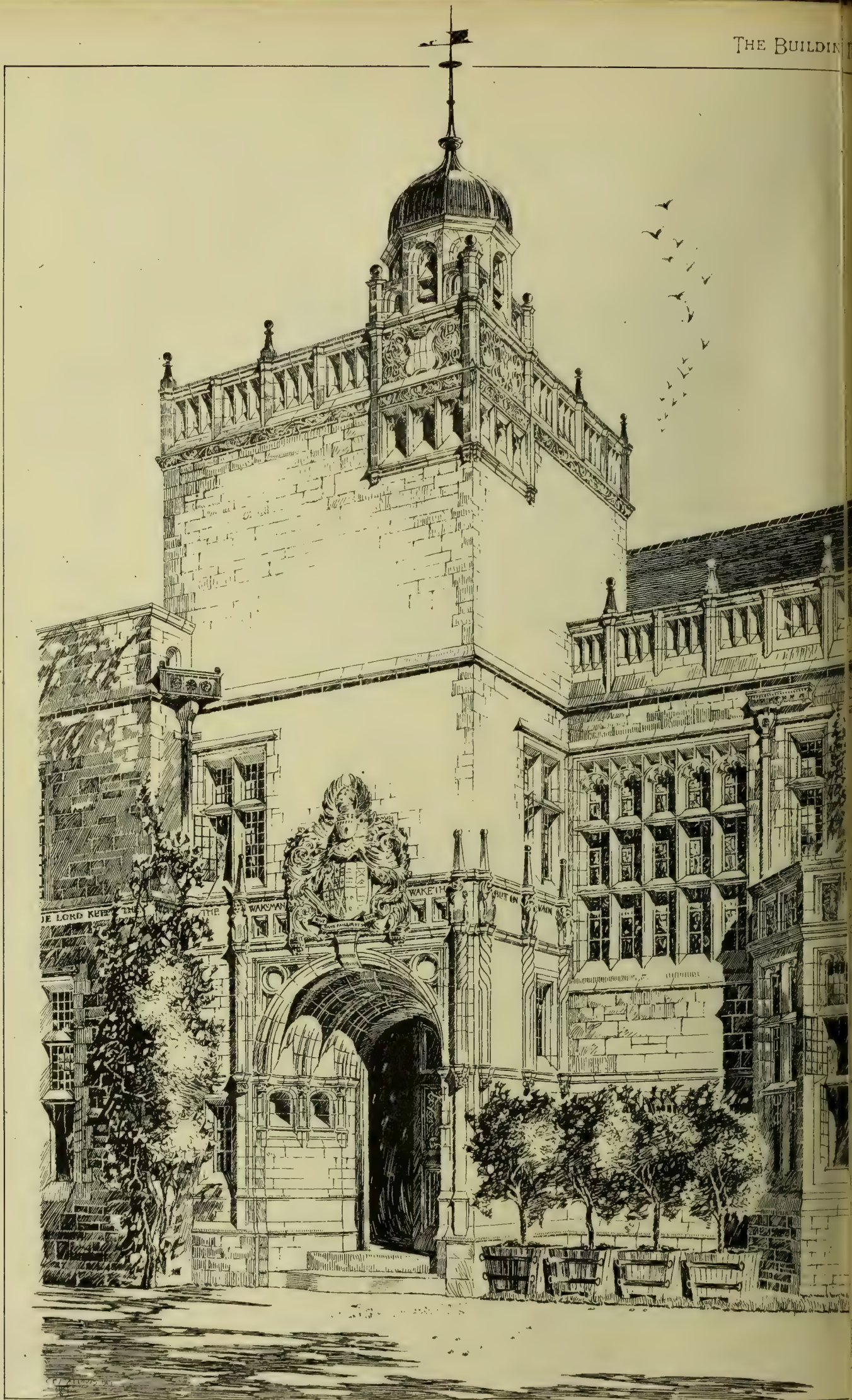
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THE FRONT ENTRANCE.

PEVEREY, SHROPSHIRE



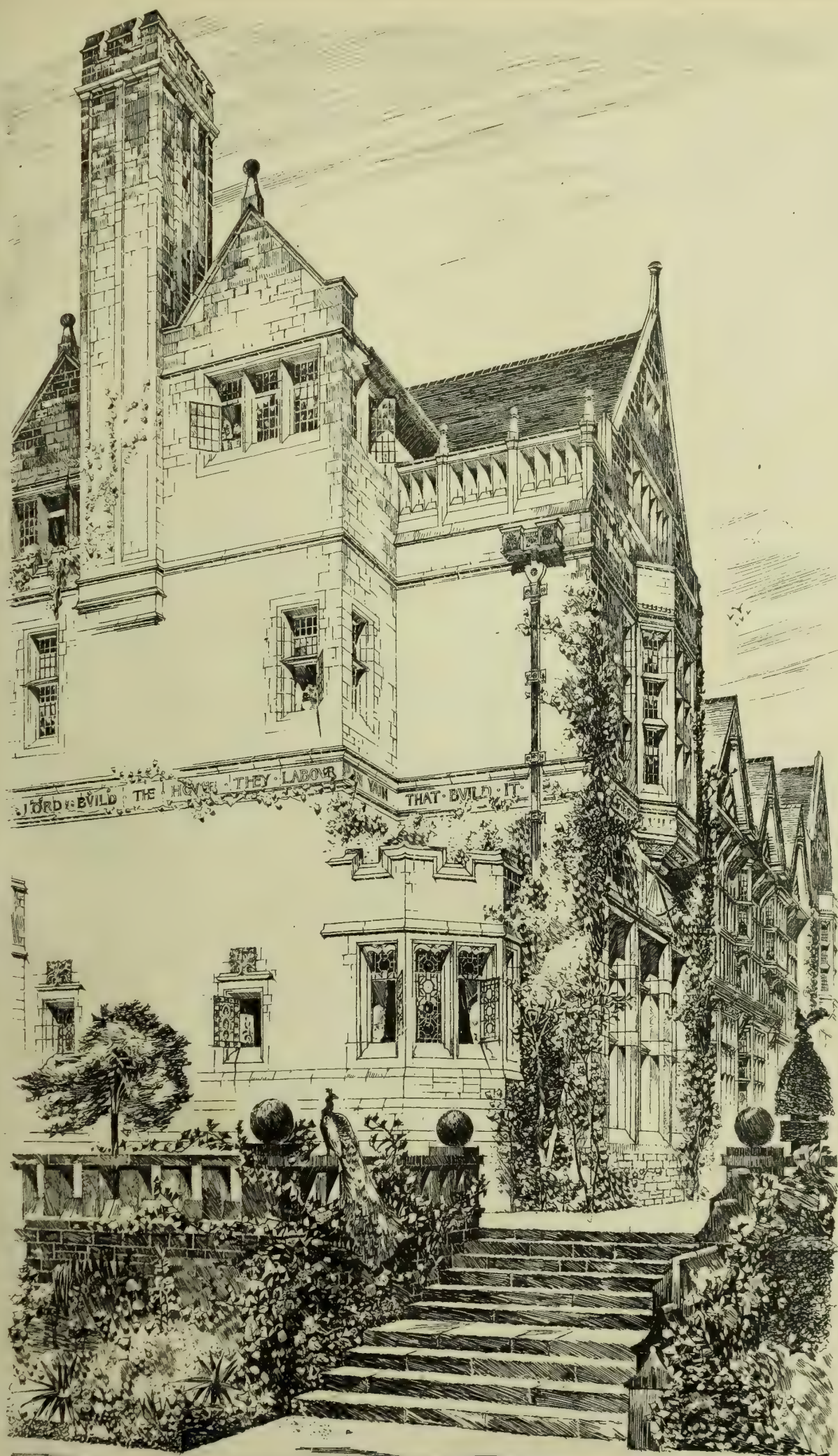
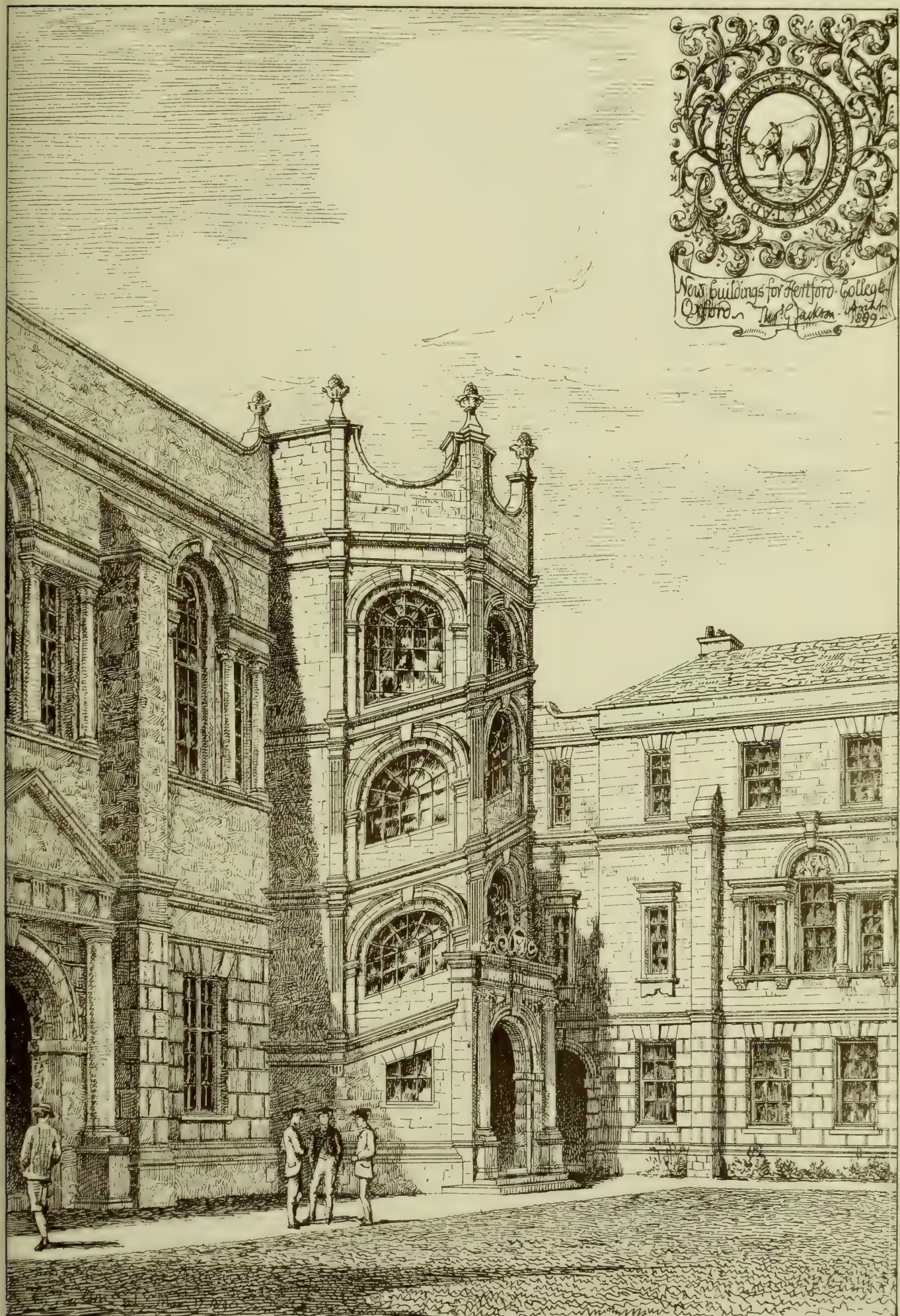


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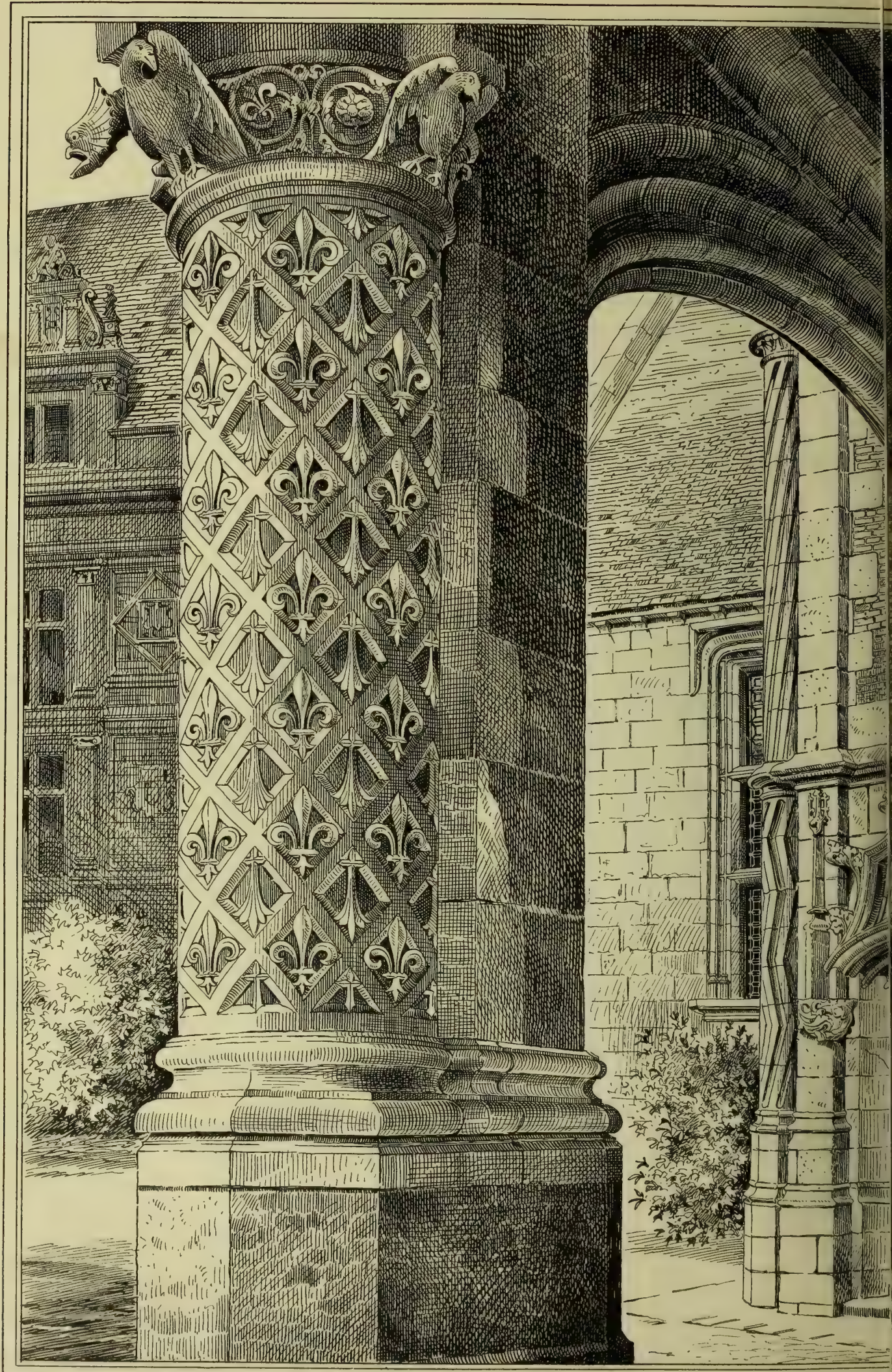




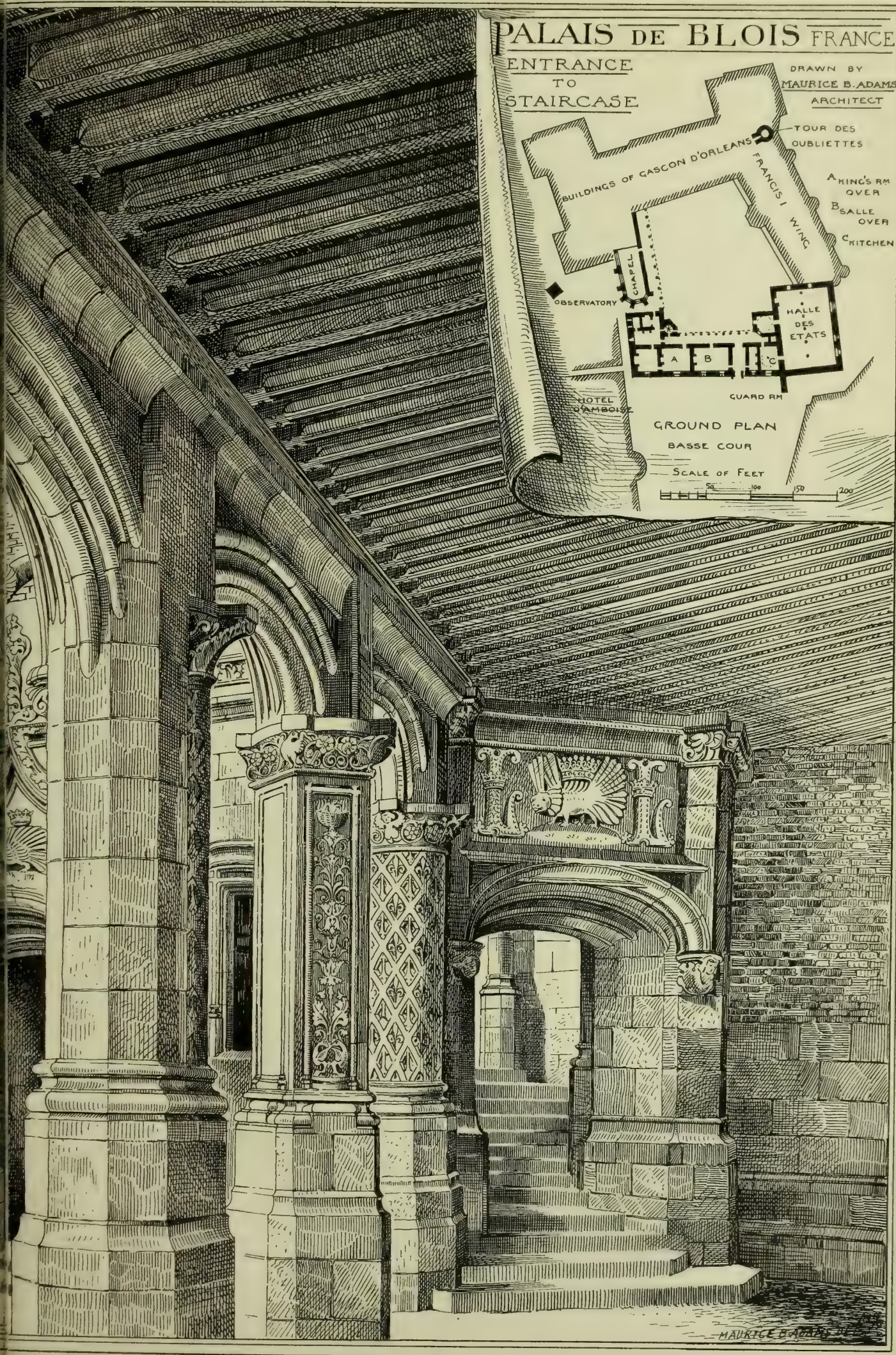


















# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1846.

FRIDAY, MAY 23, 1890.

## RESTRICTIONS OF MODERN ARCHITECTURE.

THE restrictions imposed in the design of buildings in town leave the architect very few resources. Being compelled on account of space to keep to the line of adjacent premises, he is not able to produce any play in the outline of the façade. The flat wall with its windows is the result. As regards the arrangements of his stories, the number of stories restrict their individual heights, and necessitate tiers of windows at certain levels. Projections are not permitted, and deeply-set windows are out of the question if room is to be obtained. Little variety is possible under these restrictions. The architect may vary the style: the character of his windows may be altered to a certain extent, but still he has to work within very prescribed limits. In the choice of materials he has a resource, but these are limited to brick, stone, terracotta, and iron, their available modes of treatment have an end, and do not admit of new forms *ad infinitum*. So the architect's design cannot have the freedom and flexibility of other forms of art—painting or decoration for example—in which the invention and imagination of the artist can have the fullest liberty and license. It is this want of modes which the designer, eager to break through the restraints of convention and tradition, is in quest of. The architect of small inventive powers is restricted to the ordinary types and styles; but the true artist in the profession, who can see behind and beyond them, has a far wider range of ideas open to him. He, in fact, like the poet or the word-painter, can indulge in a wider range of thought and expression. He can step beyond the bounds of that kind of respectable mediocrity and correctness which the public call "good," and indulge in rhapsodies which look strange and even ugly to the ordinary taste for *en regle* composition, like the New Police Offices on the Embankment, or the design for a house which transgresses the canons of traditional taste. We do not excuse the audacious design which only aims at upsetting all recognised principles. The real artist manages to keep within these; but he sees possibilities which the mechanically-trained architect does not perceive. Looking to the outline and proportions of his masses, he can afford to break through stereotyped arrangements and details which belong to style, to treat his materials *de novo*, and to bring his knowledge of architecture to his aid. There is a freshness in all he does, which gradually commends itself to the eye, though at first it seems strange. Here his elevation may present a plain surface of wall—there it may be relieved by blank arcading, or superficial ornament; in another place there is bold and open fenestration—his detail is confined to features, such as a door, or window, or gable, to which he wishes to draw attention. The ordinary and conventional design for an elevation is an evenly-distributed scheme of apertures and ornamentation, as we see in most of the Classic and Gothic buildings.

The architecture of Florence presents us with examples of distribution of windows, even in Classic design, which display more range of artistic freedom than we are accustomed to see. Bramante, in the Guadagni Palace, has shown a fine example. Here we have beneath the bold cornice the open colonnade, admirably suited for artistic and climatic reasons; below it is a series of semicircular-headed

windows of plain design. Below this comes a sgraffito frieze over a series of windows, almost identical with the former, with sculptured wreaths in the spandrels. The ground story is excessively plain, and is pierced by six small, square-shaped openings with a central doorway. Many buildings of the style of the Empire in France show a treatment of façade in which the regulation formula has been departed from. In America we see that the architects have been following the French style of the Empire. Even in the arrangement of a columnar façade the columns are grouped, as in Mr. R. W. Gibson's bold design for the United States Trust Company's building, New York. The style is a modification of Romanesque, which is becoming very popular. Breadth, surface ornament, as in the flatly-treated frieze of entablature and in the capitals of grouped shafts of the first and second stories, adaptability to the material, are conspicuous. The late H. H. Richardson developed a style based on Byzantine types, in which considerable departure from stereotyped features is to be noticed—broad wall surfaces, bold archways, and good outline. The Richardsonian style, like that which the late Sir Alex. Thomson, of Glasgow, made his own, in which Greek forms and flat, incised ornament are prominent, are developments of the artistic mind working with materials of localities. Many of these designs, when first seen, provoked criticism and ridicule; but they are now regarded as marked national developments. What, for example, could have been more in harmony with the material than the principal entrance to the City Hall, Albany, by the former architect? The circular recessed arches resting on grouped shafts are enriched by bold ovolo mouldings, having flat interlaced Byzantine foliage on them in which the acanthus form appears; one of the members is a bead and reel, and the shafts have capitals of Byzantine type, with the same class of flat carving. Many charming specimens of the same style applied to street architecture by Richardson exhibit the freedom with which the historic types can be used for everyday purposes. Some of the masonry and shingle buildings in the States show that old types are capable of artistic handling by re-incorporation into buildings. The most signal instances of success are where the architect has not attempted to do too much, but has developed his design simply from plan, and has expended his details and ornament sparingly wherever there is an opportunity for them, not forcing them a little here and there, as the wont of too many.

Our own street architecture affords very few examples of the artistic architect's work. The temptation has been too strong for display. The commercial premises are built for show; new hotels, offices, and clubs are designed to attract, the consequence of which is that the fronts are full of windows and the spaces between crowded with pilasters, ornament, or carving. How much of sameness and common-place, for example, overpower us in Northumberland-avenue! Hotel and club-house jostle one another for precedence, but from end to end there are the stereotyped façades, based on Italian or Flemish Renaissance models—clever some of them—with good features here and there; but on the whole exceedingly flat, tiring, and monotonous. A design for the new buildings for the Metropolitan Life Assurance Society by Mr. Aston Webb, F.R.I.B.A., and Mr. Ingress Bell, F.R.I.B.A., may be instanced as an effort in the right direction. We cannot call it of any particular style—the wide term Renaissance may cover it; the details are more essentially Classic than Gothic, there is a little infusion of Elizabethan in the carved panels on the faces of the projecting corner semi-octagon. The plain wall surfaces between the window tiers form horizontal bands which relieve

the lines of closely connected fenestration on each story. The angle-shafts carry flat arches beneath the window-heads, and on the outer edge of the pier-jambes, and the short corbelled pilasters which spring from the piers, the pleasing range of windows beneath the cornice, divided by shafts, are some of the points of freshness which mark this original treatment. There is refined taste in every detail notwithstanding.

What we have to point out in these and like designs, which avoid the temptation of following the Renaissance, or the Gothic, or any other set style, is that the architect is free in the choice of material. But it is only the gift of the few to be able to design a building without following the traditional modes of expression, to design in the true spirit of the Gothic or Renaissance architecture, but without being tied to forms. In the street architecture of London and in large towns the limitation and restrictions are, as we have said, so great, that the architect is driven to select some more or less hackneyed formula; he must have rows of windows all, or more or less, alike, certain height of stories, shop fronts, modes of treating roofs and cornices. Adjoining properties have to be consulted; cornices and string-courses cannot be allowed to stop abruptly against the adjoining houses, or in line with a row of windows; the shop-front cornice and fascia must have a stop of some form, either in the shape of the conventional truss or be returned. Many of these objectionable conventionalisms could be dispensed with by doing away with the straight frontage line, and by requiring a certain proportion of each frontage to be set back. Of course, the consequence of a building-line in a street is to make every one come out to the full extent, and to produce a row of buildings all in one plane. The results that follow are prejudicial to architecture. The street becomes either a monotonous row of windows with continuous lines of cornices, supposing the whole is taken by one person, or we get a succession of abrupt vertical slices or elevations of different patterns. Strongly-marked horizontal lines, such as cornices and strings, are more consistent with length of building façade than with narrow frontages; yet we frequently see the anomaly of a mere strip of several stories high divided into parts by cornices and strings, stopping abruptly on either side. We cannot call this a sensible or an architectural treatment. It is just as if a long façade were cut into sections or parts, and one part thrust or wedged-in between two adjacent buildings. On the other hand, the narrow façade is better adapted to the vertical treatment of composition in which the piers are emphasised, and the windows joined vertically by pilasters, or vertical members predominate. The Flemish Renaissance is therefore in consonance with streets composed of narrow façades. Recent buildings in Oxford-street, and in many of the newer thoroughfares are consequently more in keeping than the old Classic elevation with its horizontal lines and rows of windows. But there is evidently a tendency to overdo the vertical division, to overcrowd pilasters, pinnacles, gables, and to produce a fussy, restless appearance. As the houses are in one plane, they are wanting in the picturesque effect found in the old streets and market-places of Bruges, Ghent, or Ypres. The want of this element of variety in plan can only be compensated for by an irregular distribution of details and apertures. Only the true art architect has been able to grasp the idea and supply the corrective. He breaks up the plane surface of his building by attention to points instead of lines. The elevation of a flat surface is intensified in flatness by rigid lines of windows and members, but by breaks in their continuity the effect of



variety is given in perspective. To sum up these remarks we may enunciate the following propositions:—1. Straight lines and plane surfaces are accentuated by the employment of (a) horizontal members and features, and (b) by the even distribution of fenestration and ornament. 2. Therefore, to produce variety and architectural effect it is necessary to break up the lines and surfaces either by recessions and projections so as to give play to the horizontal members, or to accentuate the architectural features and ornament on certain portions of the façade. 3. Horizontal members and rows of windows produce the most desirable effects in long façades broken by projections; but when the fronts are narrow and high, as in street houses, the vertical features and members are more effective, and avoid the abrupt junctions of one house with another, also the recourse to clumsy methods of stopping horizontal members like cornices so common in streets, where the horizontal features of Classic architecture prevail.

#### REPAIRS UNDER THE BUILDING ACTS.

THE ruling of the Lord Chief Justice in the recent case of "Fletcher v. Briant and Son," which we gave last week in our Legal Intelligence, is too important to pass unnoticed. The case was an appeal from the decision of Mr. Biron, in the Lambeth Police-court. The magistrate held that the work of taking down and rebuilding the upper portion of two chimney-stacks and the upper portion of an external wall, by way of necessary repair, did not affect the construction of any external or party-wall within the section of the Act. The Lord Chief Justice confirmed this decision. The words of the Act are substantially, that an alteration or addition done for necessary repair, not affecting the construction of an external or party-wall, is not within the Act. Commenting on these words, the Lord Chief Justice repudiated the idea that such a work of reinstatement of new material for old could be included under the Act. It would be introducing "a most unreasonable and vexatious power of interference, which might be used *bonâ fide*, but most vexatiously, against builders who are doing small repairs, which everybody ought to be allowed to do if they do not really affect the character of the house, without interference from a public authority."

We have very often observed that repairs and slight alterations to buildings are made the pretext for interference on the part of district surveyors. We cannot complain of this interference if undertaken from a right motive, as if they were not to make personal inquiries, a great deal of objectionable alterations might be made to premises, which would render them unsuitable for safe occupation, as in the case of a row of private houses converted into shops, with sleeping accommodation over, without any of the proper safeguards against the spread of fire. But sometimes the provisions of the Act are extended in a manner that may be objectionable, the effect of which is to prevent repairs of a very necessary kind being carried into execution. The decision of the Lord Chief Justice and Mr. Justice Grantham is intended to apply to such a vexatious interference, and to limit the real meaning of the section of the Act. In the case referred to, the upper portions of two chimney-stacks and an external wall were taken down by the defendants and rebuilt, the length of the wall so rebuilt being 22ft., and its height about 5ft. 6in. One stack contained three flues, and the other two flues. There was no alteration in the height or length, and the work done was one of substitution of new material for old. Section ix. of the Metropolitan Building Act expressly excludes such necessary repair in

these words: "Any alteration, addition, or other work made or done for any purpose except that of necessary repair not affecting the construction of any external or party-wall in, to, or upon any old building, or in, to, or upon any new building after the roof has been covered in, shall to the extent of such alteration, addition, or work, be subject to the regulations of this Act." The words "except that of necessary repair" are an important reservation, which ought fairly to be respected in the interests of all tenants and property owners. The clause was, of course, framed with the object of preventing any structural alteration or addition to a building without permission, which would or might evade the intentions of the Building Act; but it was never intended to be applied to every case of simple repair. The 10th section defines the extent (one-half) beyond which any building is deemed to be the erection of a new building subject to the regulations of the Act. Many buildings require periodical repairs. Chimney-stacks, for instance, become twisted or shaky, the mortar joints decay, and the stack often bends considerably. Surely the term necessary repair is intended to cover the rebuilding of such a stack, provided no alteration in its size be made. Gable walls and external walls for a similar reason may have so far decayed as to become dangerous, and it is reasonable to substitute new for old brickwork, and to take down such a part of the wall and rebuild it, without being liable to give notice. These rebuildings may be considered to be substantial repairs, though they do not affect the construction in the least. No alteration is implied in such repair as that of substituting new bricks and mortar for the old and decayed portions of the wall. It was on this ground that the magistrate's decision was affirmed. Mr. Justice Grantham was of the same opinion, and said that if the owner of a house took out a brick in an external wall which is rotten, and put in a new one, it was absurd to contend that notice should be given to the surveyor. The appeal was dismissed with costs.

If the provision of the Act is held to maintain the plaintiff's construction, and to bring such a trifling rebuilding under the regulations of the Act, a serious injury would be done to owners of property. Every small repair would be liable, and notice would have to be given of it. The consequence of such a contention would be to stop all repairs and to render the condition of old houses less safe than they are now. Would it not also be the policy of the owner to keep his property in a very objectionable condition, knowing that he could not be called upon to do anything unless the premises were in a positively dangerous condition? He could evade the law by not doing anything. Thus, a too strict interpretation of the Act, like a two-edged sword, would be fatal to its operation. Owners of houses and other buildings would hesitate before giving notice to the district surveyor about any repair or alteration, rather than put the machinery of the Act into operation, invite unnecessary interference, and incur fees. We happen to know a case where the wall of the building, a corner one, through a trifling settlement, was slightly out of plumb, though perfectly safe; the owner applied to the officer of the late Metropolitan Board to allow him to undertake a trifling work; but instead of complying, the district surveyor was sent to make an inspection, which ended in a costly and unnecessary order being made to rebuild. Other instances of enforced rebuilding might be mentioned on equally slight grounds. Surveyors are eager to show their authority, especially when the smallest opposition is offered, and the provisions of the Act, if needs be, are extended beyond the line to which they were originally

intended to go. The decision to which we have referred is a timely protest against the idea that all alterations are under the regulations of the Act, and the vexatious interference of officials who, anxious to make all comply with the Legislature, are apt to occasionally overstrain the meaning intended to be conveyed. The formalities required are apt to deter many from undertaking repairs and alterations which cannot affect the construction of buildings, but are simply the reinsertion of new materials and workmanship.

#### ARCHITECTURAL BRICKWORK.—XXXIV.

##### ORNAMENTAL ARCHES.

SOMETIMES for ornamental arches bricks are moulded which have geometrical or other devices cast upon them. The result is to form a band of enrichment round the arch which resembles carving. Sketch 1 represents an arch in which these kinds of pattern bricks are introduced under the label moulding; Fig. 2 shows different patterns of diaper on the flat surface. The zigzag or chevron, billet moulding, and other Gothic ornaments, are sometimes introduced at the angle of the arch bricks, and produce a rich effect. But surface ornamentation can be overdone; the best plan is to introduce it on a part of the face, as in the examples we give, Figs. 1 and 2, so as to allow a plain face to intervene between one course or band and the next. Few kinds of enrichment are more suitable than the chevron or billet for arches; a plain leaf or geometrical form, such as in Fig. 2, is more effective than very elaborate patterns. These moulded and enriched arch bricks are made from 9in. to about 12in. or 14in. long, the shape being regulated by the curvature of the arch. There is an objection to the use of moulded arch bricks, however, that may be noticed. They would have to be manufactured for every form of arch, as every arch would require bricks of a different mould to suit its curvature and thickness, and this increases the expense and causes delay. On this account few arches are built with purpose-made moulded bricks. The ordinary building brick can be adapted by cutting and rubbing to most arches.

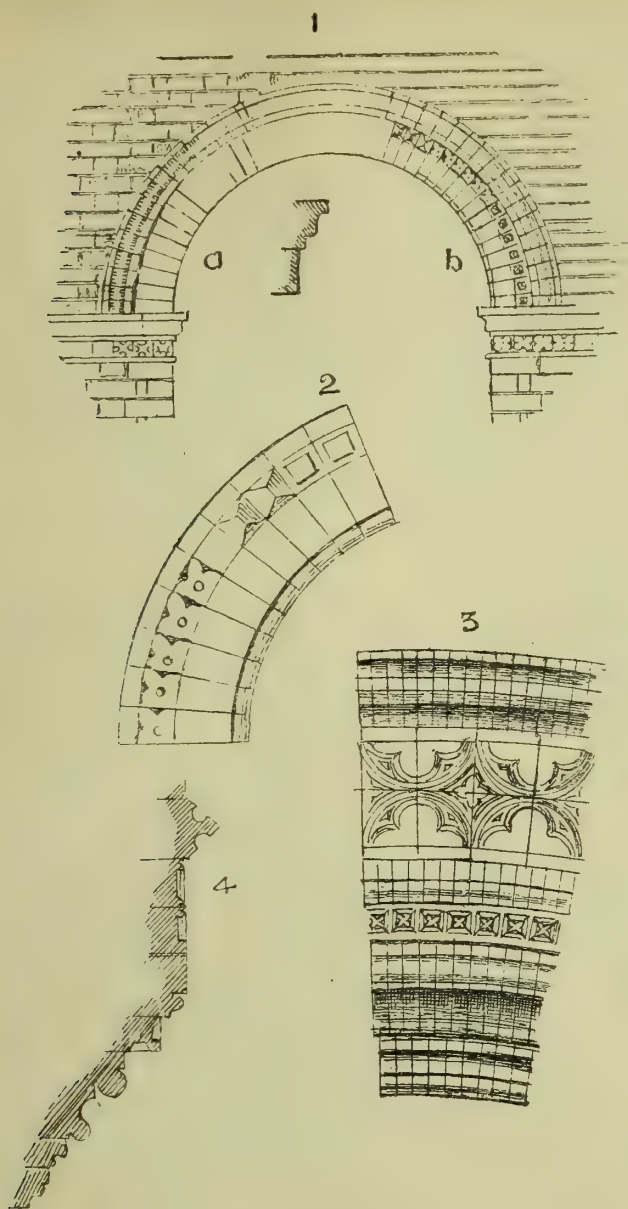
##### WHERE MOULDED AND ORNAMENTAL BRICK CAN BE USED.

There are, however, special circumstances under which the use of moulded arch bricks may be used with advantage, as in a number of arches of a decorative character of the same radius and span, as in an arcade. The cost and labour of cutting and rubbing will here be saved. Again, the ornamental moulded brick affords a comparatively cheap substitute for carved work, when many similar arches are required. Another advantage in using moulded arch bricks is that for external work they are harder and more durable than the soft rubbers, which are often of an inferior quality. Not only is the cutting saved, but the surface skin of the brick as burned is left untouched, which is most desirable for weather-exposed work. The colour also of the bricks as burned is more pleasing and varied in tint.

##### EXAMPLES OF APPLICATION.

The value of the brick impressed with ornament is its suitability for plain arches, as, for example, the voussoirs under an ordinary label moulding as in sketch 1. The label brick is required to give character to the arch. Nothing looks commoner or in worse taste than these ornamental arch bricks set flat with the wall without a label moulding, as we often see over the windows and doors in new houses and tenements. The ornament looks out of place in such a situation. We strongly object to the whole of the brick face being covered by ornament, which should be confined to a part only of





the depth. A very effective arch, suitable for a Gothic arcade, may be formed of two members, or arch rings, one within the other, the outer one in the same plane as the wall over. This outer arch can be built of bricks having a flat diaper as a trefoil in the centre of each voussoir, which thus forms a continuous band of ornament imitating carving. A similar band of diapers can be formed in the lower ring in the angle made by it with the soffit of the outer ring. Bricks of this kind are manufactured by Mr. James Brown, of Cannon-street. The object of the ornamental arch brick should be to confine the flat ornament to lines or bands in the plain face of the brick. When it covers the voussoir the idea of an arch is lost, and the appearance of strength and compression ignored. The arch certainly is not the place for ornament of this character, and we prefer the moulded voussoir for ordinary work.

#### ITALIAN ARCHES.

The Italian architects are masters of brick detail, and their arches to their Gothic buildings are particularly worth notice, especially the moulded arches, of which we have already given an example from the Cathedral of Monza. Sketches 3 and 4 represent another very beautiful and elaborate group of mouldings and enrichment round a circular window in the Broletto at Brescia, which is illustrated in Fergusson's "Handbook." It will be noticed the bricks are of different sizes and depths, the largest being the ovolo and cavetto forming the deep-shadowed member

in the inner portion of the arch. As before observed, the radiating joints are not continued through the whole series, but break joint at the principal divisions. The band of half-circles, quatrefoiled, is introduced with much effect under the outer label member, and in the same surface or plane as the wall. This kind of flat ornament is always more agreeable when introduced as bands below projecting members or between mouldings; the latter are more suitable as a relief at the intrados or lower portion of the arch.

#### THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MEDIEVAL CHRISTIAN ART.—XII.

By GEORGE ASHDOWN AUDSLEY, F.R.I.B.A.  
(Author of "Handbook of Christian Symbolism," and several works on Architecture and Art.)

IN the preceding article we alluded to the arched member which is so frequently seen spanning the field of the Aureole, and which the Italian artists commonly represented as part of the frame or structure of the attribute. We have now a few words to say with reference to the probable origin and intention of this feature. There can be little doubt, we venture to think, that it was originally introduced to represent the "bow in the cloud," or the rainbow, in allusion to the vision of Ezekiel:—"And above the firmament that was over their heads was the likeness of a throne, as the appearance of a

sapphire stone: and upon the likeness of the throne was the likeness as the appearance of a man above upon it. And I saw as the colour of amber, as the appearance of fire round about within it, from the appearance of his loins even upward, and from the appearance of his loins even downward, I saw as it were the



FIG. 34.

appearance of fire, and it had brightness round about. As the appearance of the bow that is in the cloud in the day of rain, so was the appearance of the brightness round about. This was the appearance of the likeness of the glory of the Lord." We have given this passage in full, for it has an important bearing on the subject under discussion; and was doubtless closely studied, in letter and spirit, by the Mediæval artists in rendering the Aureole and Glory.

In some examples more than one bow are



FIG. 35.

introduced. On this point, Didron remarks: "When God is represented sitting within an Aureole, His feet are frequently placed upon the rainbow; a second rainbow supports His back, and a third forms a pillow for His head. This is a fine conception, especially when the field of the Aureole is blue, studded with golden stars, and the border of a greyish colour and undulating like clouds. The two rainbows of the head and back are often suppressed, for the Deity needs no support; in this case the rainbow of the feet





FIG. 36.

is in some instances replaced by a carpet of gold, starred with silver." In Fig. 30 the rainbow is omitted, and the figure is depicted standing upon small clouds. The glory of heaven, expressed by concentric arches of light or rainbows, is beautifully rendered in a miniature of the "Triumph of the Lamb," in an *Evangelium* illuminated for Charles the Bald. Here, however, the arches or bows of light span the upper half of the subject, and are outside the circular Aureole which surrounds the Lamb of God.

The careful examination and comparison of a considerable number of examples disposes us to question whether it was invariably the artist's intention to represent the "bow in the cloud" by this arched feature of the Aureole; but that such was his intention in many cases is clearly shown by his treatment of it, in both form and colour. In the circular Aureole shown in Fig. 36, from the "Imperial Dalmatic," the arched feature, on which Christ is seated, seems evidently intended for a rainbow; whilst the two narrow arched lines which cross the field of the Aureole given in Fig. 37, from a late Greek painting, do not clearly indicate any such origin. Here the arched features serve as a seat and a footstool.

The form of Aureole of which we are now going to speak appears to have grown out of the desire to provide an appropriate seat for the figure invested, and at the same time to adapt the general outline to the seated figure. A characteristic example of this peculiar treatment is furnished by the central panel of the golden cover of the *Evangelium* just alluded to, an outline drawing of which is given in Fig. 34.

In this example two circular portions are introduced, the lower one slightly overlapping the upper and larger one. The idea of a seat is clearly conveyed by the ends of a cushion being indicated where the circles meet. Another circular form of small size serves as a footstool. Aureoles of this description have most certainly a very material character, far removed from the original idea of luminous clouds or radiance. Didron gives two illustrations of compound Aureoles very similar to that of Fig. 34. In one, the lower portion is circular, whilst the upper

part is lenticular in form, and the cushion appears at the junction. This Aureole invests a figure of Christ. It is from a fresco of the 11th century in the church of Montoire (Loire-et-Cher). In the other example, from a 10th-century miniature, the Virgin Mary is seated on a lower portion of irregular outline (probably intended to be circular), whilst the upper part is nearly a perfect oval.

In Fig. 35, which is taken from the sculptured tympanum of the portal of the church of St. Trophime, at Arles, a work of the 12th century, an oval Aureole is seen, but with a treatment of the arched member which seems to convey the idea of the compound Aureole just described. The arched portion which spans the field in this instance can hardly be construed into the likeness of a rainbow; indeed, the sculptor has, by his system of ornamentation, done his best to inform the observer that the arched seat for the figure is a part of the framework or border of the Aureole. In this respect it resembles the Aureoles represented in Figs. 5 and 31. In Fig. 35 the portraiture of the Deity is crowned, but is not invested with the Nimbus, furnishing a noteworthy and comparatively early example of the use of the Aureole alone investing the figure of the Deity. Had this been a work of late art one would not have wondered at the omission. In the case of the portraitures of the Saviour and the Virgin Mary, in Orcagna's celebrated fresco of the Last Judgment, in the Campo Santo, at Pisa, fine lenticular Aureoles appear; but instead of their heads being invested with the usual circular Nimbus, they have a bright radiance extending from them beyond the margins of the Aureoles. A drawing of the Virgin Mary from this fresco will be given in our next article.

It has been already remarked that the artists of the Middle Ages adopted the double or compound Aureole with the view of adapting the general outline or shape of its field to the proportions and forms of seated figures. Now, we will also observe that, with the same view, they have introduced several modifications of the lenticular and oval Aureoles for standing figures. One instance

of this latter treatment may be described here. In the tenth century manuscript of Saint-Sever, preserved in the Royal Library, at Paris, there is a miniature in which the Deity appears in a Glory. Here the main portion of the Aureole is reduced in size, length being secured by the addition of lobes at top and bottom. The upper lobe receives the large tri-radiated Nimbus, whilst the lower one surrounds the feet of the figure. Outside the margin of the Aureole are several layers of fleecy clouds, which extend its effulgence outward in gradations of intensity. The singularly self-supporting effect imparted to the Aureole by this treatment, and the idea of dignified motion—the coming of the Son of Man in the clouds of heaven with power and great glory—which is conveyed to the mind by the attitude of the figure and the disposition of its surroundings, render this miniature worthy of careful study.

The forms which appear to be best suited for a throned or seated figure, with outstretched arms, are the circle and quatrefoil, and both these have been frequently used by Byzantine artists and those working under Byzantine influence. One of the most beautiful and interesting examples of the circular Aureole known to us is that which adorns the magnificent dalmatic, known as the Imperial Dalmatic of Pope Leo III., preserved in the treasury of the Cathedral of St. Peter, at Rome, a most elaborate specimen of embroidery of Byzantine origin, attributed to the 12th century. We give, in Fig. 36, a drawing of an important part of the embroidery of this dalmatic, in which the Aureole alluded to appears. The Aureole, it will be observed, is a large and plain circular disc, spanned in its lower portion by a rainbow—evidently "the bow that is in the cloud in the day of rain" is here intended—and having, issuing from its field near the edge, the symbols of the four Evangelists carrying the books of their Gospels. Seated upon the rainbow, and with its feet resting upon the two winged wheels "full of eyes, round about" which the Byzantine artists have derived from the vision of Ezekiel, is a beautiful portraiture of Christ. The right arm is outstretched, and the left hand rests upon a large open book. The head is invested with a large circular, tri-radiated Nimbus, on the rays of which are inscribed the Greek letters  $\Theta$ ,  $\Omega$ ,  $\Lambda$ . Adjoining the Nimbus, on the field of the Aureole, are inscribed the Greek monograms of our Saviour's name,  $\text{IC}$ ,  $\text{XC}$ . Around the Aureole proper is the region of heaven, studded with the sun, moon, and many stars; above the Aureole stands the cross of Calvary, with the crown of thorns, the spear, and the sponge—emblems of the Passion; and on each side and nearly surrounding the Aureole are representations of the choirs of angels, the Blessed Virgin, and numerous saints. This, taken altogether, is a most interesting iconographic study, and probably one of the most beautiful illustrations of the Glory to be met with in the entire range of Mediæval art.

Another interesting and uncommon example of the Glory is to be seen in a late fresco in the church (Panagia Phaneroméni) of the great Convent of Salamis. An outline drawing of this is given in Fig. 37. Here the Aureole is circular, but far from plain in its treatment, being intersected with two quadrangular forms with curved sides, forming an eight-pointed star, and covered with numerous lines radiating from the centre. Two arched lines span its lower portion, serving as a seat and a footstool for the portraiture of our Lord. The Aureole appears as if borne by four cherubim. The figure is that of Christ coming in glory as the Supreme Judge. The head is invested with the Byzantine tri-radiated Nimbus; and the right hand is raised in the act of blessing, according to the form authorised by





FIG. 37.



FIG. 38.

the Greek Church. The intention of the artist is by no means clear with reference to the two quadrangular forms intersecting the field of the Aureole; but we may point out a treatment almost identical in the Nimbus of God the Father, in our illustration Fig. 21, in Article VII. It seems to be an extension of the idea, whatever it may be, of the quadrangular, hollow-sided Nimbus, as illustrated in Fig. 20 in the same article.

Cusped or foiled Aureoles are sometimes met with, although they are by no means so common as the lenticular, oval, and circular forms. A painting, of 12th-century date, in the crypt of the Cathedral of Auxerre, furnishes us with a good example of an Aureole in the form of an ordinary Gothic quatrefoil. A drawing of this is given in Fig. 38. The small portion outside the dotted line has been destroyed, but we have restored the part, without, however, attempting to insert the missing symbol of St. Mark, so as to show the general form entire. The quatrefoil Aureole is admirably suited for a throned figure, especially when accessories are introduced, as in the present instance. There is another and very fine example in the west rose window of the Cathedral of Chartres. In this instance the figure of Christ is represented seated, and with arms outstretched and extending into the lateral foils of the Aureole. His throne, head, and hands have, accordingly, each their special part of the field of the quatrefoil. In the Auxerre example, the form was probably adopted with the view of accommodating the two seven-branched candlesticks, and giving an opportunity for the addition, in an artistic manner, of the symbols of the Evangelists. These symbols appear in small circular Aureoles, partly hidden behind the cusps of the chief attribute. There is little doubt that in such Aureoles as appear in Figs. 36 and 38, the artists' intentions were to set forth the region of heaven, the immediate surroundings of the Deity, and the centre of His glory, rather than the effulgent cloud-like or material radiance which is expressed by the more common elongated Aureoles, moving unaided through space or borne by numerous angels.

We may now say a few words on a form of the Aureole, the signification of which has much exercised students of Christian Iconography. We allude to the form which displays on its field radiating bars, like the spokes of a wheel, and which was often used by the Byzantine artists of the 11th and 12th centuries. It rarely appears in Western art. This peculiar treatment of the Aureole is met with in representations of the Transfiguration. According to the *Byzantine Guide to Painting*, the Transfiguration is painted thus:—"A mountain with three peaks. Upon the

centre one Christ stands clothed in white garments; He blesses. *All round Him is a light with rays.* Upon the peak to the right stands Moses, holding the tables of the Law; upon the peak to the left stands the prophet Elias. Both regard Christ in a supplicating manner. Below Christ, Peter, James, and John appear in prostrate positions, with heads gazing upwards, and lost in ecstasy." In paintings executed according to these directions, the bright light which surrounds Christ is expressed by an Aureole of circular or lenticular outline, whilst the rays, usually eight in number, proceed from the centre of the Aureole and extend some distance beyond its margin.

Transfiguration, instead of standing on the central peak, Christ is lifted up in the Aureole. As Didron remarks, alluding to this treatment, "the figure of Christ is affixed to this wheel-like glory, and might be imagined to be nailed to an instrument of torture; for the martyrdom of St. George, who suffered death upon the wheel, is thus commonly represented. This singular treatment is rarely met with in Western art; it is, indeed, seen only in works which betray at least an indirect Byzantine influence; as for example in one of the three great windows in the west gable of Chartres Cathedral." This authority seems to favour the idea that the long



FIG. 39.

The idea to be conveyed by this form of Aureole is obscure. It may very probably have been intended to express the name, Jesus Christ, after the fashion of the old Greek monogram, in which the initials I, X, of the words 'Ιησους Χριστος, are united into a wheel-like device, as may be seen in the ornaments of the Church of St. Demetrius, at Thessalonica; here the *iota* (I) is formed into a Greek cross by the addition of a horizontal bar, a very commonly adopted expedient. In certain representations of the

radiating bars, which issue from the Aureole, have some symbolical connection with the five witnesses—Moses, Elias, St. Peter, St. John, and St. James; but we consider that the fact of there being eight instead of five rays or bars, and their assuming a strictly geometrical arrangement, clearly refutes the idea. Nor, indeed, is our own supposition, which only applies to groups of six or eight bars, always supported; for occasionally, though very rarely, more than eight are introduced;



but in such cases the wheel-like treatment is abandoned by the omission of the fellow or ring. In the Transfiguration depicted in the Cathedral of Monreale, near Palermo, the eight bars (straight lines of blue and white) are introduced. The three lower ones certainly reach and disappear behind the apostles, at the foot of the mount, the lateral bars passing behind Moses and Elias. This example, though apparently supporting Didron's idea that the rays are in some way related to the witnesses, does not overthrow our suggestion.

On the back of the "Imperial Dalmatic," already spoken of, is a most interesting representation of the Transfiguration, which, in the treatment of the Aureole, supports our opinion that the rays or radiating bars have no connection with anything beyond the attribute or the figure invested. We give an outline drawing of the figure of Christ, with the complete Aureole, in Fig. 39. The figures of the apostles are placed far away at the foot of the mount, and none of the rays even point in their direction. In this instance there appears to be no vertical ray to suggest the cross, or to carry out the idea of the monogram formed of the I and X. The lozenge-shaped field of this aureole is worthy of note.

In certain representations of the Transfiguration three vivid rays of light, unmistakable in their intention, descend towards the apostles in the foreground; but these have no connection with the Aureole. In an ivory carving of 12th-century workmanship the figure of our Lord has no Aureole; but three broad divergent rays issue from its sides and feet and flood the apostles, who seem to shrink from their overpowering brilliancy. And in another representation of the event, in a Russian bronze casting containing scenes from the life of Christ and the Virgin, the figure of our Lord is invested with a circular Aureole covered with stars and divergent lines; and, in addition, appear the three great rays descending on the apostles, who crouch towards the ground to hide their faces from the great glory. In neither of these examples have Moses and Elias any rays directed towards them.

(To be continued.)

#### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS sheet completes the first dozen plates of portraits of British Architects given in our pages this year. The series commenced in the opening number of the present volume. The first photograph reproduced to-day is of the late Mr. E. C. Ayton-Lee, F.R.I.B.A., whose death at the early age of forty-four we recorded only a few weeks since. One of his last acts was to send us this portrait. He was conspicuous as a figure draughtsman and bold delineator of detail, working with genuine enthusiasm for his art, and having the great advantage of material aid from his uncle, the late Mr. Octavius E. Coope, who recognised the great promise of his relative, and assisted him with his influence and patronage. Mr. E. C. Lee, as he was better known, came from the office of Col. R. W. Edis, F.S.A., and although not a pupil of the late Wm. Burges, A.R.A., was much influenced by that master. He was among the first promoters of the Architectural Association Sketch-book, and founded the Colour Decoration Class. He was President of the Architectural Association in 1880. He gained the Soane Medallion in 1869, and the Pugin Studentship in 1870. He was a member of the "Goths and Picts." In 1869 he became an Associate, and in 1881 a Fellow of the Institute. His last work of importance was St. Thomas's, Brentwood, and he did a lot of work in Essex. He twice built St. Mary's Church, Whitechapel; Mission Church at Collier-row, Romford; St. Paul's Church, Bentley, and another at West Greenwich. He restored churches at Hornchurch, Dagenham, and Ilford, and built St. Matthew's Mission House in West-

minster; schools at Barrow-in-Furness, others at Brentwood; a bank at Colchester; Berechurch Hall for Mr. O. E. Coope, M.P.; also Gower Walk Schools at Whitechapel; The Grange and cottages at South Weald, Essex; vicarages at Bentley and at Horsell, near Woking, and various houses in London, Bentley, and Shere. He was good at water-colour drawing, and had a love of the beauties of nature. He changed his name to Ayton-Lee in 1887. His portrait was taken by Mr. Bassano, of Bond-street, W.

Mr. Thos. Manly Deane, M.A., of Dublin, was a pupil of the late Wm. Burges, A.R.A., and was associated in his student days with Mr. Ayton-Lee. He won the Royal Academy Travelling Studentship in 1876, and studied in Italy for a year. He is a graduate of Trinity College, Dublin. For some years he has been a partner with his father, Mr. Thomas N. Deane, R.H.A., whose portrait we gave on Feb. 28 last. The firm have carried out the Museum of Science and Art and National Library, Dublin, which was won in competition; various branch offices through Ireland for the Provincial and Munster Banks have been erected by them; the Royal Exchange Insurance Office, Dublin; the Commercial Union Insurance Offices, Dublin; the town hall and markets, Bray, co. Wicklow; the rebuilding of Lough Crew House, co. Meath, for Mr. J. L. Napier, D.L.; the M'Arthur Hall, Belfast; and several country houses in various parts of Ireland. Messrs. Deane and Son's design submitted in competition for the Imperial Institute will long be remembered for its ability and the grandeur of the scheme. The Anthropological Museum and the Physiological Laboratory at Oxford are among their recent works, and also a house for Master Bruce, near Dublin; the Church of Ireland Training College, Dublin; and other works of more or less importance have been finished from their designs. Mr. Deane's portrait comes from the studio of Messrs. Werner and Son, of Dublin.

Mr. John F. Bentley was for some years with Mr. H. Clutton, and his work is well known. Much of his time has been spent on restorations and additions, and on work accessory to architecture, such as fittings and decoration, besides designing silver, brass, and ironwork. The work at Carlton Towers, York, named in the subjoined brief list of works, is perhaps as thorough and complete a piece of Gothic work as any done since the "revival." Mr. Bentley's portrait was produced by Mr. Deneulain, of the Strand. Some of the buildings mentioned among the following are enumerated in Eastlake's "History of the Gothic Revival" as notable examples:—Fittings, furniture, and decoration of the whole of the interior, Carlton Towers, Yorks; Buxstead Hall, Uckfield, Sussex; house, Sydenham; Sunnyside, Rockhills, Sydenham, Surrey; house, Ascot; Westminster Diocesan (St. Thomas), Seminary, Hammersmith; Cupper's Field, Yorkshire; Beaumont College, Old Windsor; Bramley Manor, Surrey; Convent and Chapel, Taunton; City of London Distillery; offices, Messrs. Sutton and Co.; St. Francis of Assisi Church, Notting-hill (baptistery and schools); St. Mary's Church, Chelsea; St. Mary of the Angels (chapels and baptistery), Bayswater; St. Mary's Church, Kensal; Corpus Christi Church, Brixton; Church of the Holy Rood, Waterford; and the Presbytery at Doncaster.

Mr. Hippolyte J. Blanc, F.I.A.Scot., was a pupil of the late David Rhind, is a Past President of the Edinburgh Architectural Association, having been elected in 1871 and again in 1886 and 1887, and one of the Vice-Presidents of the Royal Scottish Society of Arts, and President of the Edinburgh Photographic Society. For several years he held an appointment in H.M. Office of Works, Edinburgh. Among executed works are Christ Church, Episcopal Church, Mayfield Free Church, West Port Free Church, St. Margaret's Episcopal Chapel, St. Matthew's Church all in Edinburgh; and at present engaged upon designs for the reconstruction of St. Cuthbert's Church, Edinburgh. In the provinces: St. James's Church, Paisley; Broxburn U.P. Church and manse; West Kilbride U.P. Church; Woodend Free Church and manse; Kirkliston Free Church; Greenbank Church, Greenock; restoration of St. Duthus Church, Tain; Free St. Luke's; Broughty Ferry Free Middle Church, Perth; All Souls', Invergowrie; Lasswade Episcopal Church, and probably the most important church built in Scotland during the past ten years, the Coats Memorial Church, Paisley, being erected to the memory of the late Thomas Coats by the

members of his family. Of mansion houses, examples are at Ayr, Southdun, Wick, Broughty Ferry, and Ferguslie Park, Paisley, for Colonel Elen Coats. Of street architecture, there are the Edinburgh Café Co.'s new premises, properties at Paisley, Broughty Ferry, and residences on an extensive scale in South Bruntsfield-place; while among buildings for commercial purposes on a large scale are brewery establishment of Messrs. John Aitchison and Co., and brewery offices for Messrs. D. and J. M. Bernard, Gorgie. When, by the munificence of the late Mr. Wm. Nelson, an offer was made to the Government to defray the cost of dismantling the great hall of Edinburgh Castle, so long lost to view through re-appropriation, the works of restoration were intrusted to, and are now being carried out by Mr. Blanc, who has also recently restored the ancient tower known as the Argyle Tower, and which now forms so prominent a feature in the group of the castle buildings. In 1887 Mr. Blanc was joined in partnership by Mr. James Gordon, whose early death was reported at the beginning of last year. Mr. Blanc's photograph comes from the studio of Mr. W. Crooke, of Edinburgh.

Mr. Robert J. Johnson, F.S.A., F.R.I.B.A., after being articulated in the country, passed some time in Sir Gilbert Scott's office, being much engaged, amongst other matters, on the drawings for the Foreign Office in the Gothic style, which was abandoned in favour of the present building, and he subsequently travelled abroad, particularly in France. On his return, the "Specimens of Early French Architecture" was published, and he settled in Newcastle-upon-Tyne, where he has since carried on an extensive and varied practice, building and restoring many churches, and erecting important buildings of various descriptions. Amongst these are the restoration of the interesting Saxon churches at Monkwearmouth and Escombe, various works at Brinkburn Priory, St. Giles's Church at Durham, the costly fitting of the chapel at Castle Howard, works at Woolbeding in Sussex, and the great reredos, choir fittings, and other works in the church of St. Nicholas at Newcastle-on-Tyne, including its general arrangement as the cathedral for the new diocese. Of new churches, there are St. Anthony and St. Stephen at Newcastle; All Saints, Gosforth; All Saints, Skelton; North Gosforth, Wylam; St. James, Gateshead; Sherburn, Burnmoor, Bishop Auckland, Jarrow; St. Paul, Middlesbro; St. Hilda, Whitby, and many others; several large schools for the Newcastle School Board, and many other local Board schools, church schools, &c. The extensive buildings for the Durham College of Science at Newcastle; and the complete establishment of the North-Eastern County School at Barnard Castle. Banks for the principal private banking firms in Newcastle and elsewhere, and several insurance offices and other commercial buildings. Pendover, Kirkclevington, Upsall Hall, Blindburn, and other mansion houses, and numerous vicarages and smaller houses. Mr. Johnson has been diocesan surveyor for Durham and Northumberland since the passing of the Dilapidation Act in 1871. His photograph is the work of Mr. W. P. Glaisby, of York.

Mr. Edward Augustus Grüning, F.R.I.B.A., was articulated 1853-1858 to the late Professor Donaldson, and studied also at the Royal Academy and University College. After completion of his articles, he was engaged for some time on other matters, gaining experience in mercantile affairs in a leading merchant's office in the City, and in engineering in railway construction, having been also employed as clerk of works at Broadlands, on the estate of the late Lord Palmerston, K.G., and in the Inspector-General of Fortifications Department at the War Office. Elected an Associate of the R.I.B.A. in 1860, he became a Fellow in 1869, and served on the Council, 1873-1876, and again from 1885 to the present time; also as an active member of the Board of Examiners from the commencement of the obligatory examinations for associates. Established as an architect in Gresham House, Old Broad-street, in 1862. The following is a list of the principal buildings erected by him. Office buildings:—Bartholomew House, Bank, E.C. (including Alliance Bank); 144, Leadenhall-street; 113, Cannon-street (corner of St. Swithin's-lane); 31, Throgmorton-street; 14, Austinfriars; 11, Cophall-court, Throgmorton-street; 22 and 23, Change-alley; 11, Tokenhouse-yard; 1, Crown-court. Premises for private firms:—Colonial Bank, Demerara;



Messrs. F. Huth and Co., 12, Tokenhouse-yard; Messrs. Frühling and Goschen, 12, Austinfriars; London Banking Association, 57, Old Broad-street; new galleries and alterations, Messrs. Christie, Manson, and Woods, King-street, St. James, and two houses adjoining in Duke-street; many alterations, including the Council of Foreign Bondholders, in Moorgate-street, Standard Bank of South Africa, Clement's-lane, and the fitting up of many banking and merchant's offices. Hospitals:—German Hospital, Dalston (joint architect with the late Professor Donaldson); additions to out-patients' department, &c. (as sole architect), Seaside Convalescent Hospital, Seaford. Hotels:—Royal Hotel (De Keyser's), London, E.C.; Tilbury Hotel, Tilbury; Excise Coffee House, 56, Old Broad-street, and various alterations, &c. Warehouses, &c.:—Union Oil Mills, Rotherhithe; London Seed Crushing Co., East Greenwich; Sales, Pollard, Lloyd, and Co.'s tobacco factory, Farrington-road; Palm Kernel Mills, Limehouse; warehouse, New-street, E.C.; Tilbury Docks electric light engine-house, and various other works. Private houses:—4, Seamore-place, Park-lane; 28, Hertford-street, Park-lane; Alton House, Roehampton Park (alterations and additions, stables, lodge, conservatory, &c.); 10, Grosvenor-street, W., and stables; two houses on Hampstead Heath, "Beechwood" and "St. Mary's"; Tilbury Docks, officers' houses; twelve houses, The Terrace, Richmond; smaller houses, and many alterations and additions; stables, &c., in London and various parts of the country; also some few restorations of old churches and old country houses. Schools, &c.:—St. George's German and English Schools, Whitechapel; Anglo-German Schools, Bristol; German Gymnasium, near King's Cross. Mr. Gruning holds the appointment of honorary architect to the German Hospital at Dalston, is on the livery of the Goldsmiths' Company, and on Her Majesty's Commission of Lieutenancy for the City of London. The portrait is from a photograph by Mr. Thos. Fall, of Baker-street.

Mr. Paley was born at the vicarage of Easingwold, near York, in 1823, and became pupil to the late Mr. Edmund Sharpe, of Lancaster, in 1838, and subsequently partner in 1845. The firm carried out the rebuilding of the parish church of Wigan, new churches at Knowsley, Lever Bridge, Rusholme, and other smaller ones; new halls at Capernwray, in Lancaster, and Ince, near Chester; large additions to the County Lunatic Asylum and Castle at Lancaster, &c. From 1851 to 1868 Mr. Paley practised on his own account, and designed and carried out several new churches—viz., St. George's and St. James's, Barrow-in-Furness; St. Peter's Catholic Church (with presbytery, schools, and convent) at Lancaster; Poolstock, near Wigan; Ringley, Allithwaite (with parsonage house and schools), Aughton, St. Thomas's, Blackburn; Bradford (Holy Trinity), Bury, Bradshaw, Hoddesden, Higher Walton, Penwortham, Ince, Wrightington, Lowton, Walton, in Cumberland; Walney Island, Rossall School Chapel, Pennybridge, Blawith, Singleton, Quernmore, Woodlands, Over Darwen, Thwaites, Livesey, St. Mark's, Preston; Stockton Heath; new parish church, Bolton-le-Moors; Catholic churches at Garstang and Yealand Conyers, &c. Restoration and enlargements of the parish churches of Winwick, Cartmel, Lancaster, Burnley, Easingwold, Crayke, Ulverston, Kirkby Lonsdale, Poulton-le-Fylde, Penn, Caton, and others. At Lancaster, the Royal Albert Asylum, Wagon Works, new cemetery buildings, savings bank, Royal Grammar School, and several smaller buildings. At Barrow-in-Furness, large ship works and jute mill, schools, new bank, old railway-station, &c. For Furness Railway Company, stations and hotel at Furness Abbey, Grange, &c.; hotel at Grange; mansions at Abbots-wood (for Sir J. Ramsden), Wennington, Dalton, Newfield Halls, Browhead, Windermere, and numerous smaller buildings, schools, parsonage houses, &c. Mr. Paley became associated with Mr. H. J. Austin in 1868, and since that date the firm have designed and carried out above 40 new churches, many large and important—viz., Mossley Hill, Liverpool (with parsonage); Kirby (for Lord Sefton); the Saviour's and All Saints, at Bolton-le-Moors; St. Mary's, Bewick; Higher Broughton; and St. John's, Cheetham Hill, Manchester; St. Clement's, Salford; Millom, Bettws-y-Coed; parish church, Leigh; St.

Laurence, Morecambe; Atherton, Winmarleigh; Howe Bridge, Cross-Crake, St. Cuthbert's, Darwen; Walton, near Warrington; St. John's, Greenock; Halliwell, Daisy Hill, St. Anne's-by-the-Sea, Halton; St. Cross, Knutsford; Hutton-roof, Mansergh, Thornton, and Leck, nr. Kirkby Lonsdale; Largho, Scorton, Pilling, Westleigh Mill, St. Barnabas, Crewe; Parish Church of Dalton-in-Furness, Lower Ince, Mission Chapel at Scarborough, Grimsargh, Burnage, Finsthwaite, Torvor, Burton-in-Lonsdale, Cloughfold, &c. Restoration (and enlargement in some cases) of the parish churches of Bowness, Hever-sham, Lytham, Gt. and Little Ouseburn, Melsonby, Alderley, Broughton-in-Furness, Penn, Bolton-le-Sands, Daresbury Eskdale, Great Harwood, Halsall, Kirkstall, Malham, Llanwrst, Fleetwood, Melling, Orton, Ormskirk, Fawley, near Henley-on-Thames; Westham, and Wilmington, nr. Eastbourne; Sedbergh, Dent, Colne, Prestwich, and other smaller ones. Grammar schools at Sedbergh, Skipton, St. Bees, and Giggleswick. Mansions: new wing at Holker (for the Duke of Devonshire), new tower and enlargement of Underley Hall (for Lord Bective), Thurland Castle, new wing and terraces at Fawley Court (near Henley-on-Thames), Dane Ghyll, Oak Lea, Dunningwell, Chapel Ridding, Windermere; Walton Hall (new offices and enlargements, &c., for Sir Gilbert Greenall), new hall, with stables, lodges, &c., for Lord Winmarleigh. Banks at Barrow and Lancaster, for Lancaster Banking Co., and bank at Barrow, for Cumberland Union Banking Co. Stores: Jubilee Institute at Lancaster, &c. His photograph was produced by Mr. Silas Eastham, of Southport.

Mr. Hubert Austin is the youngest son of the late Rev. Thos. Austin, M.A., rector of Redmarshall, Durham, and was educated at Richmond School, Yorkshire. In 1860 he was articled for four years to his elder brother, the late Thos. Austin, of Newcastle-on-Tyne (afterwards Austin and Johnson). On the completion of his articles he passed the Voluntary Examination in Conduit-street in January, 1864, and entered the office of Sir Geo. Gilbert Scott, on whose staff he remained till he became associated with Mr. E. G. Paley, in 1867. He was Pugin student in 1866, and the first secretary of the Spring-gardens Sketch-Book. He gained the competition for Christ Church, Ashford, Kent, in 1865, which church was built from his designs by the kind permission of Sir Gilbert Scott. A list of works carried out by the firm since his partnership with Mr. E. G. Paley is stated above. The churches at Mossley Hill, near Liverpool, Bettws-y-Coed, St. Barnabas, Crewe, Cloughfold, and Crawshawbooth were gained in competition from designs by Mr. Austin. The first premium for mountain churches, given by the Carlisle Diocesan Church Extension Society in 1873, was also gained, out of 56 competitors, by the firm from Mr. Austin's designs. The portrait given was produced at the studio of Messrs. Davis and Sons, of Lancaster.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary meeting of the Institute was held on Monday evening, the president, Mr. A. Waterhouse, R.A., in the chair.

#### GERMAN TECHNICAL MUSEUMS.

A paper on this subject, illustrated by plans and drawings, was read by Mr. Frank Granger, M.A., holder of the Godwin Bursary for 1889. The lecturer remarked that the industrial art and trade museums of Germany had been suggested to a great extent by South Kensington Museum; but close inspection revealed essential differences. A common practice in Germany was to locate industrial art museums in school buildings, the great principle in these institutions being that they were regarded from the student's point of view, not from that of the collector of curios. It was advisable to group objects of one kind together, so that the characteristic methods of a group of artists, a district, or a period could be seen in combination at a glance; the division of rooms by partitions and screens, as in Berlin and Hamburg, greatly facilitated this. In planning a trade museum it would be well, on scientific as well as on practical grounds, to group together, 1st, the materials employed in the industries of construction; 2nd, the materials employed in the

textile and allied industries. All the buildings the lecturer visited were characterised by great simplicity of plan. The rooms were square or oblong, and arranged along corridors, and, generally speaking, there was an absence of *tours de force* in the planning. In some of the larger buildings the corridors overlooked interior courts. The rooms in which textile objects were exhibited should not have the sun upon them; and accommodation should be provided for storage in an easily accessible manner. A library and reading-room should be provided in connection with each museum, and it should not be necessary to pass through the museum to reach the library, near which lavatories should be provided. The museum authorities in Germany preferred wood to iron for the framing of glass cases for exhibits. Extracts from the author's detailed reports on particular museums were given, commencing with the museum at Hamburg, erected from the designs of Herr Zimmermann at a cost of £120,000. It formed a closed quadrilateral with two interior courts separated by a central block. The greatest length was 343ft., and the greatest width 247ft. The Industrial Art Museum, Berlin, was from the designs of Gropius and Schmieden, and was constructed with stone basement and brick superstructure, with tile and terracotta bands. The library was on the ground-floor to the right of the entrance. The Dresden Museum of Industrial Art was in the same building as the school; and, as at Hamburg, the museum occupied the ground-floor, and the school the upper stories. The Trade Museum at Chemnitz was the best example of its class Mr. Granger inspected. It occupied the second story of the building of the local "Handwerkerverein," the floor below being devoted to their library; and consisted of four rooms opening into one corridor, while the further corridor led to a fifth room and a small library. The Mining, the Agricultural, and the Hygienic Museums, Berlin, were described, and also the Art Museums at Leipsic and Hanover, the Trade Museums in the latter town, and the Mineralogical Museum of the Charlottenburg Technical High School. The last-named example was housed in a fine new building, the main block being 600ft. long by 170ft. deep from front to front, with two large projecting wings. It had five exterior courts; the basement of the exterior was faced with red sandstone, while the upper stories were in yellow sandstone with white sandstone dressings. The principal staircases were of unpolished red granite. In the grounds were a chemical laboratory, a technical testing institution, and an engine-house. The Dresden Polytechnicum covered an area of 13,700 square feet, the technological, engineering, architectural, telegraphic, and electro-technical collections being all arranged with a view to their use in instruction. Several miscellaneous matters noted during his tour were mentioned by the lecturer. The scaffolding of the new buildings were usually constructed of square timber, and carried up to the top soon after operations were commenced. The bricks used for the interior walling of the new shops and residential blocks were ordinarily the local yellow. Some of the fronts were being faced with brick; the majority, however, were still faced with stucco in the old fashion, the brickwork being carefully adjusted to the stucco detail. At the Academy of Art, Leipsic, the ventilation and heating were kept independent. The slates were secured by hooks at the bottom; no leverage was allowed to the wind, and even in exposed situations such roofs had stood for thirty years without suffering much damage. As an instance of German professional practice, Mr. Granger stated that in the case of the University Library and of the Academy of Art at Leipsic, the buildings were not being executed under the superintendence of their designers, but the library under another architect, the Academy under the Municipal Building Inspector. At the close a vote of thanks was accorded to the lecturer on the motion of Messrs. E. C. Robins and T. M. Rickman.

At the last meeting of the town council of Wolverhampton, the School of Art Committee presented a report giving the names of three gentlemen selected for the office of head-master of the school in succession to Mr. A. Gunn, resigned. They were Mr. A. C. Jahn, of South Kensington; Mr. W. H. Gates, assistant-master at the Wolverhampton School; and Mr. G. Ward, of Rochester. Mr. Jahn secured the highest number of votes, and he was appointed at a salary of £250 per year.



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## ILLUSTRATIONS.

TRINITY HALL, CAMBRIDGE.—HOLY TRINITY CHURCH,  
WANSTEAD.—CRANBORNE MANOR HOUSE, DORSET.—  
CONTEMPORARY BRITISH ARCHITECTS.

## Our Illustrations.

NEW BUILDINGS, TRINITY HALL, CAMBRIDGE.

THIS is a new block of buildings, containing eighteen sets of undergraduates' chambers and Fellows' rooms. The materials are small, red, south country bricks, and yellow Ham Hill stone dressings. The roofs are covered with tiles of variegated colours from six different yards. The contractors are Messrs. Haigh and Thornton, of Liverpool, and the architects Messrs. Grayson and Ould. The Master's lodge is also being remodelled by the same architects, and an addition made to the college hall. The drawing illustrated is from the exhibition of the Royal Academy.

CHURCH OF THE HOLY TRINITY, WANSTEAD, ESSEX.

THE Church of The Holy Trinity, Hermon Hill, is now being built for the use of a rapidly increasing population, at George Lane, on the Great Eastern Railway. The plan of the church comprises a nave 102ft. long, 30ft. wide, and 55ft. high, with N. and S. aisles measuring altogether 62ft. across, with chancel, organ chamber, and vestries on the north side, tower and spire at the W. end of the N. aisle, and South porch. The nave is of five bays, of broad, massive arches on circular shafts, with pilasters and columns rising from the pillar capitals to the roof, and in each bay above are three low-pointed windows. The chancel is 40ft. by 24ft., apsidal ended, and is arcaded round the sanctuary with interlacing arches on marble columns, and marble roof shafts rising from the floor to the cornice. The three arches forming the eastern bay of the chancel contain a sculptured group of the Ascension. The altar is of large size, and is enriched with interlacing arches forming nine compartments, each of which contains a carved statuette, all in oak. The organ-chamber and vestries form a picturesque group on the north side of the chancel, and below them is the vault for the warming apparatus. A low stone wall, with metal cresting and gates, separates the nave from the chancel; and at the end is a large pulpit, enriched with carved interlacing arches, and on one side is a fine sculpture of our Lord in Majesty. Doorways for egress are provided at the east end of each aisle. The tower and spire stand at the west end of the north aisle, and will be a conspicuous feature when completed. The tower is 30ft. square outside the buttresses; the total height will be 170ft. The tower is of three stages, the lower one being again subdivided, and this forms one stage internally, making a handsomely-arcaded and groined porch. The style of the church is that which prevailed at the end of the 11th and the early part of the 12th century, and has been well and thoughtfully carried out, great variety being given to the mouldings and ornamentation. The nave of the church was built three years ago; the chancel and lower part of the tower are the gift of the Misses Butler, who have also contributed most liberally to the other parts of the work. Mr. S. B. Barton, of Newcastle-on-Tyne, is the

builder employed, and has carried out the work most satisfactorily under the direction of Mr. James Fowler, of Louth, architect.

CRANBORNE MANOR HOUSE, DORSET.—EXTRA  
MEDAL.

THE Manor House was the head lodge of Cranborne Chase, and in it were held the Hundred, Manorial, and Chase Courts. Of its erection there is no recorded date; but from time immemorial there has existed on the site a building mentioned in old records as "the Castle." In the Domesday Book the Manor is noted as having belonged to Queen Maud. It was subsequently held for a long period by the Earls of Gloucester, and eventually came to the Crown by King Edward IV., after which it was frequently granted to many great persons for life, until, in 1612, James I. presented it to Robert, Earl of Salisbury. It has remained in the possession of this family ever since, and is now the property of the present Marquis of Salisbury, to whose eldest son it gives the title of Viscount Cranborne. The house is ably described in the R.I.B.A. *Journal*, February 6th, 1890, by Mr. John P. Seddon, who visited it last year with members of the Committee of Architects of the Incorporated Church Building Society—when that body was hospitably received by Canon Cazenove, the present occupier—as follows:—"On a Norman foundation, and with sufficient remaining of that early period to indicate that its original plan was a remarkable and characteristic one, with half the ground story open and arcaded to form a covered approach, the main central block had been completed in the 13th century, and retains the beautiful corbelled parapets of that age, with additions of the Elizabethan period in the shape of projecting towers from the entrance façades, with parapets curiously copied from the earlier ones; with a cinque-cento architectural veneer on the opposite side with enriched pilaster buttresses, with a wing added by Inigo Jones, and a most picturesque and curious screen-wall, with gateway flanked by square lodges placed diagonally." There is an underground passage, now walled up, connecting the "larder" with the priory some few hundred yards to the eastward. The Chase and other Courts were held in the great hall, the prisoners being confined in the dungeons on the floor below. The arms over the N. porch are those of Sir Robert Cecil, K.G., first Earl of Salisbury. The building was for many years in a ruinous condition, but the whole has been well and thoroughly restored by the present Prime Minister.

J. E. MOWLEM.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 720.)

## CHIPS.

It is intended to fill the window in the gable of the north transept of Bristol Cathedral with stained glass as a memorial to Edward Colston. The work will be carried out from designs by Mr. J. L. Pearson, the architect to the Dean and Chapter, and towards the £1,000 required about one-third has already been promised.

Additions have been made to the Infectious Diseases Hospital, Portsmouth, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilator, and fresh air admitted by their improved air inlets.

A full-sized statue of Edward the Confessor, the gift of the Queen, and another representing St. Edmund King and Martyr, given by the corporation of Winchester, have just been placed in two of the vacant niches in the screen of Winchester Cathedral. They are the work of Mr. Boulton.

Mr. E. Onslow Ford's statue of General Gordon, a model of which forms the chief feature of the exhibition of sculpture in the Octagon-room at the Academy this year, was unveiled by the Prince of Wales on Monday. It represents Gordon riding on a gaily-caparisoned camel, and wearing the uniform of an Egyptian general. Both statue and pedestal are of bronze, and on the latter is the single word "Gordon."

At the London Bankruptcy Court on Friday, Mr. Registrar Brougham adjourned the application for the approval of resolutions in the case of Thomas Quinn, M.P. for Kilkenny, and builder and contractor in Islington, till June 6th.

The Buildings (Sanitary Registration) Bill was withdrawn from the House of Commons on Wednesday night.

## COMPETITIONS.

MENCE SMITH STUDENTSHIP.—The Mence Smith Travelling Scholarship of £50, offered in competition by the Painters' Company for the best set of designs in decorative painting, and open to students of all Schools of Art within the Metropolitan area, has been awarded to Edward Gridal, aged 21, a student at the Regent-street Polytechnic School of Art.

OLDHAM.—The awards for designs for the new offices of the Oldham School Board have been made as follows:—1st premium, Mr. F. E. L. Harris, Chelmsford; 2nd, Messrs. Potts, Son, and Pickup, Manchester and Oldham; 3rd, Messrs. Smith, Woodhouse, and Willoughby, Manchester and Stockport. There were 31 competitive designs submitted.

WILLESDEN.—The competition for the new cemetery at Willesden has been settled, and the author of the chosen design is Mr. Charles W. Worlee, of 62, Welbeck-street, Cavendish-square, W., whose motto was "Terracotta." The scheme includes two chapels, a mortuary, and superintendent's lodge, provision being made for about 20,000 graves. The estimated cost of the buildings, &c., is £6,500. Great care seems to have been taken in this plan with the drainage, for which the site has a good natural fall.

## ARCHITECTURAL &amp; ARCHÆOLOGICAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—At the final meeting of the session, held on May 14th, the president declared that the following gentlemen had been elected to the various offices named for session 1890-91: President, T. Naden; vice-president, W. H. Lloyd; hon. treasurer, C. E. Bateman; hon. librarian, H. Beck; hon. secretary, H. R. Lloyd, A.R.I.B.A.; hon. auditors, A. T. Powell, chartered accountant, and E. F. Titley. Council to consist of four members and three Associates. Members: W. H. Bidlake, M.A., A.R.I.B.A., W. Doubleday, W. Hale, F.R.I.B.A., and W. H. Kendrick. Associates: F. B. Andrews, A.R.I.B.A., G. T. Bassett, A.R.I.B.A., and H. R. Bewlay. A hearty vote of thanks was passed to the president for the services he had rendered to the association during the past session, and the thanks of the association was also voted to the retiring officers. It was announced that the services of Prof. R. H. Smith, M.I.M.E., Assoc. M.I.C.E., had been secured as lecturer on "Statics," and that a number of members had already given in their names for the lectures.

MANCHESTER SOCIETY OF ARCHITECTS.—An exhibition was held on Friday, the 9th inst., at the meeting room of the Manchester Society of Architects (Diocesan Chambers), of the drawings and descriptive report of a tour in Belgium and a portion of Northern France, made by Mr. Ph. E. Barker, A.R.I.B.A., who had been selected, in a preliminary competition, as the holder of the Society's Travelling Studentship for last year. The Studentship, of the value of 50 guineas, was given on the condition of the holder submitting satisfactory proofs of work done during a tour of three months, and the Council of the Society, at a meeting held on February 20th, passed a resolution expressive of their satisfaction with the results.

The foundation-stone of the new public buildings and library for Oldbury was laid on Monday. The site is at the corner of Freeth-street and Birmingham-street. Hitherto Oldbury has been without a free library, and the offices of the various officials of the Local Board have been distributed over the town. In the new buildings all the officials will be accommodated, and there will be commodious Board and committee rooms. The lending library and reading-room will be on the ground-floor. Messrs. Wood and Kendrick, West Bromwich, are the architects; and the building contract of £3,000 has been taken by Mr. J. Dallow, of Blackheath.

Among the birthday honours we note that Mr. Trueman Wood, the secretary of the Society of Arts, has been knighted, Mr. George Bullen, late Keeper of the Printed Books, British Museum, Mr. W. C. Roberts-Austen, Assayer to the Royal Mint, and Major-General C. S. Hutchinson, inspector of railways under the Board of Trade, are made C.B.'s, while Mr. James G. H. Glass, superintending engineer to the Public Works Department, Central Provinces of India, is created a C.I.E., and Mr. R. Knox MacBride, Director of Public Works for Ceylon, receives the C.M.G. decoration

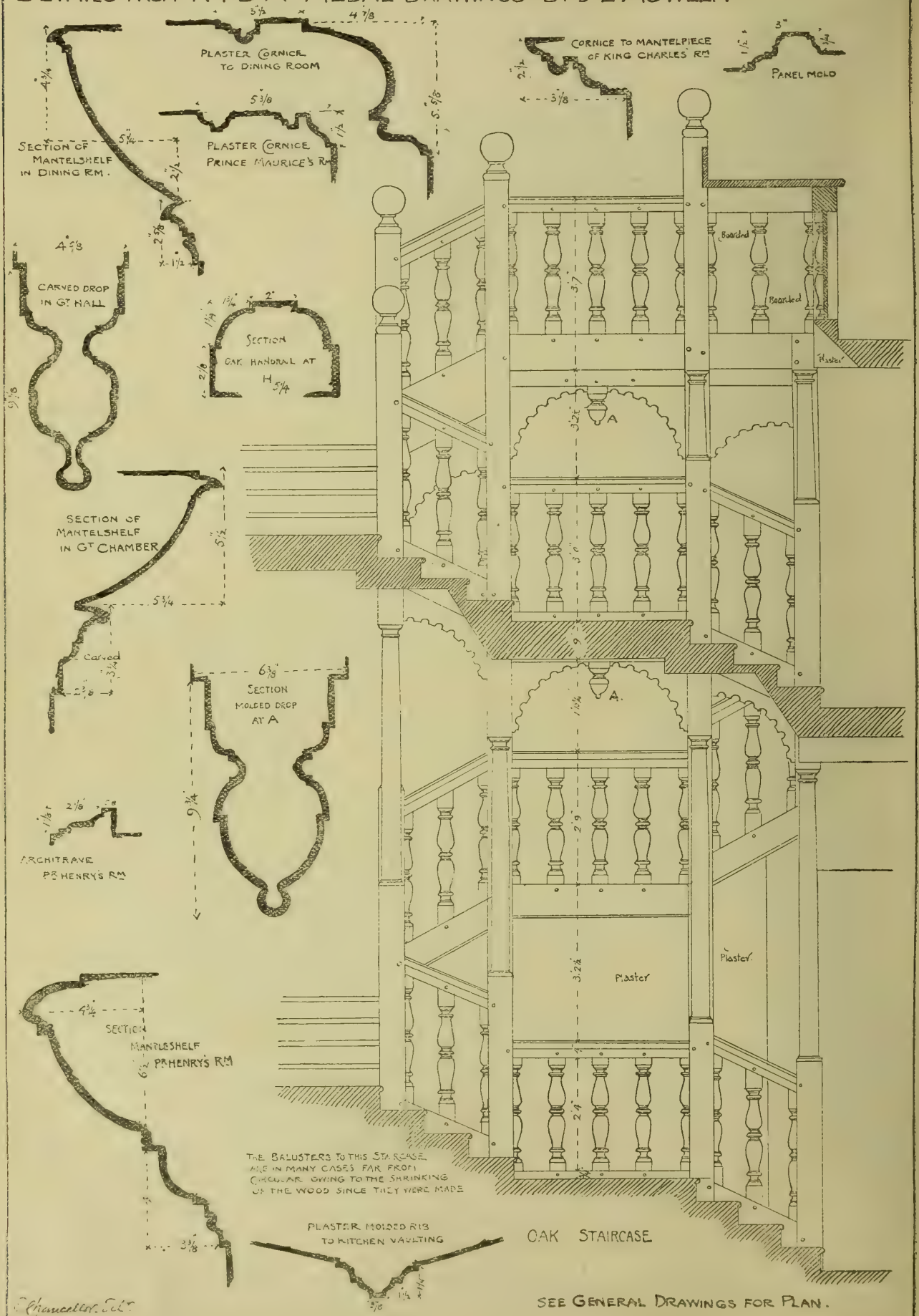






# CRANBORNE MANOR HOUSE DORSET.

DETAILS FROM R.I.B.A. MEDAL DRAWINGS BY J.E. MOWLEM.

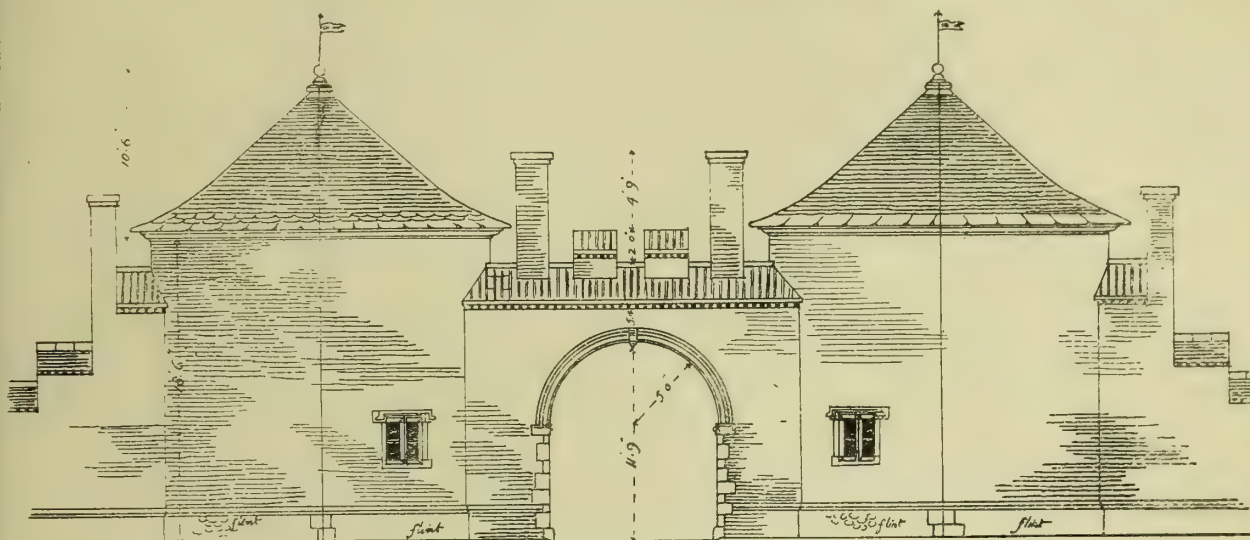




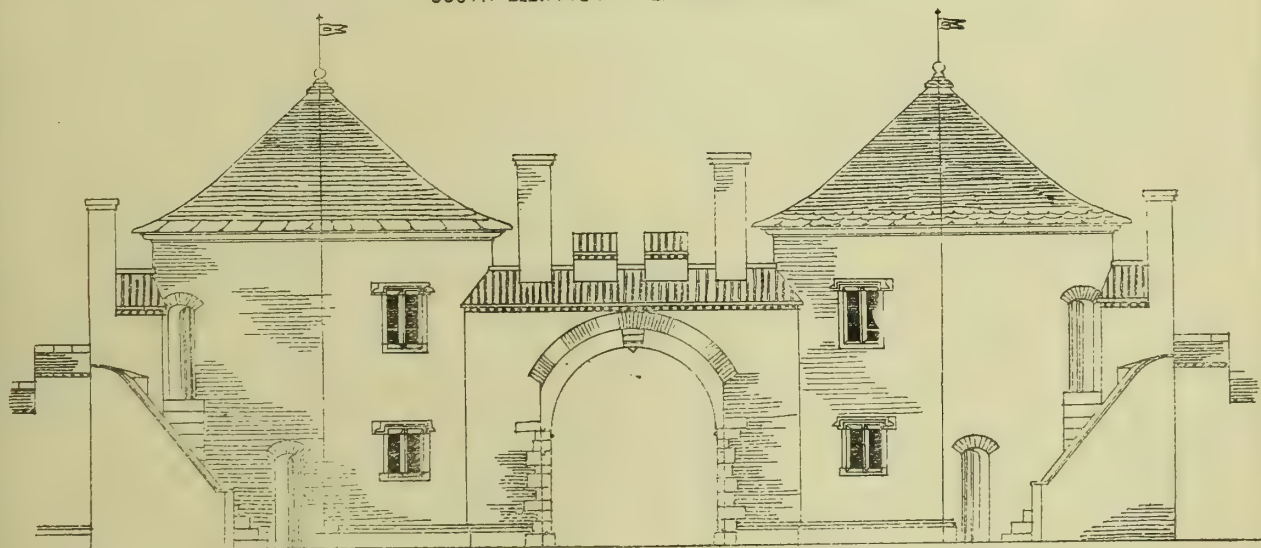
# CRANBORNE MANOR HOUSE DORSET.

## THE ENTRANCE LODGES.

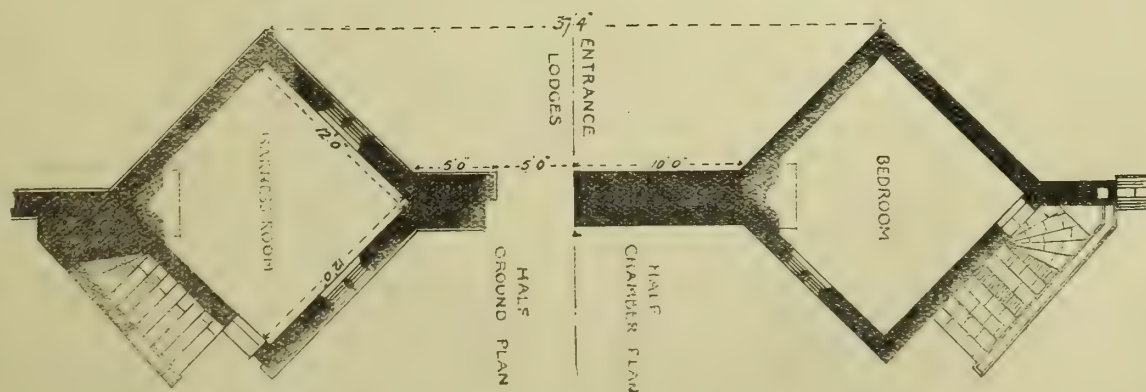
FROM R.I.B.A. MEDAL DRAWINGS BY J.E. MOWLEM.



SOUTH ELEVATION OF ENTRANCE LODGES



NORTH ELEVATION



E. H. Mowlem, Del.







## WAYSIDE NOTES.

THE scene of my daily labours being not more than one hundred miles from the parochial churches of St. Clement Danes and St. Mary-le-Strand, I frequently look forward with pleasurable anticipation to the time when the Strand Improvements Bill will become law, and its provisions duly carried into effect. I joyfully picture to myself the change that will come over the things that be. It causes me no small happiness to reflect that ere long the jostle and crush that at present characterise the district comprised in the area of the improvements that the County Council propose to effect will be conspicuous by their absence, that, moreover, there will be freedom in ambulatory action, and that comfort will accrue from the increased elbow-room. And I console myself not a little with the reflection that, all well, I shall at last, perchance, witness the demolition of the butcher's shop, whence, for so long, gory carcasses have projected over the narrow public footway.

No less do I delight to anticipate the architectural effects that will accrue from the destruction of the group of buildings that, for the want of a more definite term, have been called "the Holywell-street block." I conjure up visions of St. Mary-le-Strand standing out in dark purple outlines against the glowing red of the evening winter's sky. How greatly will the effect be improved, pleasing though it may be under the present circumstances in the days when the setting sun throws its bright rays down the length of the busy Strand! Then, too, I picture a new prospect of St. Clement Danes, with a more interesting view of its admirable spire, besides a glorious grouping of both churches, and yet another group where these old buildings will be backed by the broken outlines of Street's masterpiece! Those will be better days for the architectural features of East Strand, apart from the fact that 'buses, cabs, and other units of vehicular traffic will pass along more smoothly. May the question of betterments, then, and other debatable matters, be quickly settled by the Parliamentary Committee now in the thick of its labours, and the work of demolition begun in all earnestness.

So much attention has in times just past been bestowed upon St. Mary's that excellent St. Clement's has been cast into the background. It is to be supposed, with some readers, that had there been an equally determined attempt to have the latter church pulled down, it would have also been "discovered" as a building of remarkable interest and architectural beauty. In many respects it would have deserved the notice; in some it would deserve more commendation than St. Mary's. To my mind, the spire of St. Clement Danes has ever been an object of great beauty, appealing to my sympathies more strongly than does any feature of St. Mary's. The peculiar gracefulness of its upper stages, resulting, primarily, from the diverse and contrasted plans of the several stories or stages, must have been often noticed by the observant among the passers-by. The pleasing proportions, the bold mouldings, and the crisp "go" about the whole design are characteristics of this London campanile that compel the regard and esteem of the architect. It is a pity, I have thought, that the body of the church should be of such inferior architectural merit to that of its steeple; but it is at least honest, and if the roofs have little more character of outline than a straw-stack, the blemish and shortcoming are referable to the fact that the building had to be adapted to a curiously-shaped plot of ground.

I have been up and down the Lower Thames lately more than once, and have had opportunities of inspecting the condition of the works for the new Tower Bridge. One cannot take in a vast deal from the deck of a passing steamer, so my observations were but superficial. They, nevertheless, suffice to show the excellence of the work upon the substructure of the two proposed towers. It is pleasingly massive, and eminently soothing and grateful to the architectural senses in these days, when civic corporations debate as to the possibility of allowing 4½ in. party-walls, and when Mr. Buggins is daily adding to his numerous "pieces" by the building and selling of shoddy houses. Massiveness and solidity are always pleasing, and an inspection of these works at their present stage will prove interesting to all, and instructive to the students

who can gain access to them. In a short time now, I suppose, the towers will begin to develop more rapidly. Work on the foundations has seemed lengthy; but no one will be surprised at this who sees the nature of the undertaking, which is truly of no ordinary kind.

Having been interested in the value of riverside property below London Bridge, it has become evident to me that the completion of the new bridge will decidedly affect businesses carried on at wharves lying between the old means of river transit and the new. Mention any possible building site east of London Bridge, and the first thing a business man asks is whether it is above or below the new Tower Bridge. There would appear to be a general apprehension that the interference with the freedom of navigation to and from the western portion of the Pool will in some measure depreciate the value of waterside premises above the new bridge. As it is at present, there is not a vast waterway between the basements of the two proposed towers, not a greater distance, perhaps, than between the heads of the two harbour piers at Ramsgate. Although this may cause no practical congestion in river traffic whilst unspanned by the proposed bridges, the opening day of the new undertaking will certainly find the navigation to and from the Pool a very different thing to what it was in the old days, when the river was unobstructed. Barges, lighters, and small craft, and steamers of small tonnage with adjustable funnels and masts will be able to pass under the girder bridges leading from the river banks to the towers—so, at least, I presume; but large steamers finding themselves at one and the same time desirous to pass up or down the river will have to wait about a bit, and the delay will not tend to promote briskness or business. The bridge, however, is on a fair way to becoming an accomplished fact, and so it is no use talking of what its effects may be, unless, indeed, some intending buyers of wharves on the Pool should read this, when perhaps they may be inclined to give less for such property. Otherwise the only apology for this note is that the subject matter may be taken as a possible example of the newly-invented word, "worsement."

Things in connection with the City and South-west Subway progress favourably. The method of electrical locomotion—the means that will cause the trains to "electrocute," "electrate," "volt," "ohm," "mote," "trike," "squirm," or "chortle," &c., as individuals, blessed with more originality than sense, have variously suggested in the columns of the *Times*, has been under trial for some six months, and is said to promise success. Boilers of some thousand horse-power have been erected at the generating station at Stockwell, and the fittings of the electrical plant, and other details, is rapidly progressing. The trains, it is intended, shall be composed of three carriages and an electrical locomotive, and carry one hundred passengers at a speed of 15 miles per hour, including stoppages. The main conductor will be of copper, and laid along one side of the tunnel, and this will be connected at short intervals with the conductor from which the current will actually be taken. This latter will consist of a light iron rail between the rails of the permanent way, contact with the motor on the engine being made by means of metallic brushes. All things, therefore, being settled, it should not be a great while before the line is ready for traffic, when it will be seen whether the chief question will be satisfactorily answered, and the line made to "pay." Regarding the enormous concourse of humanity that daily passes to and fro over London Bridge, there can be little doubt on this score, providing the descent and ascent of the lifts at the stations do not prove tedious and wearying.

A correspondent kindly sends me the "particulars" and "instructions" to architects for the competition for new market buildings for the Fleetwood Improvement Commissioners, saying that he forwards them exactly as he received them, and that he considers that, "of all the vile productions of late years," the documents, taken in conjunction with the advertisement, to which I referred last week, "cap everything." I must confess they would be hard to beat. The plan of site is a beautiful production certainly! My correspondent requests that I may return "the

curiosity," which I will not fail to do; but had he not wanted them back, I might have been tempted to have them framed, or to present them to the trustees of the British Museum, who would doubtless have labelled them "Competition Particulars, Instructions to Architects, XIX. Century, temp. Queen Victoria." The "instructions," save the mark! are written, of course; but on paper such as a grocer wraps a pound of tea in. I suppose they would be called "instructions," because they don't instruct. The architect, presumably, is to arrive at a knowledge of the requirements of the commissioners by a sort of intuitive process. But the plan takes the mortar-mill. It is prepared upon similar tea-wrapping paper, but sheets of paper of sufficient size to take the whole plan were not at hand, so one half goes on one sheet and the other half on another sheet of paper. I cannot, however, do justice to the "curiosity," which should be a really marketable article among architects anxious to procure the very latest thing in competition particulars and instructions.

GOTH.

## CHIPS.

A stained-glass window and a marble and stone sculptured reredos are being prepared for setting up as memorials at the east end of the chancel of the new parish church of St. Michael, Aberystwyth, now building from the designs and under the direction of Messrs. Nicholson and Son, architects, Hereford. The window at the east end of the morning chapel is also to be filled with memorial stained glass.

Mr. Oscar Harrison, who has acted for several years as assistant to the borough surveyor of Stafford, has received the appointment of surveyor to the local board of Workop, at a commencing salary of £110 per annum. There were about ninety applicants for the post.

On Monday Colonel Luard, R.E., held an inquiry at the Town Hall, Newport, concerning the proposal of the corporation to borrow between £6,000 and £7,000 for street improvements.

An inquiry has been held by Mr. Thornhill Harrison, Engineer Inspector to the Local Government Board, on an application by the Local Board of Sutton, Surrey, for a loan of £26,000 for works of sewerage and sewage disposal on a plan designed by Mr. Anstie. The scheme was strongly supported by Mr. E. L. Jacob, medical officer of health.

The Thomas Coats Memorial Church at Paisley is in course of completion, and on Friday the vane was formally placed on the tower. Mr. Hippolyte J. Blanc, of Edinburgh, is the architect.

A stained-glass memorial window was unveiled in Ellison-street Presbyterian Church, Jarrow-on-Tyne, on Sunday. It occupies the east end of the church, illustrates the Parable of the Sower, and has been executed by Messrs. Atkinson Brothers, of Newcastle-on-Tyne.

A pavilion is being built on the side of the private cricket ground in Erridge Park, Tunbridge Wells. It is being built from the designs of Mr. J. Richardson, one of the estate foremen, under the superintendence of the Marquis of Abergavenny. Mr. H. Bond, of Frant, is the builder.

The Rugby Local Board have accepted from Mr. R. H. Wood, of that town, the gift of a house, four stories in height, with schoolroom, reading-room, bath, and five-court attached, standing in 2,000 square yards of land. It is presented as a home for an institute and museum.

The Abbey of Winchester has been purchased by the corporation, and the beautiful grounds, which are well wooded and intersected by a river, are to be converted into a public promenade.

Mr. Ernest Alfred Williams, F.S.A.Scot., architect, of 171, Queen Victoria-street, E.C., died on Saturday last at his parents' residence in Upper Norwood, at the early age of 27 years. Mr. Williams had only five days previously returned from a voyage to South Africa, undertaken with the hope of restoring him to health.

The family of the late Mr. W. Thompson Watkin, the well-known archaeologist and historian of "Roman Lancashire and Cheshire," have just received a grant of £200 from the Royal Bounty Fund.

A new organ chamber, containing an instrument built at a cost of £1,250 by Messrs. Henry Willis and Sons, of London, was opened at Broughton-place U.P. Church, Edinburgh, on Friday. The architect was Mr. G. Washington Browne, of Edinburgh.

The will of Mr. John Ridley Hunter, formerly of the firm of Messrs. W. and J. R. Hunter, timber merchants, Moorgate-street, has been proved, the personality exceeding £18,000.



# THE PROPOSED CHANGES AT THE ARCHITECTURAL ASSOCIATION.

THE closing ordinary meeting of the Architectural Association was held on Friday evening, and was largely attended. Mr. Leonard Stokes, the President, occupied the chair. A motion was made by Messrs. Price, Appleton, and Stannus to rescind the motion passed at the previous meeting for publishing the number of votes given in the election of the committee, but, after considerable discussion, the motion to rescind was defeated by 47 votes to 40. The following were announced to have been elected as officers and committee for 1890-1, the statement of the unanimous re-election of the President being greeted with prolonged applause. President: Leonard Stokes. Vice-Presidents: Frank T. Baggallay and H. O. Cresswell. Committee: Herbert D. Appleton (197 votes), T. E. Pryce (173), John Slater (153), A. Beresford Pite (141), Gerald C. Horsley (130), W. Burrell (128), Frank G. Hooper (128), G. Richards Julian (128), Owen Fleming (117), and E. W. Mountford (116) — the highest unsuccessful candidate received 114 votes, and the lowest 34. Hon. treasurer: Hampden W. Pratt. Hon. assistant treasurer: R. L. Cox. Hon. librarian: W. H. Town. Hon. assistant librarians: W. Stonhold and E. H. Freeman. Hon. secretaries: F. R. Farrow and E. S. Gale. Hon. auditors: Max Clarke and Campbell Jones.

The President announced that the A.A. Travelling Studentship had been awarded to Mr. Percy D. Smith, and the second prize had been given to S. Tugwell.

Messrs. J. Todd, R. H. Hunter, E. Cruickshank, H. Jefferies, A. G. Dutton, G. W. Haywood, T. Constanduros, H. G. Collins, T. D. Mitcheson, and H. C. Corlette having been elected as members, the meeting was made special for the consideration of the report of the committee on education, an epitome of which appeared in our issue of the 2nd inst., p. 618.

Mr. J. SLATER, B.A., past president, as chairman of the special committee, moved the adoption of the report, which he thought would be, if agreed to, epoch-making in the history of the Association. While the proposed changes were of a decidedly drastic character, they had not been propounded in an iconoclastic spirit. The inquiry was originated by the dissatisfaction felt by the students in one or two of the classes; but when the committee examined into the working of the Association, they found the field widened. The voluntary system had been strained of late years almost to the breaking point, and for the past ten years every President of the Association had declared in his opening address that some change must be made in the near future. That near future ought to be, the committee believed, the immediate present. Examination was not, after all, education, and if students were to enter examinations with any hope of passing them, there must be an organised system of preparation. When the Association was younger and smaller, and had only two classes, those of construction and design, it was easily managed on a voluntary basis. These two classes had now expanded into eighteen, attended by 300 students, and it was no longer possible for unpaid workers to cope with the task. Men could not be expected to give up time for teaching unless remuneration were offered. Again, their honorary secretaries were asked to make great sacrifices of time and money; indeed, the senior secretary had now to meet between £40 and £50 a-year out of his own pocket, and it was obvious that this could not always be maintained. This was not a novel departure, for already there were some regularly paid instructors and lecturers. While the curriculum proposed to adopt the Institute examinations as a basis, it would be by no means confined to those subjects. The architectural studio system which it has proposed to adopt had been very successful abroad, and one or two studios had been established of late years in London, with great benefit to those who availed themselves of these advantages. The studio plan was, therefore, an integral and cardinal feature of the committee's programme. At the same time, the curriculum sketched out was a tentative scheme, and went thoroughly on the basis of the old classes. A new feature was the establishment of day classes, and in this department the committee did not wish to enter into rivalry with existing institutions. As to the scale of fees, the committee came to the conclusion that

ten guineas was not too much to ask for the whole curriculum, and in no other profession could the necessary instruction be obtained on such inexpensive terms as these. For attendance at a casual lecture a fee of half-a-crown had been fixed as a minimum charge. The committee contemplated that at least 100 students might join in the aggregate, and if this number—only one-third the present attendance—joined, the elaborate scheme would be self-supporting. Another recommendation was the raising of the subscriptions of town members. He regretted that this proposal was not carried when it was mooted five years ago, and he did not believe they would have lost a dozen members by the change. At present members paid 33d. per week for all the privileges of the Association, and 7d. was not an excessive sum. In conclusion, he appealed for full and fair criticism; he believed that if the suggested alterations embodied in the report were adopted, a career was open before the Association of enlarged usefulness and widely-extended influence.

Mr. A. O. COLLARD seconded the adoption of the report, remarking that criticism of the scheme was what the committee wished for. As one of those who opposed the proposals of five years since, he now admitted that the subscription must be raised. It was intended, he explained, that the hon. secretaries would continue to be unpaid, but many of their duties would be delegated to paid assistants. The curriculum was, he claimed, an improvement of the R.I.B.A. examination plan, particularly in its weak point—the testing of drawing; and in particular the establishment of an architectural studio would tend to improve and raise the standard of examinations. It had been suggested that architects would be willing to meet part of the fees of their articulated pupils, and to afford them facilities for attending day classes, in consideration of the increased usefulness in the office of youths so trained.

Mr. COLE A. ADAMS, past president, thought all would agree in thanking the committee heartily for their report. The case on behalf of the change could not have been put more fully and fairly than had been done by Mr. Slater. As to the scheme generally, it was inevitable, but while he felt that the time had come for paid assistance, he would put in a plea for the continuance of the mutual system. Was it, he would ask, necessary or desirable that the Association should resolve itself into a college? It would be a mistake to eliminate the aid of members as voluntary workers. He could not understand the estimate in the report that a salary of £100 only would be sufficient for the director of the studio for the first year, for no man so clever and well-informed as the director would need to be could be secured for anything like that salary. He would throw out the suggestion that the assistance and counsel of many architects of high standing could be secured—with advantage to the students—as visitors, and this would prevent the extinction of the present enthusiasm. The great danger of all paid teaching was to become perfunctory in character, and against this they must guard. Referring to the proposal to raise the subscriptions, he said five years ago those who proposed that plan had a very definite programme—viz., that lecturers should be provided, and that transactions should be published; but these were defeated by a narrow majority. Since then his views had somewhat changed, and he feared the proposed increase would have a disastrous effect in driving out the senior members, who derived no benefit from the classes, but did not care to sever their connection with the body. He hoped it was not regarded by the committee as part and parcel of the scheme. As that evening only about a fifth of the members were present, he thought before the report was put for adoption a plébiscite by voting papers ought to be taken.

Mr. J. A. GORCH, past president, heartily welcomed and supported the report. He was pleased that the committee had grappled with the problem, and had brought forward so comprehensive and thorough a scheme, for half measures would be useless. As to the raising of the subscriptions, the matter now stood on a different footing to what it did five years ago, and the reasons in favour of increase were much greater. The change would only apply to town members. The establishment of day classes would be of great benefit to provincial men, for they could then apply themselves steadily to study. It was intended that students should continue their ordinary employment, the nine hours per week

allotted to study by the curriculum, in addition to fortnightly meetings of the Association and Institute and Saturday visits, left little leisure to students. He agreed with Mr. Cole Adams that it would be well to continue the voluntary system by enlisting the co-operation of eminent men as visitors to classes. All other instructors should be paid, partly by fixed salaries and partly by capitation grants.

Mr. S. BEALE thought with Mr. Gorch that the report should have laid more stress on the necessity for establishing day classes. The experiment of such classes ought to be tried concurrently with the introduction of the new programme.

The PRESIDENT explained that the only reason the committee did not press the point of the establishment of day classes was that it was felt to be premature to attempt to promulgate the whole programme at once.

Mr. HUGH STANNUS said the report would have been better received if it had been better edited. They were asked to adopt it as a whole, whereas it dealt with at least half a dozen proposals, the acceptance of one of which did not necessarily imply concurrence in the others. These points were the proposal of an ideal curriculum, the laying down of the principles that teachers should be paid, that those who profit by the classes should maintain them, that day-classes should be established, that a studio be organised, and, lastly, that the subscription be raised. He would appeal to Mr. Slater to withdraw his report, and move the adoption of these principles in some six sections. They could then be discussed in detail, and the real views of the members would be ascertained. At present he did not think members were prepared to vote on the subject. In reply to the President, Mr. Stannus said he would move, as an amendment, that the best thanks of the members be given to the committee for their report, and that it be remitted back to them with instructions to submit it again in sections.

Mr. GOTCH supported this; but Mr. F. T. BAGGALLAY contended that the report must hang together, and be accepted *en bloc* or entirely rejected.

Mr. WOODTHORPE agreed with Mr. Stannus. He objected to the proposal to raise the subscriptions, and thought ten guineas a year too large a sum to demand from young students. The Association was primarily intended to assist young men who could not afford to pay the ordinary college fees. He could not admit that the atelier system was a success in France. A man was not qualified to practise there till he was 33 or 34, and then State appointments had to be provided for him. He did not share Mr. Gorch's views as to the course being too severe; unless a young man was willing to work hard for considerably more than eight hours a day, he would not succeed. He deprecated taking a vote on the report after only one evening's discussion.

Mr. H. L. FLORENCE, past president, held that it was all-important that the old feeling and instinct of the Association should be maintained in the revolution now proposed. A mere educational studio of classes was not what was wanted. He was willing to accept the report in great part, but with security that the voluntary system should be continued. Day classes would not be so difficult to organise as some appeared to anticipate, for he believed many architects would not only allow pupils to join but be willing to pay all or a portion of the fees. As to the estimated expenditure, he was convinced that £900 a year would be found utterly inadequate, especially after the first two years. With the improved classes a great development of the library would be urgently needed, and also the provision of a proper reading-room, and as a nucleus of a fund for making such provision he was commissioned by a past president to offer a donation of one hundred guineas. (Applause.) He did not anticipate they need lose a serious proportion of members if the subscriptions were raised.

Mr. BERNARD DICKSEE seconded Mr. Stannus's amendment.

Mr. LEVERTON expressed fear that the raising of the subscriptions would reduce the membership. Mr. MAX CLARKE agreed with Mr. Stannus's proposal to discuss the report in sections; while Mr. E. J. TARVER begged the members not to send the report, which was the outcome of much thought and labour, back to the committee. Mr. F. T. BAGGALLAY also opposed the amendment.

The PRESIDENT explained that it was not pro-



posed to do away with the system of visitors; but that the earlier stages of instruction in the classes should be intrusted to paid lecturers and teachers, while the latter stages would be carried on nearly as at present.

Mr. SLATER appealed to Mr. Stannus not to press his amendment, and expressed his willingness that the report should be discussed in detail. Mr. Stannus, however, declined to withdraw.

It being now ten o'clock, Mr. C. H. BRODIE and Mr. FLEMING proposed the adjournment of the discussion, and, after an ineffectual appeal by Mr. Stannus that the amendment be voted upon forthwith, the motion for adjournment was carried. The discussion will be resumed on Friday, the 30th inst.

#### THE ARMOURERS' AND BRAZIERS' METALWORK EXHIBITION.

THIS City Company's Hall and Galleries in Coleman-street have during the week been usefully occupied with an exhibition of art brass-work and arms, including a great variety of objects both old and new, most of them on loan from private collections, and some in competition for the prizes offered by the promoters of the gathering. One good condition was inserted in the rules drawn up for the exhibition—viz., that the name of the craftsman and designer shall be given in each case for all modern contributions. We notice, however, in some cases, among the larger firms represented, that this condition was ignored, the name only of the manufacturers being stated. Another condition was that the objects shown must have been made during the past twelve months, and not previously exhibited or offered for sale. We seem to remember, notwithstanding this, some fairly familiar specimens. The various prizes seem to have been very judiciously awarded, and much of the students' work is of a high standard, judged rather from a technical standpoint, and not so much in respect to artistic merit of design. The honorary judges were Mr. Alfred Gilbert, A.R.A., and Mr. Herbert W. Singer. A prize of £10 was given to Messrs. Wm. Hopkins and Son for a set of saw-pierced iron cabinet furniture, and another prize of £3 for a lock and finger-plate in brass, designed and wrought in each case by Mr. Herbert Bennet. The skill displayed, particularly in the work of the former, is deserving of praise. Messrs. Hicks and Son received a second prize for their telescope floor-lamps, designed by Mr. Chas. J. Moreton. The slight relief in bronze of a figure of a jester, by Mr. C. E. L. Koester, took an extra prize as a spirited and well-drawn specimen of figure modelling. The Keswick School of Industrial Arts was well represented, the most ambitious being a gilt altar cross, designed by Mrs. Hardwicke Rawnsley. The Guild of Handicraft are responsible for some curious specimens of copper-work, coal-vases, sconces, and log-boxes; but the most singular of all is a big sconce or so-called picture-frame in copper repoussé, designed by Mr. Holman Hunt for his picture of "May Morning Ceremony, Magdalen College, Oxford." The square panel for the picture is surrounded by rays indicative of the rising sun. The craftsman was Mr. J. Williams. Mr. Samuel Cope is to be congratulated on the excellent character and taste displayed in his £10 prize. Finger-plates in brass (representing the use of armour), and another, No. 42, representing brazing. The drawing, both of the figures and the acanthus leaves intermingled with them, is first rate. Electric-lighting sconces and pendants naturally lend themselves for fresh treatments, and among these we note a trefoil arrangement by Mr. R. L. B. Rathbone, in copper and brass, having ground-glass domes for the lights and turrets over. Messrs. Strode and Co., the well-known iron-workers of 48, Osnaburgh-street, are strong in exhibits of this character, and win a first prize of £10 for a large hall lantern in wrought brass and copper, designed by Mr. Amor Fenn, and made by Mr. Henry Ross. To this work, as the best in the exhibition, the judges specially award a prize of £10 to the designer and £5 to the craftsman—£25 in all. This official statement must be highly gratifying to this leading firm and its assistants, and we are glad to note that all three parties concerned have been thus properly recognised. The lamp is circular on plan, with horn-like glass panels divided by elaborated metal bands, surmounted by a most delicately-wrought cornice with foliage and leafings to a scale well

according with the general proportions of the whole. Miss Georgie Cave France is clever in her lock-plate engraved with cupids and doves, decoratively treated. Mr. Shuttleworth-Brown takes a prize for a coffee-jug, which we admired amongst his other articles of domestic ware, though his kettle looks like a copy of a well-known and extravagant designer's goods. The vases in brass and copper by Messrs. Winfields, Limited, are equal to a second prize, but came too late. The hammered hollow ware is interesting, and so is the saw-pierced work, some of which is particularly delicate, as, for example, Mr. John Gorrill's photograph frames (122-124), to which a first prize was given. The cored castings are good, and so are the cire perdue castings by Mr. Conrad Dressler, whose bust in bronze seems worthy of a prize. The students' designs from the Birmingham School of Art reflect great credit on Mr. Taylor, the master there, and they have received several prizes. A large collection of Oriental and ancient metalwork and armour is shown in the other rooms from South Kensington Museum. The Exhibition closes on Saturday at 4 p.m.

#### CHIPS.

At a special meeting of the Surrey County Council held on Tuesday, it was decided to purchase a site for new county buildings at Kingston, at a cost of £3,450.

The Duke of Cambridge laid on Tuesday the corner-stone of the new front which is to be erected at the London Hospital, Mile-end-road. The disadvantage of the approach, the inadequacy of the receiving-room, the need of a new operating theatre, and the absence of conveniences for clinical teaching have long been felt. The principal features of the new buildings will be a covered approach, a new receiving-room, an operating theatre, a clinical theatre, and a chapel.

King's College, London, has just received the means of organising two new departments. The widow of Sir William Siemens, in fulfilment of the intentions of her husband, has given £5,000 for the establishment of an electrical laboratory, of which Dr. John Hopkinson will be the new professor, and Mr. Banister Fletcher, master of the Carpenters' Company, has subscribed liberally towards the formation of an architectural museum.

The opening on Wednesday week of two new recreation grounds in the borough of Croydon was made the occasion of a public demonstration. The open spaces were Wandale Park, situated in the west ward, comprising 20 acres of reclaimed marsh land, and about 12 acres of ground at Upper Norwood. The cost of acquiring and laying out the former was about £8,000, and the total expenditure with regard to the latter was £7,800.

A new line of railway, connecting the town of Woodstock with the Great Western system, was opened on Monday. The line, which is rather more than three miles in length, has been constructed by Messrs. Lucas and Aird, mainly at the cost of the Duke of Marlborough. It terminates close to one of the entrances to Blenheim Park. Woodstock-road Station will henceforth be known as Kidlington.

A Select Committee of the House of Commons has passed the preamble of the Bill by which it is proposed to erect a weir, lock, and footbridge across the Thames at St. Margaret's, just below Richmond.

The Board of Trade, having inspected the new line from Towcester, in Northamptonshire, to a junction with the Midland Railway near Olney, have sanctioned the opening thereof for passenger traffic.

The tenders have been let for a new Wesleyan chapel at Friendly, near Halifax, these amounting to £2,000. Mr. T. L. Patchett, of Halifax, is the architect.

A new pulpit and lectern, placed in St. Philip and James Church, Ilfracombe, were dedicated last week. The pulpit is Early Decorated in style, hexagonal on plan, and constructed of Derbyshire alabaster and nine varieties of Devonshire marble. Mr. H. Gardner, of Ilfracombe, was the architect, and Mr. H. T. Jenkins, of Torquay, executed the work.

At a meeting on Monday of the Devonport School Board, Messrs. Hine and Odgers, of Plymouth, were appointed architects for new schools to be built at Pennycomequick.

Justices Grantham and Charles have decided that, under the Local Government and Highway Acts, county councils are liable to pay the costs of maintenance, repair, and reasonable improvement of footways at the sides of main roads within urban districts, as well as of pitched crossings over those roads.

## Building Intelligence.

DARLINGTON.—On Saturday the chairman of the Darlington School Board laid the foundation stone of a new boys' school in Albert-road. The buildings will afford accommodation for 390 boys, and comprise a schoolroom 72ft. 6in. long, by 22ft. wide, master's room, lavatories, store room, &c. There will also be a large playground, with covered sheds. The buildings are of brick, with stone dressings; the roof will be of Welsh slate, and the timber used is to be Baltic fir. The flooring is to be of wood blocks laid on a 6in. bed of concrete. Ventilation will be obtained by means of the windows and inlet tubes, the foul air being carried off by exhaust ventilators in the roof. The schools are being erected to the designs of Mr. T. W. Robson, Paradise-terrace, Darlington, and the total cost of the contract for the buildings is £3,338. The contractors are—for brick, stone, and plastering work, Mr. George Marshall; carpentering and joinery, Mr. W. Jameson; plumbing, glazing, and gas-fitting, Mr. Emmerson Smith.

FENTON, STAFFORD.—The foundation-stone of the new parish church for Fenton was laid on Wednesday week. It replaces a red-brick building erected in 1856, and is being erected from designs by Mr. Charles Lynam, F.S.A., of Stoke-on-Trent. It will consist of a nave of six bays, with clerestory and aisles and north and south porches; a chancel with a chapel on the south side and clergy vestry on the north; also a north transept containing a choir vestry and an organ-chamber. Beneath the clergy vestry is the heating vault. A tower is designed for the west end of the nave, the foundations of which have been put in, but this feature is not included in the present contract. The floor space will accommodate about 1,000 worshippers. The walls throughout are of brickwork, with facings of the same material, except that the interior of the chancel is of ashlar stone. All the dressings are of Hollington or Wall Grange stone. The roofs are of timber, open-framed, and will be covered with lead or green slates. The floors will be laid with wood blocks, with passages of plain tiles. The chancel is to be inclosed by open oak screens and fitted with oak stalls, whilst chairs will be provided for the church generally. Much of the stonework from the eastern part of the former church will be reused. The style is English Decorated, and was dictated by the requirement of the reuse of certain prominent features from the former church. The present contracts with Messrs. H. and I. Inskip, of Longton, are for something less than £6,000.

LIVERPOOL.—On the 4th of May the Bishop of Liverpool opened a new high altar and reredos at St. James's Church, Marsh-lane, Liverpool, which was illustrated in the BUILDING NEWS in 1886. The new altar and reredos, with screens and alabaster rails, is carried round the chancel to a height of 25ft., the upper portion of the side walls above the arcading being lined with slabs of rouge fleuri marble, and there are medallions with paintings of the Evangelists, by Westlake, on gold grounds. A central composition on the east wall has two tiers of niches, and rises to the east window sill level. The window will later on be filled with stained glass, and complete the whole composition at a height of 50ft. The niches have a series of 12 figures in polished white alabaster—Our Lord in Majesty, St. Joseph, the Virgin Mary, SS. Peter and Paul, and others. The altar throne and tabernacle are of white polished alabaster and Irish and Derbyshire fossil marbles; and there is a relieve in the frontal, of the "Last Supper," and at either corner figures of adoring angels. The wall arcade is worked in polished light alabaster, with Kerry red shafts, and Connemara green-veined panels. These marbles have all been arranged on the old North Italian model as to tone and figure, and harmonise well with the red stone of the pillars, arches, vaulting ribs, and stonework of the church. Mr. Boulton, of Cheltenham, executed the figures, and Mr. C. Hadfield, F.R.I.B.A., of Sheffield, was the architect.

SHEFFIELD.—The plans for the additional postal offices, which are to be erected for the authorities in Pond-street, have been passed, and a commencement made with the work of getting the foundations ready. The new buildings, which will cover a space of about 50ft. by 120ft., are to consist of a basement, lower ground floor on a level with Pond-street, and another



ground floor on a level with Flat-street. The intention is to use the basement merely as a boiler-house and storage-room. The lower or Pond-street ground floor is to contain a loading shed for parcels, parcel sorting, and comptroller's rooms. The upper, or Flat-street ground floor, will comprise postmen's rooms, public parcel, private box, and other offices. The plans for the new building have been prepared by Mr. Henry Tanner, of H.M. Board of Works office, and the contract has been secured by Mr. S. Warburton, Miles Platting, and the work is now being carried out under the direction of Mr. F. Wilson, general foreman, the clerk of the works being Mr. R. Berry, from H.M. Board of Works.

WEDNESBURY.—The memorial stone of the Art Gallery was laid on Wednesday by the Mayor. The new building will stand on a site adjacent to the Town Hall. The style is the Renaissance, harmonising with the façade of the hall, and the materials used will be Stourbridge red bricks and terracotta dressings. The rooms for the caretaker and the heating apparatus are in the basement. To the ground floor access will be had by means of a vestibule and hall entrance, behind that being the grand staircase hall, with a flight of stone steps leading to the floor above. On each side of the vestibule will be an art or class room, 19ft. by 24ft.; and behind those, on each side of the staircase, will be ladies' cloak-rooms, and secretary's or committee-room; a corridor, extending the whole width of the building and forming the connection with the Town Hall, intervening before the museum, a lofty room—34ft. by 18ft.—is reached, at the back of the building. The Richards bequest will occupy the front of the first floor, a room, 50ft. by 24ft., and 19ft. to the flat of the coved ceiling; and in addition three other rooms on this floor will be set apart for works of art, one—15ft. by 23ft.—on each side of the staircase, and behind these, at the back, a room 50ft. by 18ft., a doorway from this room communicating with the gallery floor of the Town Hall. Messrs. Wood and Kendrick, of West Bromwich, are the architects, and the contract has been taken at £3,300 by Mr. H. Willecock, of Wolverhampton. £1,500 is also being spent on the alterations to the Town Hall.

#### CHIPS.

A convalescent cottage and nurses' home are about to be added to the hospital at Bromley, Kent, at an outlay of £2,000. Mr. John Ladds, of London, is the architect, and Mr. H. Heathfield, of Beckenham, is the contractor.

A mission school is to be built near Turner Land, Ashton-under-Lyne, from plans prepared by Mr. J. H. Burton, and at an estimated cost of £1,500.

A stained-glass window, designed by Messrs. Heaton, Butler, and Bayne, is being placed in the Salford Royal Hospital and Dispensary. The window will be formally unveiled by Lord Howard of Glossop to-morrow (Saturday).

In the course of some excavations for a new road on the Sea View estate at Broadstairs, a discovery of human skeletons and several vases or urns has been made. The vases, three of which were preserved intact, vary from 4in. to 6in. in height; they also vary in shape. The position where they were found is very near to the North Foreland Light-house. Several pieces of metal very deeply oxidised were also found, one of them having the appearance of a clasp.

A plaster model of Sir Edgar Boehm's equestrian statue of Lord Napier was placed on view yesterday (Thursday) in Waterloo-place, between the United Service and Athenæum Clubs, prior to a final decision as to the site being come to by the authorities. The model will remain on view for a few days.

Mr. W. Grant, of the borough engineer's office, Plymouth, has received an appointment as assistant in the borough engineer's office, Croydon, and Mr. G. Reginald Davey, late of the same office, has been appointed an assistant to the county surveyor of West Sussex. They were both pupils of Mr. Geo. D. Bellamy, M.Inst.C.E., borough and water engineer, Plymouth.

The Rugby Union Rural Sanitary Authority has called in Mr. J. E. Willcox, C.E., of Birmingham, to report and submit a scheme for the drainage of Wolston. Mr. Willcox is also engaged by the Evesham Rural Sanitary Authority to report as to the best means of providing a supply of water for North and Middle Littleton.

A new organ is being built by Messrs. Voules and Son, of Bristol, for the Mayor's Chapel on College Green, in that city. The chapel was recently reopened after restoration from Mr. J. L. Pearson's designs.

#### TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 392, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

#### NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. M.—E. H. L. and Sons.—A. and Co.—M. J. P.—W. H. R.—B. of S.—A. F. P. Co.

#### "BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Pisistratus," "Red Rover," "Wallaby," "Clansman," "Coombe," "Box."

"RED ROVER," "Coombe," and others.—(The drawings for cottages will be returned in a few days.)—George Peto. (The Parish Hall is the last subject to be given this session.)

### Correspondence.

#### THE A. A. AND THE INSTITUTE COUNCIL.

To the Editor of the BUILDING NEWS.

SIR,—In common probably with other members of the A. A., I have received a circular from a secretary of that body exhorting me to vote at the approaching election of the Institute Council for various persons whose names are therein duly set forth. Now, as there is nothing in this document to show whether it emanates officially from the Committee of the A. A., or whether it is only a little private electioneering device of our esteemed secretary (or vice-president, I forget which he now is), Mr. T. E. Pryce, and the "some others" to whom he alludes but does not mention, it would be interesting to learn the origin of it. If the latter surmise is correct, I have nothing special to say about it; but if it is to be taken as a duly authorised bull, or pastoral letter of the President and Committee of the A. A. to the faithful of the Association, issued especially to guide and direct them in their choice, then it would appear to be a merely somewhat barefaced attempt to interfere with the rights of private judgment at present possessed by the members.

The list of names given is, however, both curious and instructive. The present Associate-Members are left out in the cold, and in place of them two gentlemen are recommended whose principal distinguishing qualifications are that they are the sons of their fathers, and bear well-known names. Considering that one of the discarded is actually a member of the A. A.

Committee, and has, besides, done more probably than any other member of that body to obtain for Associates their present position, it seems little unkind! Of the other, I would only say that, apart from his acknowledged position and abilities, he represents a phase of the profession that should certainly find expression upon the Council. Sir, we have, and always have had enough and to spare of merely "pretty-picture makers" of men, who, wanting the ability to become artists in the ordinary acceptance of the word, yet affect to look down from their imaginative heights upon their ordinary every-day brethren. Neither—with all respect be it said—does architecture begin and end with the building of churches; so that the ecclesiastical copyist and Mediævalist element must be kept within bounds. What is wanted is such a body as the Council are—representative men.

It is depressing, but not surprising, that the few architects of real ability and originality who possess stand aloof from the various architectural bodies, and the squabbles engendered by them.—I am, &c.,

F. T. W. MILLER, A.R.I.B.A.

73, Queen Victoria-street, E.C.

#### THE GRAND SCHEME AT THE A.A.

SIR,—As an old fogey member of the A.A., should like to know what is the meaning of the little game which a certain clique are endeavouring to inaugurate at Conduit-street? The establishment of the Architectural Studio or private atelier may or may not be a good thing, and I enough pupils are forthcoming, probably it would pay the promoters very well. The A.A. should not, however, be converted into a high road for architectural "coaches," whereby only those who can afford to pay the fares demanded may travel with advantage. The old path of progress so prosperously continued by the founders of the A.A. and their successors, my contemporaries was that of mutual aid. Turn it into a forcing bed for professional crammers, and the society will be crushed out of all knowledge as it becomes the vantage ground of a mere set.—I am, &c.,

AN ODD FARTHING.

#### THE ARCHITECTURAL ASSOCIATION.

SIR,—I do not know what was done at the meeting on Friday last; but I fear that the A.A. is going to the dogs.

1. Stagnation; nobody found worthy of the office of president.
2. Returning to the old supper, in place of the more dignified dinner.
3. Raising subscriptions, and so losing about half the members.
4. Departing from the old system of mutual help, and turning the A.A. into a kind of college.—I am, &c.,

OBSERVER.

#### PROVISIONS IN QUANTITIES.

SIR,—I will not attempt to follow in detail the long letter in your last issue. Personal abuse is not argument.

Your readers will have perused the excellent leader on the subject, and I again state that the practice mentioned by "Builder's Manager" has never come to my knowledge, and it is scarcely necessary for me to inform your readers that I have never thought of doing such a thing myself.—I am, &c.,

26, Budge-row, E.C. HENRY LOVEGROVE.

SIR,—It is gratifying to read the lucid and interesting article respecting the above in your last issue, and likewise "M. M.'s" excellent general review of the correspondence on this subject, and the judicious manner in which he sifts the whole. It may, in time to come, dawn upon Mr. Lovegrove and others that neither of them has answered the question at issue, or given the desired information. Possibly they are unable, or unwilling, or both, or wish to avoid it altogether. Any way, their silence, whether from inability or unwillingness, appears to give a tacit confirmation to the opinions I previously expressed. The marvel is that a gentleman of Mr. Lovegrove's calibre should pen such effusions, and imagine that they in any way approach the nature of replies to my letters. I say this with all due deference and respect to Mr. L., but their freedom from anything even remotely connected with the point in question is so very palpable, whilst the innocent self-complacency of a "Disgusted Surveyor," so



ably illustrated by Mr. M., is perfectly charming. Possibly a surveyor may yet come to the surface who can give a straightforward reply—no quibbling or fencing off on to other matters foreign to the subject, but a genuine comprehensive answer to the point, which might aid in dispelling the doubts under which "surveyor's provisions" at present labour.—I am, &c.,  
TWICE CHARGED.

Sir,—After reading the remarks by "M. M." and "Disgusted Surveyor" in your last issue, one is irresistibly reminded of the old saying, "Codlin's the friend, not Short," and also of the adage, "Charity begins at home." If these gentlemen, in their conscientious scruples regarding their clients' interests, had begun at their own end of these amounts, we builders would have listened to what they had to say with more respect.

Without going into details, it is sufficient to point out that architects and quantity surveyors charge just as much for including, say, a £500 provision, as they do for designing £500 worth of work in the one case, and for "taking out" the same amount in the other. In the first case a short arithmetical sum represents the bulk of the work, and in the other case it consists of the clerical effort of writing the amount in the draft bill. "Oh! but," these gentlemen exclaim, "our charges are based on the whole transaction." The laborious work which it partly consists of makes up for the more easy portion." Just so, and we builders expect the same consideration. It is the profit on the whole which ought to be considered, and not that on particular items.

"M. M." makes an absurd blunder in supposing there is any distinction between the general prices and the provisional prices. Why, "Disgusted Surveyor" says he puts p.c. to the latter items so as to get a competition profit. Neither the client or builder recognise any distinction; it can therefore only be artificially created by the architect or surveyor. I am further charged with a fallacious attempt to prove that "prime cost" is not the actual amount a builder pays. My letters bear no such interpretation. I defined the proper meaning of the term and its proper use, receiving, as I fully expected, the retort that my definition was the surveyor's definition, and, further, that if a £20 kitchener was stated to be p.c., with profit to be added, what could possibly be plainer? I have stated all along that the builder's contention is that p.c., as so applied, is to him the client's p.c., i.e., what the client would pay if he bought the kitchener himself, and that if the catalogue or list prices of kitcheners, generally speaking, was subject to a liberal discount, no further profit need be added. The round sum itself shows that the p.c. in a trading sense is not meant, because it is impossible for anyone out of trade to know what the p.c. is likely to be a few weeks in advance, and even if they did, there would certainly be some odd shillings and pence to the sum. I suppose it will be admitted that it is really the client who invites builders to tender, and consequently the bills of quantities represent the work he wishes them to execute. Supposing, instead of the bills, he personally went to the builders, gave them the plans and asked them to include for a £20 kitchener when making out their estimate, would he personally tell them he meant their actual cash payment for it? I venture to say he would not, unless he meant to insult them. Builders therefore deny the right of a surveyor to mean any more by p.c. than the client would when stating an amount. These ardent p.c.-ists surely do not carry their notions of what is a fair profit to other trades, and in asking, say, for a pound of tea, state that they want it of such and such a p.c. price with a competition profit added.

The system of trying to give p.c. prices is decidedly wrong in principle, and I say "trying," because it will always, at the best, be a very will-o-the-wisp proceeding—just when you think you have got near it, trade organisation will upset the calculation. It is a far more straightforward proceeding to quote the value of the thing, whether the list prices are high or low: competition in some form or other will always keep the profits down. It is idle talk to say the builder would pocket the difference in value by a fall of prices. Surely it will be admitted that if the prices rose the builder's prices would rise also. Well, then, if the prices fall, surely competition can be trusted to cause their prices to fall also. All the charges of lax morality and

rapacious profits fall to the ground after the remarkable admission by "Disgusted Surveyor," that neither surveyors nor clients would care if 50 per cent. was made on provisional amounts, provided the particular tender happened to be lowest. It is quite unnecessary to go into the catalogue question with their red slips if that is the case. Apologising for again troubling you, —I am, &c.,  
A BUILDER'S MANAGER.

#### WHAT IS A "BUILDER"?

Sir,—Can any of your numerous readers answer the above simple question?

I am led to ask simply because I read in a local paper that a County Court judge expressed himself at a loss to know whether a lot of carpenters and bricklayers were engaged in their proper line of business when they commenced building operations. It is a singular thing that in the town to which the judge referred there is not a single "Builder" who was not at one time a mechanic of some kind—fourteen were carpenters, three bricklayers, three plasterers, one a plumber, and two wheelwrights.

Now many of these are now engaged in their "proper line of business." Is there any system of examination or form of certificate for a builder? Is building construction, sanitation, or elementary drawing a necessary part of their education? Surely, Sir, among the vast array of talented readers of your valuable paper there are some who can draw the line and enlighten an—  
IGNORANT INQUIRER.

### Intercommunication.

#### QUESTIONS.

[10281.]—**Bench-Mark.**—When the expression—"so many feet below bench-mark" is used, am I to understand that the distance is taken from the mark itself, or from the level of the ground at that point?—TRADDLES.

[10282.]—**Deposit on Copper Boiler.**—Some few months back I fixed a copper circulating boiler heated by gas (Bunsen burners). 60ft. of 2in. piping was run in from boiler, which the latter worked satisfactorily; but after a month's constant use a greenish white encrustation formed on bottom of boiler (outside) which threw off a very offensive and suffocating smell. This incrustation I scraped off down to the copper, and went on with boiler again; but the same deposit formed, and smell returned with it. Can any reader who may have had a similar experience tell me what this deposit really is? and can the copper be treated in any way, or any other means adopted to prevent the adhesion or formation of the deposit?—W. W. R.

[10283.]—**Weathercock.**—I have to fix accurately a weathercock to the four cardinal points. Will any kind reader inform me how I should proceed, and what I should allow for magnetic declination?—J. E. S.

[10284.]—**Shores.**—Will some one kindly answer the following query which was asked in one of the examinations by the Royal Institute? Sketch shores you would adopt to stop the lateral movement outwards of the blank side of a house 40ft. long. (a) 30ft. high, three stories; (b) 60ft. high, six stories. Give the distance apart of the shores, and figure the scantling of the timbers. (N.B.—There is supposed to be no other building within 40ft.)—GILBERT.

[10285.]—**Continental Cathedrals.**—I will be glad to know where, on the Continent, examples will be found of cathedrals presenting the feature of a lower and an upper church. I understand one or two examples exist in Germany, and I have heard of one in the south of France somewhere. In this country, Glasgow is the only example I believe.—C.

#### REPLIES.

[10279.]—**Italian Oak.**—I take it that by "Italian" oak is meant the fine Austrian butts that are shipped at Trieste, and are so largely used in this country at the present time. I happen to be cutting up 60 logs of it on my pit just now, straight, wide billets, 20ft. and upwards long; all entirely free from knots or shakes, and opening out clean, bright, and flashy. It is the best oak that I know.—HARRY HEMS, Exeter.

[10279.]—**Italian Oak.**—This oak, although placed in the list of questions framed by the City and Guilds examinations in Carpentry and Joinery, has nothing to do with these trades so far as this country is concerned. "H. J. P." will find the fullest published particulars in "Timber and Timber Trees," by Thomas Laslett (Macmillan and Co., 1875), pages 83 to 89. The botanical names of the trees producing this oak, as given in the above work, are not reliable. Loudon, in his standard work "Arboretum Britannicum" (p. 1844), gives the Italian oak as the *Quercus esculus*; but it is probable that *Q. Cerris*, and *Q. Pyrenaica* may constitute wood under this generic title. The oaks of Europe as a genus are deciduous, the wood brown and of medium hardness. When grown in the south they have a tendency to become evergreen, and to produce wood hard and horny in texture; when grown in the north they develop no peculiarities except that of mildness, being soft, and, when in a dry state, light in the wood. The Dantzic, Italian, and Riga oaks mentioned by "H. J. P." are, of course, European. Riga, being the most northern, is mild and soft in texture; Dantzic, somewhat more south, is harder wood. From this to the Italian oak is, as our geography implies, a considerable remove, and hence we obtain a wood marked by extreme hardness and density. We have not

the specific gravity of Riga oak, which would be somewhat less than Dantzic oak; but the following bears out the above remarks:—

Dantzic oak .....	835
(English about the same.) .....	
French .....	1029
Tuscan .....	1040
Spanish .....	1042
Modena .....	1109

African oak would be still higher in its specific gravity. Italian oak, so far as this country is concerned, is matter of history. When:—

"Hearts of oak were our ships," this timber had a prominent place, and was used in preference to most other oaks in the framework of ships. It was not purchased by our naval authorities after the year 1863, owing to the introduction of iron, but there was a considerable quantity in hand at the Royal Dockyards in 1875, and may be even now. Mr. Laslett, in his table, showing the uses of woods, has the following:—

Oak, British .....	All kinds of constructive work—naval, civil, and military engineering.
" Belgian .....	
" French .....	
" Piedmont .....	
" Turkey .....	
" American .....	Similar to British; but not so generally useful.
" White .....	
" Italian .....	

The White oak mentioned by "H. J. P." is an American product. The distinguishing feature between the oaks of Europe and America is, that the former are brown in colour, and the latter are red. It thus follows, that for wrought work of a good character, it is impossible to work the two together. The mode of distinguishing the European oaks, in the first place, is by the manner in which they are hewn or prepared for the markets. The high class, soft or mild oaks, are shipped in the half log or billet, or, in other words, in the wainscot form, for it is the form only that constitutes the title wainscot. This form is shipped from Riga, Memel, Odessa, Trieste, and Fiume. These ports occasionally ship the wood in the round or partially-squared log. The Dantzic is mostly in the squared log, but, occasionally in the partially-squared log, the latter being the form in which the Stettin and Italian oaks are shipped. To distinguish these oaks in panel specimens is not an easy matter. It requires a practised eye, and an experience of years; the tests are colour and texture. The Riga and Odessa oaks are uniformly brown and fine grained—fine in the "bark" or texture. The Memel is paler in colour and coarser in "bark" or texture. The Stettin is alike coarse, possessing a greenish tinge or colour. The Trieste and Fiume oaks (Austrian) are coarse in the "bark" or texture, large in figure, i.e., in the medullary plates or silver grain, which, at times, is white and lustrous. The colour is not pronounced in any direction; hence it can be used with any of the above oaks, to which it is superior in point of size.—W. STEVENSON, Hull.

#### WATER SUPPLY AND SANITARY MATTERS.

**DRAYCOTT SEWAGE FARM.**—The sewerage works and sewage farm are now completed at Draycott, near Derby. The sewage was turned on the farm last week, and everything appears to be acting very satisfactorily. This scheme may be regarded as a sample of what may be done in sewage disposal for a country district of 1,200 inhabitants. Members of local authorities, or others interested in sanitary work, may see the farm at any time. The land is six acres in extent, and it has been properly drained, levelled, steam scuffed, and laid out with carriers. The sewers are flushed automatically every 12 hours with brook water. The engineer to the works is Mr. W. H. Radford, C.E., of Nottingham, and the contractors are Messrs. Holmes Bros., of Nottingham.

**LYNDHURST.**—Active operations were commenced last week by the Lyndhurst Gas and Water Company, Limited, with a view to the completion of their scheme by next winter season. A well, lined with iron tubing, has been sunk on a site granted by H.M. Department of Woods and Forests, and a sufficient supply of potable water, free from contamination, has been obtained at a depth of 85ft. from the surface, the borehole passing through 60ft. of hard clay before reaching the Upper Bagshot Sands, from whence the supply is derived. The Company are considering the question of manufacturing gas made from crude petroleum. The constant system of water supply will be adopted, and a pressure always available for fire purposes capable of throwing a jet over any buildings in the village. The joint engineers are Mr. Reginald Bolton, C.E., and Mr. E. L. W. Haskett Smith, A.M.I.C.E., of 6, Queen Anne's Gate, London; and the London offices are at 11, Queen Victoria-street, E.C. Messrs. Scholfield and Lacey are the contractors.

Messrs. W. Lewis and Son, architects, of York, have just completed considerable improvements to Grantley Hall, and other work on the estate, for the Right Hon. Lord Grantley. Other work is in progress and contemplation to generally improve the estate, from the plans and designs of Messrs. Lewis and Son.

The Clethorpes Local Board have instructed Mr. W. H. Radford, C.E., of Nottingham, to prepare plans and obtain tenders for carrying their Beacontorpe outfall 150 yards farther out to sea, in consequence of the tidal increase of sand on the beach.



## STATUES, MEMORIALS, &amp;c.

**BRADFORD.**—A bronze memorial statue to the late Right Hon. W. E. Forster, for twenty-five years member for Bradford, was unveiled in Forster-square in that town on Saturday. The statue is by Mr. J. Havard Thomas, is 9ft. 7in. in height, and stands on a red granite pedestal 10ft. high. The attitude, as will be remembered by those who have seen the model for the statue in the present Academy Exhibition, is erect, with the head slightly turned towards the right hand, which is uplifted and outstretched, while the thumb of the left hand is inserted in the armpit of the waistcoat. The statue has been cast by Messrs. H. Young and Co., of the Enlston Ironworks, Chelsea.

## STAINED GLASS.

**CHESTER CATHEDRAL.**—A great improvement has just been effected in the north of the nave of Chester Cathedral. The harmony and beauty of the mosaics have hitherto been marred by the colours of the stained glass in the windows above them. This glass was removed from the eastern window of the Lady-chapel when the stonework was replaced in its ancient Early English form, and was distributed through the small windows in the north aisle. It has now given place to other glass, designed and executed by Messrs. Heaton, Butler, and Bayne, of London, under the supervision of Sir A. W. Blomfield, A.R.A. The general tone is silvery. The most western window, which is lighted from the chapel of the old Bishop's Palace, contains pattern foliage with emblems of holy baptism, the font being immediately below. The remaining five windows have each four openings, and the two middle lights in each case contain figures of angels with musical instruments, the whole series forming a celestial choir. The appearance of the mosaics has been improved, while the aisle has received fresh light, and the groining of the roof, one of the many gifts to the cathedral by the late Mr. Platt, now stands out distinctly in beauty of form and design.

## LEGAL INTELLIGENCE.

**IN RE W. BISSETT AND SONS.**—At the Sheffield Bankruptcy Court on Friday, before Judge Ellison, the affairs of William Bissett and Sons, builders and general contractors, of Sheffield and Birmingham, again occupied attention, the bankrupt, James Francis Bissett, who attended to the Birmingham branch of the business, applying for his discharge. The gross liabilities, according to the statement of affairs presented by J. F. Bissett, were £35,006, of which there was £34,439 to rank for dividend. The assets were estimated by the bankrupt to realise £7,326, from which there was deducted for preferential creditors £567, the deficiency being £27,680. Up to the present time the assets had realised £5,311, and the Official Receiver thought he might realise a further sum of £500. The separate liabilities of the bankrupt, James Francis Bissett, were £25 5s. 2d., and the assets £50, out of which £21 6s. 2d. for preferential creditors had to be paid. The bankrupt J. F. Bissett did not appear to have committed any misdemeanour under the Bankruptcy Act, 1883, or the Debtors' Act, 1869. The trade books, which had come into the Official Receiver's possession, appeared to have been well kept, but the last cash book and the private ledger had not been given up, the bankrupt, J. F. Bissett, alleging that the same were in the possession of his partners, and it was supposed they were taken away or destroyed. The Official Receiver stated that the father of the bankrupts died in February, 1888, when a balance-sheet was prepared, and it appeared there was a balance in favour of the firm of £7,525, the whole of which belonged to the father. No balance-sheet had since been made out. The bankrupts had since February, 1888, carried on the business on their own account with this balance of £7,525 standing against them, and their only asset was the reversionary interest under the father's will. This reversion was assigned by the bankrupts to creditors as security for a debt, and it therefore appeared to be doubtful as to the bankrupts ever having been solvent during the time they had carried on business. One of the chief causes of the bankruptcy had been the losses on contracts, but the primary one had been the extravagance of William Crellin Bissett and Lawrence Colgrave Bissett. The Official Receiver gave particulars as to the departure of William Crellin and Lawrence Colgrave Bissett, taking with them about £4,000. The Official Receiver considered the bankrupts were very blamable in not preparing a balance-sheet after their loss by fire in Wilkinson-street. The bankrupt, J. F. Bissett, had assisted him largely in realising and investigating the estate, and his conduct since the bankruptcy had been satisfactory. His Honour said no blame attached to J. F. Bissett, except that he knew his brothers were living extravagantly and drawing more money than they ought to do. He should therefore grant the discharge.

## Our Office Table.

THE voluminous report of M. Marius Vachon on English Industrial Museums and Schools of Art, published by the French Minister of Education on Wednesday, is of a flattering character; M. Vachon plainly avowing that our artists and artisans have alike made great progress during the present generation in art as applied to industry. It will be known to some that M. Vachon spent last June and July in England, making this the close of his tour of inspection through Europe. He says:—"In England the artistic industry of this century was, so to speak, entirely created by France. Our artists and artisans are no longer in request. English artists and artisans are insisted on. There is the ambition of making by them a national art and industry. England has plenty of resolution. This ambition is already being realised. In default of recent exhibitions, which have not been an accurate and complete expression of the present industrial and artistic movement, it is sufficient to visit the country, or even London alone, to be convinced of the rapid march of the new evolution."

THE proposal to carry out a photographic survey of Warwickshire has been warmly taken up by the amateur photographers of the county, and will, there is little doubt, be adopted. The general work of the survey will be directed by a council, to consist of representatives elected by the various photographic and scientific societies of Warwickshire, with co-optative members. The photographic, artistic, scientific, and literary societies of Warwickshire have elected representatives, who attended a general meeting held yesterday (Thursday) at St. Edmund's College, Edmund-street, Birmingham, when the directing council was elected. The county is to be divided into sections, and of that for Birmingham Mr. Jethro A. Cossins, architect, of that city, has been appointed the vice-chairman. No English county is more rich in historical associations and architectural works of every period in proportion to its area than Warwickshire, and the photographic record of its buildings and scenery will be of permanent and increasing value.

At the meeting on Saturday of the Montgomeryshire County Council, it was proposed by a committee that they give the county surveyor (Mr. W. N. Swettenham) three months' notice to terminate his engagement, on account of the differences of opinion that had been expressed and the difficulty that had arisen as to what the duties of the county surveyor were. It was explained that the county council had reduced the emoluments of the office from nearly £400 per annum to £300 and increased the work, and also wanted to make the engagement terminable by a three months' notice. These Mr. Swettenham objected to, and claimed compensation under the Local Government Act. In the end it was decided to give him six months' notice to quit, and to again offer him the position on the new terms.

The first meeting of the Registration Committee of the Council appointed by the Plumbers' Company for Devon and Cornwall was held in the Drake Chamber, Plymouth, on Monday. The chair was occupied by Mr. H. G. Luff, architect, Devonport. Thirty-two applications for registration were considered, and those received from Mr. W. G. Pearce, of Plymouth, and Mr. W. T. Steer, of Barnstaple, were passed by the committee, and were recommended to the Worshipful Company of Plumbers, London, for their certificate of registration. Many of the other applicants not having inclosed their indentures, the secretary was requested to write them asking that they may be forwarded before their application can be considered, and also to request Messrs. Burden, Stuart, Tardrew, Mardon, Lake, Cockram, Whitfield, Tilley, Hedges, Trick, and Waterman to attend to a practical examination to be held at Plymouth shortly.

**Indian Engineering** describes an important work of engineering skill, the new Nira Canal in the Poona District, a project due to the genius of General Fife, R.E., which has been carried out by Mr. J. E. Whiting, M.A., M.I.C.E. The district traversed has a very capricious rainfall, and the crops fail for years in succession. This canal commands an area for irrigation of 429 square miles, under the immediate command of 61 distributionaries. To maintain a supply in the canal after

October, when the river Nira becomes a mere streamlet, a reservoir is designed at Bhatghur, on the Yelwandi river, a tributary of the Nira; the dam is at the junction, and will be of concrete and masonry, 3,020ft. long, 127ft. high above foundations, and 103ft. above bed of river. The canal headworks consist of a weir, 2,273ft. long, the crest of which is 42ft. above bed of river, constructed of masonry and concrete, 26ft. wide at river-bed level, and 9ft. at crest. Two other subsidiary weirs are constructed. The main weir will discharge a flood of 158,000 cubic feet per second, with a depth over crest of 7.5ft., representing one-third of an inch rainfall over the whole catchment area of 700 square miles.

THE improvements being made in motive-power and rolling-stock equipment in America, such as locomotives and cars, are in advance of the track. Trains of heavy engines and elaborately-decorated carriages are allowed to run over a track of 56 to 70lb. rails, which are inadequate to the strain put upon them. Such is the gist of a paper, by Mr. Tratman, on railway and street traffic in the *Transactions of the American Society of Civil Engineers*. An improved rail section is advocated of greater weight per yard; a better mode of securing the rails to ties than by spiking them, improved rail-joint fastening; the advantages of steel ties for heavy traffic are recommended. The paper is illustrated by diagrams of American rail sections and suggested improvements in the construction of tracks. The English railroad system is superior in many respects: the rails are heavier, and are secured to the sleepers in a better manner. The American cars are furnished in a more sumptuous style, but out of all proportion to the actual requirements, while the expenditure on the track is reduced to a minimum.

## MEETINGS FOR THE ENSUING WEEK.

**SATURDAY (TO-MORROW).**—Architectural Association. Visit to Field and Queen Offices, Bream's-buildings, E.C. 3 p.m.  
**THURSDAY.**—Edinburgh Architectural Association. President's Valedictory Address. 8 p.m.  
**FRIDAY.**—Architectural Association. Special Business Meeting to consider Report of Committee. 7.30 p.m.  
**SATURDAY.**—Edinburgh Architectural Association. Annual Excursion to Dunfermline, Inverkeithing, and Pitreavie.

**Architectural Association, 9, Conduit-street, W.**—The Special Business Meeting, adjourned by resolution on May 16, will be resumed on May 30, at 7.30 p.m. The last Seasonal Visit will be made on May 24, at 3 p.m. to the Field and Queen New Printing Offices, Bream's-buildings, Chancery-lane, Messrs. Satchell and Edwards, architects.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

## CHIPS.

The inquiry about to be begun by the Corporation of London into the charges made for water in the City and elsewhere in the metropolis, and other matters incident to the question of the water supply, will be formally opened at Guildhall to-day (Friday), when, after arrangements as to procedure have been made, it will be adjourned over Whitsuntide.

The contracts for the Glasgow Caledonian Central Underground Railway were let on Wednesday; the main portion—viz., from Bridgeton Cross to Stobcross-street, will be made by Messrs. Chas. Brand and Son, at a cost of £650,000; that from Stobcross-street to Kelvinside, by Messrs. J. Young and Son, at £210,000; and that from Kelvinside to Maryhill, by Mr. A. H. Boyle, at £145,000.

The ceremony of opening the new vicarage house at Verwood, Dorset, was performed by the Bishop of Salisbury last week. The vicarage is of red brick, with facings of Bath stone, and contains a drawing-room 24ft. by 18ft.; a dining-room of the same dimensions, a study, and the usual domestic apartments. There are nine bedrooms, besides dressing-rooms, bath-rooms, &c. The entrance hall is laid with tessellated tiles, and measures 40ft. by 12ft. The vicarage is in the Gothic style, and was built by Mr. George Moore, from designs by Messrs. A. & C. Bradford-on-Avon, the cost of the building being £4,500. The principal features in the drawing-room and dining-room are the beautifully-carved mantels, which bear the arms of the Province of Canterbury and those of the See of Salisbury.

Mr. Millward Butterfield, architect, of Brackley House, Sevenoaks, died at Hastings on the 14th inst, aged 48 years. He had been an Associate of the Royal Institute of British Architects since 1882.



## Trade News.

### WAGES MOVEMENTS.

**BRADFORD.**—The whole of the plasterers in this district turned out on strike on Monday for an advance of  $\frac{1}{4}$ d. per hour.

**BARNSELY.**—The strike of carpenters and joiners, bricklayers, and masons at Barnsley shows no change. The men are still out, and the employers show no sign of giving way. The joiners ask 8d. per hour, the wage they had ten years ago. The masons offer  $7\frac{1}{2}$ d., and will not advance beyond that. The masons and bricklayers have already 8d. per hour, and ask 9d. They have been offered an advance of a farthing per hour, which they refuse to accept.

**CORK.**—The builders' labourers are still out and have not returned to work. The employers are determined not to concede the advance demanded, which they regard as unreasonable. A number of men employed by Mr. Samuel Hill, of this city, on some works in Waterford, and who left work a week before the Cork men, making a similar demand, returned to their employment on Monday last on the old terms, and it is likely the men in Cork will shortly follow their example.

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### TENDERS.

Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**AUDENSHAW.**—For the pulling down and rebuilding of the Sun Inn, Hooley Hill. Mr. J. H. Burton, Warrington-street, Ashton-under-Lyne, architect:—

Pike, Z., Hooley Hill	£1,958	0	0
Brown, W. H. & H. C., Stockport	1,691	0	0
Davison, J., Manchester	1,659	0	0
Gibson, J., Dukinfield	1,610	0	0
Williamson, J. W., Ashton-under-Lyne	1,639	0	0
Whitell, R., Manchester	1,633	0	0
Kirkby, E., Ashton-under-Lyne	1,625	0	0
Holmes, A., Ashton-under-Lyne	1,584	0	0
Williams, O., Manchester	1,579	0	0
Garside, Barnes, and Co., Stalybridge	1,560	0	0
Gardner, H., and Co., Ashton-under-Lyne	1,557	10	0
Underwood Bros., Dukinfield	1,526	0	0
Robinson, J., Ashton-under-Lyne	1,494	0	0
Storer, T., Denton (accepted)	1,350	0	0

**AVONMOUTH.**—For two hydraulic cranes to be erected in transit shed No. 2 at Avonmouth Dock, for Bristol Docks Committee:—  
**Armstrong, Mitchell, and Co., Newcastle** £1,775  
(Accepted.)

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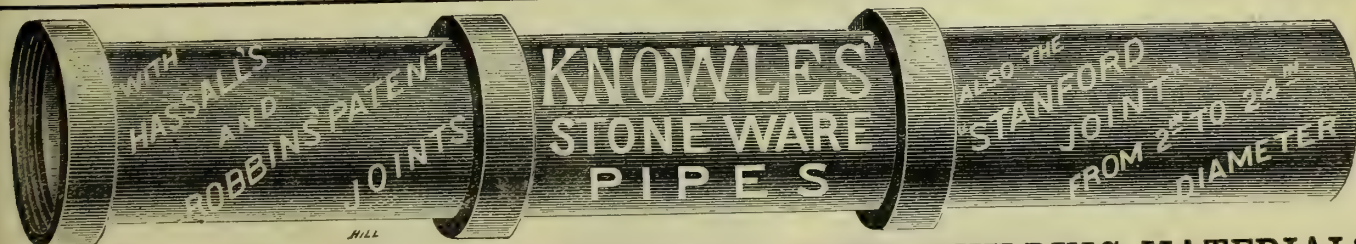
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Sheffield Telephone No. 11.



**BERMONDSEY.**—For block of model dwellings, Abbey-street, Bermondsey. Mr. C. Bell, F.R.I.B.A., architect:—  
Scott, M. ... .. £7,888 0 0

**BISHOPSTOCK.**—For alterations and additions to The Anchor, p.h., for Messrs. Strong and Co. Mr. W. H. Mitchell, Southampton, architect:—  
Jukes, T. J. ... .. £903 0 0  
Stevens, H., and Co. ... .. 893 0 0  
Bull, J., Sons, and Co., Ltd. ... .. 874 0 0  
Nichols, J. (accepted) ... .. 850 0 0  
All of Southampton.

**CHESHAM.**—For extensions and alterations to factory, New Town, Chesham, for Messrs. G. Wheeler and Co. Mr. G. H. Green, Chesham, architect:—  
Green, G., Aylesbury ... .. £642 0 0  
Harding, W. ... .. 437 0 0  
Darvell, F. (too late) ... .. 430 0 0  
Mead, A. ... .. 415 0 0  
Abbott and Son (accepted) ... .. 353 0 0  
Rest of Chesham.

**CHRISTCHURCH, HANTS.**—For widening the road at Bargates by pulling down three cottages and throwing the site into the road, for the town council:—  
Davis, C. (accepted).

**CRICCIETH.**—For the extension of main sewers and works connected therewith. Mr. T. Roberts, Assoc. M. Inst. C.E., Portmadoc, engineer:—  
Roberts, D. M., Pentrefelin ... .. £383 5 4  
Roberts, H., Carnarvon ... .. 328 17 0  
Thomas, H., Criccieth ... .. 304 7 9  
Thomas, T., Liverpool (accepted) ... .. 297 14 0  
Engineer's estimate, £302

**DEWSBURY.**—For proposed six-storied warehouse, Ratcliffe Mills, Dewsbury, for Messrs. Wormalds and Walkers. Mr. J. Lane Fox, Bond-street, Dewsbury, architect and surveyor. Quantities by the architect:—

Accepted tenders:—  
Mason, &c.:—Horsfall, G., Liversedge.  
Joiner:—Haigh, E., Thornhill Lees.  
Plumber:—Newsome, F., Dewsbury.  
Plasterer:—Parker, W., Heckmondwike.  
Slater:—Brear, T., Dewsbury.  
Ironfounder:—Newsome, M., and Sons, Dewsbury.

**DUNDEE.**—For the erection of a bandstand on Magdalen-green, for the police commissioners:—  
Macfarlane, W., and Co., Saracen Works, Glasgow, £300 (Accepted.)

**GLASGOW.**—For the construction of the Caledonian Company's Central Underground Railway:—  
(Accepted tenders.)

Section No. 1.—From Bridgeton-cross to Stobcross-street:—  
Brand, C., and Son ... .. £650,000 0 0  
No. 2.—Stobcross to Kelvin-side:—  
Young, J., and Son ... .. 210,000 0 0  
No. 3.—Kelvin-side to Maryhill:—  
Bayle, A. H. ... .. 145,000 0 0

**HARROW.**—For the erection of a factory at Harrow. Mr. C. Bell, F.R.I.B.A., architect. Quantities by Mr. H. Lovegrove, F.S.I.:—

Kilby and Gayford ... .. £9,930 0 0  
Nightingale ... .. 9,883 0 0  
Anley ... .. 9,786 0 0  
Wall, C. ... .. 9,775 0 0  
Smith and Sons ... .. 9,127 0 0  
Allen and Sons (accepted) ... .. 7,563 0 0

**HORSHAM.**—For the erection of a house and shop, for Mr. R. Anderson. Mr. S. A. Ell, A.R.I.B.A., of East Grinstead, architect:—

Pledge, W., East Grinstead (accepted) £870  
**LINCOLN.**—For new church in the united parishes of St. Nicholas and St. John, Lincoln, for the Rev. Canon Blenkin. Mr. E. P. Loftus Brock, F.S.A., architect:—  
Baines, C., Newark ... .. £2,270 0 0  
Pattinson, S. and N., Ruskington ... .. 2,090 0 0  
Close, H. S. and N., Lincoln ... .. 1,975 0 0  
Wade, W., St. Neots ... .. 1,958 0 0  
Wright, W., and Sons, Lincoln ... .. 1,841 0 0

**LONDON.**—For alterations No. 3, Bow-lane, E.C. Mr. C. Fowler, F.R.I.B.A., architect. Quantities by Mr. H. Lovegrove, F.S.I.:—

Clarke and Bracey ... .. £1,028 0 0  
Heaps ... .. 957 0 0  
Larler and Son ... .. 942 0 0  
Simpson and Son ... .. 851 0 0  
Lidstone and Son ... .. 829 0 0

**LONDON.**—For alterations and repairs to warehouse, Farrington-road. Mr. H. Lovegrove, surveyor:—

Palmer, W. D. ... .. £553 0 0  
Sage and Co. ... .. 549 0 0  
Goad, W. V. ... .. 530 0 0  
Drew and Cadman ... .. 460 0 0  
Colls, G. ... .. 440 0 0

**LONDON.**—For the erection of stable buildings at Warwick-place, Upper Whitecross-street, Messrs. Hudson and Booth, architects. Quantities by Mr. H. Lovegrove:—

Morter ... .. £2,166 0 0  
Greenwood and Son ... .. 2,139 0 0  
Higgs, H. and H. F. ... .. 2,125 0 0  
Dabbs ... .. 2,119 0 0  
Nightingale ... .. 2,089 0 0  
Hall, Beddall, and Co. ... .. 1,994 0 0  
Spencer and Co. ... .. 1,970 0 0

**LONDON.**—For adapting No. 139-40, Tottenham Court-road, to the requirements of Messrs. C. Baker and Co. Messrs. N. S. Joseph and Smith, 49, Finsbury-pavement, E.C., architects:—

General work:—  
Scrivenner and Co. ... .. £2,720 0 0  
Patman and Fotheringham ... .. 2,681 0 0  
Drew and Cadman ... .. 2,489 0 0  
Internal fittings:—  
Drew and Cadman ... .. £473 16 0  
Colls, G., and Co. ... .. 412 0 0

**LYMINGTON.**—For rebuilding the Dorset Arms, for Messrs. Styling and Co. Mr. W. H. Mitchell, Southampton, architect:—  
Jukes, T. J., Southampton ... .. £900 0 0  
Wheeler, A., Lymington ... .. 898 15 0  
Stevens, H., and Co., Southampton\* 826 0 0  
\* Accepted.

**MITHIAN, CORNWALL.**—For the restoration of the parish church of Mithian, near Truro. Messrs. St. Aubyn and Wadling, London, architects:—  
Julian, J., Truro (accepted).

**PADDINGTON.**—For alterations at 9, Bishop's-road, Paddington, for the Phoenix Brewery Co., Latimer-road, Notting Hill. Mr. R. A. Lewcock, 68, Bishopsgate-street Within, E.C., architect:—

Tyerman ... .. £517 0 0  
Smith ... .. 510 0 0  
Ivory ... .. 485 0 0  
Courtney and Fairbairn (accepted) 460 0 0  
Counter, cabinet, and pewtering:—  
Mathews, T. H. (accepted) ... .. 117 0 0  
Gasfitting:—  
Ungar (accepted) ... .. 44 16 0

**PLYMOUTH.**—For erection of chapel at the Little Sisters of the Poor Home at Penny-cross, near Plymouth. Mr. F. W. Tasker, London, architect. Quantities supplied:—

Lethbridge, A. R., and Son ... .. £2,155 0 0  
Finch, J. ... .. 2,080 0 0  
Partridge, J. ... .. 2,065 0 0  
Lapthorne and Goad ... .. 1,798 0 0  
Blowey, P. ... .. 1,760 0 0

**RICHARD'S CASTLE, SALOP.**—For the erection of the Foster Memorial Church. Mr. R. Norman Shaw, R.A., London, architect:—

Heath, Endon ... .. £9,990 ... £7,694  
Bowdler, Shrewsbury ... .. 9,670 ... 8,650  
Treasure, Shrewsbury ... .. 9,440 ... 8,244  
Collings, T., Tewkesbury ... .. 8,678 ... 8,032  
Thompson, J., Peterborough 8,590 ... 7,360\*  
\* Accepted.  
A.—If stone is found.

**SALFORD.**—For retort ironwork, for the gas committee of the Salford Corporation:—  
Clayton, Son, and Johnson ... .. £6,909 0 0  
(Recommended for acceptance.)

**SHREWSBURY.**—For the conversion of the Nisi Prius Court at the castle into a council chamber, for the Salop County Council. Mr. T. M. Lockwood, of Chester, architect:—

Morris, T. (accepted) ... .. £156 0 0

**SOUTHAMPTON.**—For improvements to the Common, for the town council:—  
Morgan, Isted, and Morgan, Southampton (accepted) £87  
(Three tenders received.)

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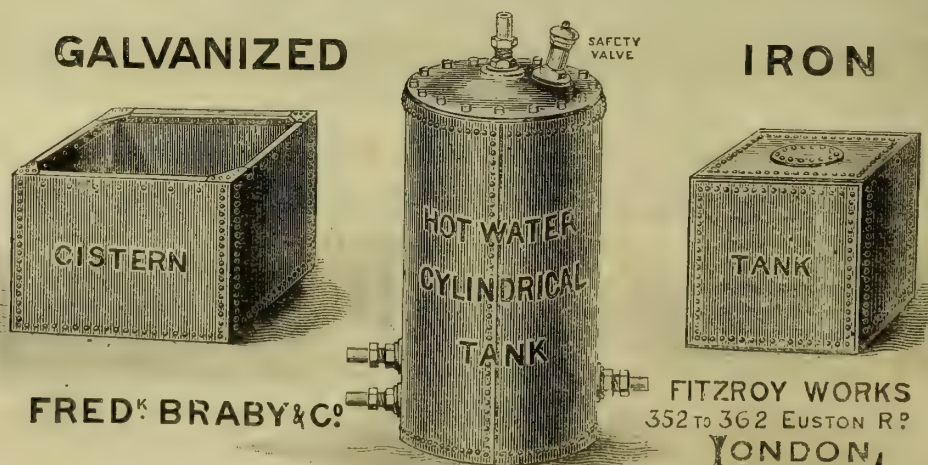
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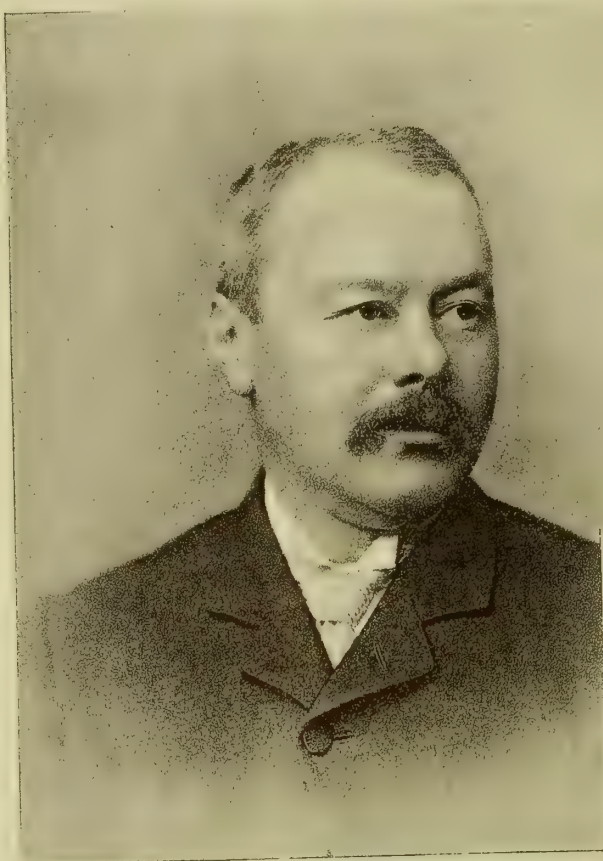
**GEORGE JENNINGS, STANGATE, LAMBETH, LONDON,**  
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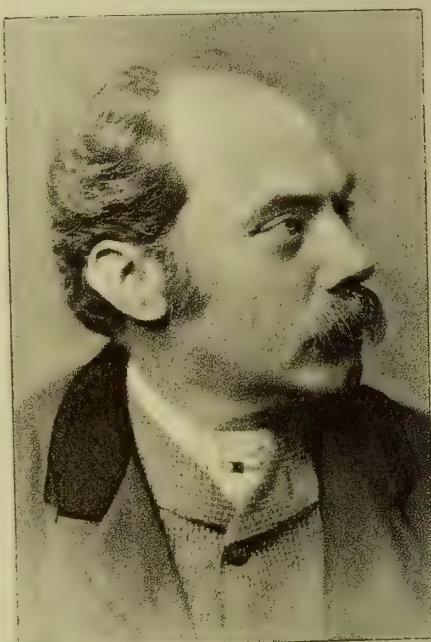




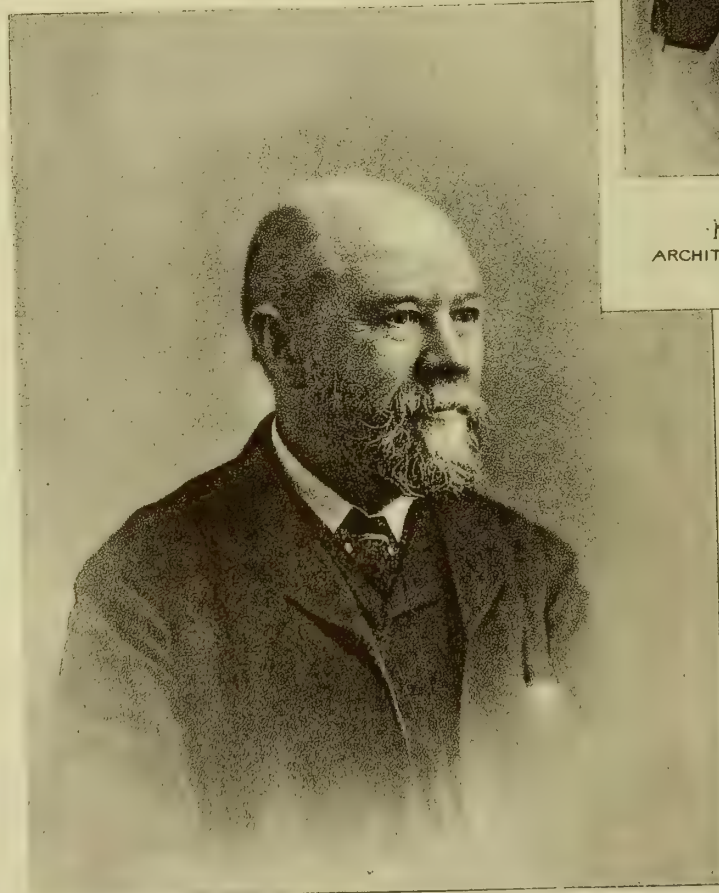


*E.C. Ayton-Lee*

E.C. AYTON-LEE F.R.I.B.A.  
ARCHITECT OF ST MARY'S CHURCH WHITECHAPEL.



HIPPOLYTE BLANC  
ARCHITECT OF COATS MEMORIAL CH  
PAISLEY N.B.



*Robert J. Johnson*

ROBERT J. JOHNSON F.S.A.  
ARCHITECT OF THE DURHAM COLLEGE OF SCIENCE NEWCASTLE



T. MANLY F.R.I.B.A.  
ARCHITECT OF THE



EDWARD  
ARCHITECT OF ME



MAY 23, 1890.



*anly's Eau*  
(T N DEANE & SON)  
SEUM DUBLIN



*Edw. H. Heming*  
D. FRIBA  
OFFICES LONDON

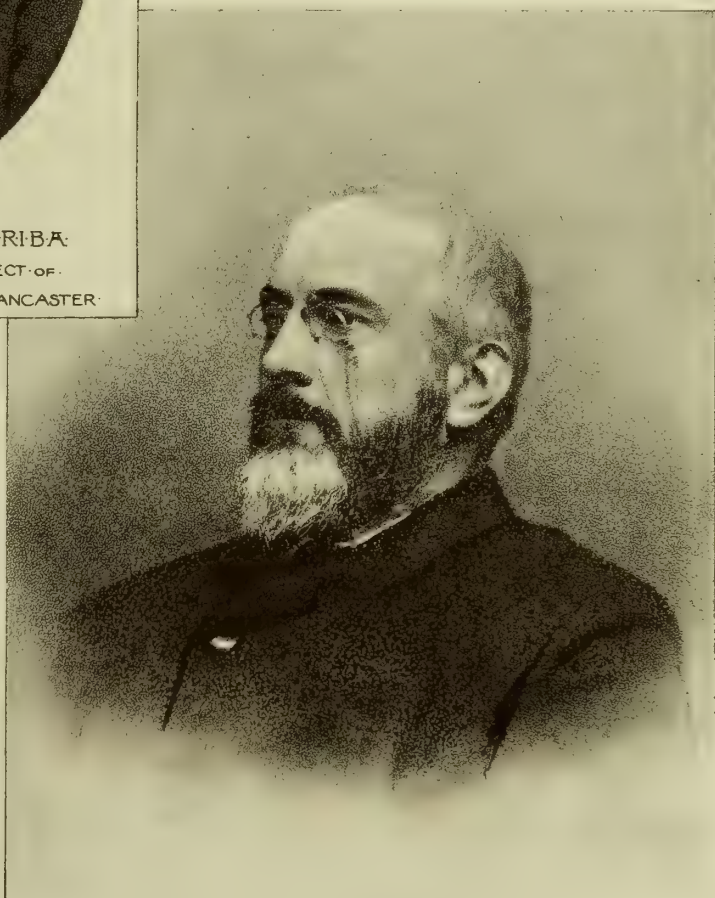


EDWARD G. PALEY-FRIBA  
(PALEY & AUSTIN) ARCHITECT OF  
ROYAL ALBERT ASYLUM LANCASTER



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JOHN F. BENTLEY  
ARCHITECT OF ST THOMAS' SEMINARY HAMMERSMITH



*Hubert J. Austin*

HUBERT J. AUSTIN (PALEY & AUSTIN)  
ARCHITECT OF CHURCH AT MOSSLEY HILL LIVERPOOL

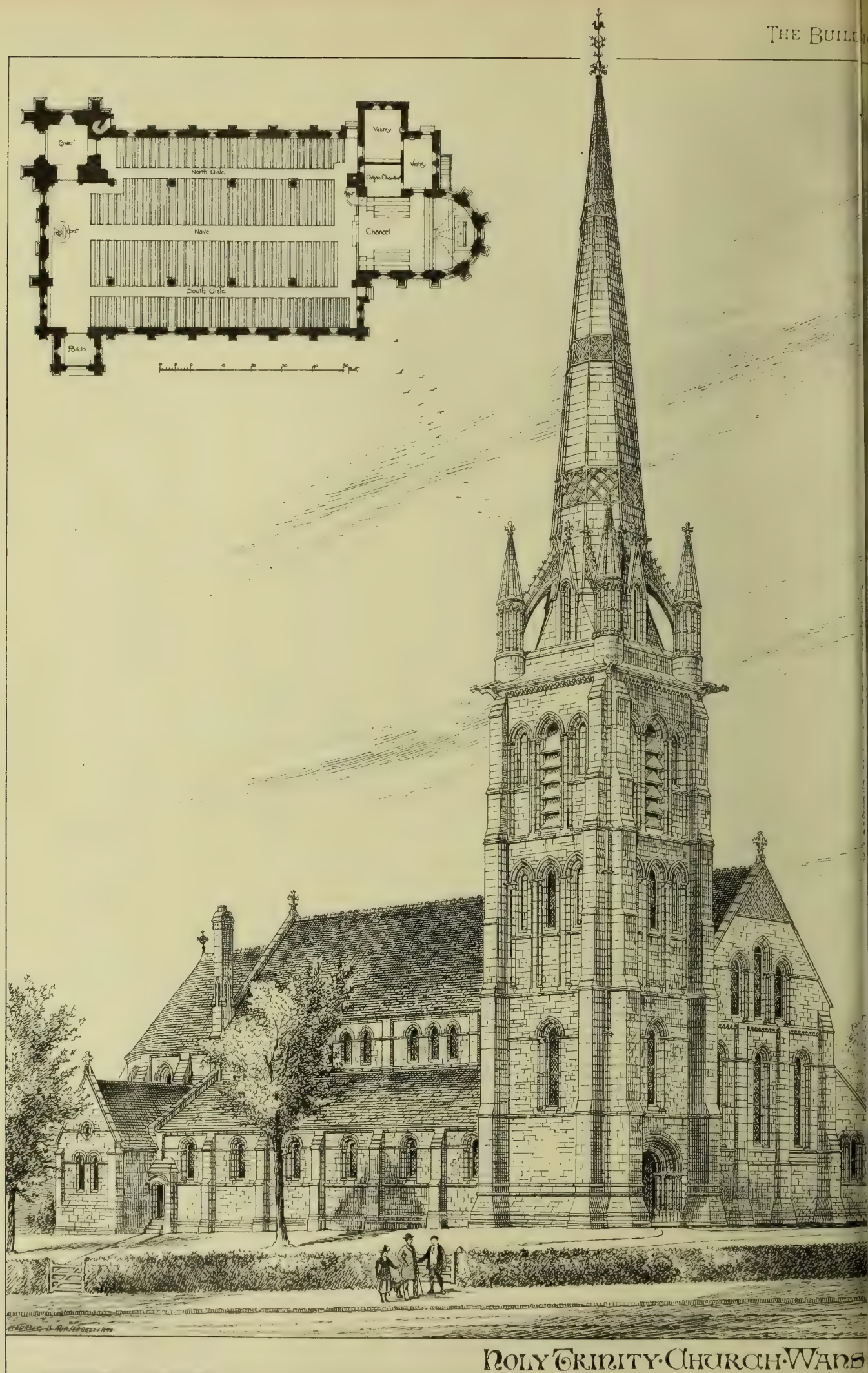












HOLY TRINITY CHURCH WANS





PLATE IX. JAMES FOWLER F.R.I.B.A. ARCHT. LOUTH







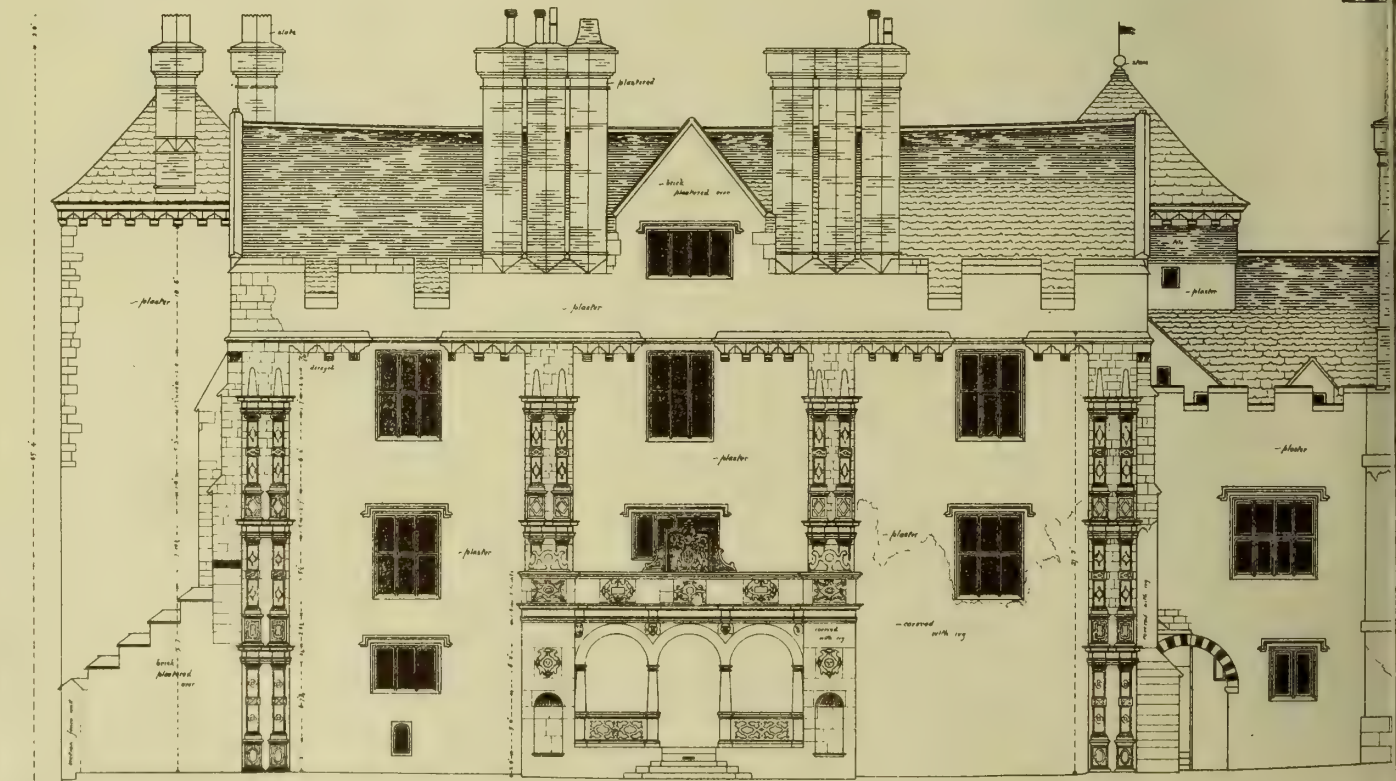






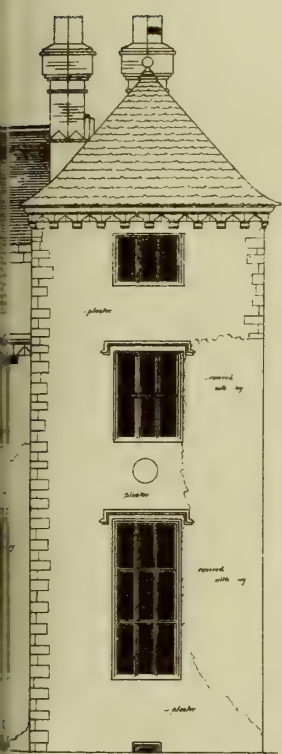
SOUTH ELEVATION

CRANBURY

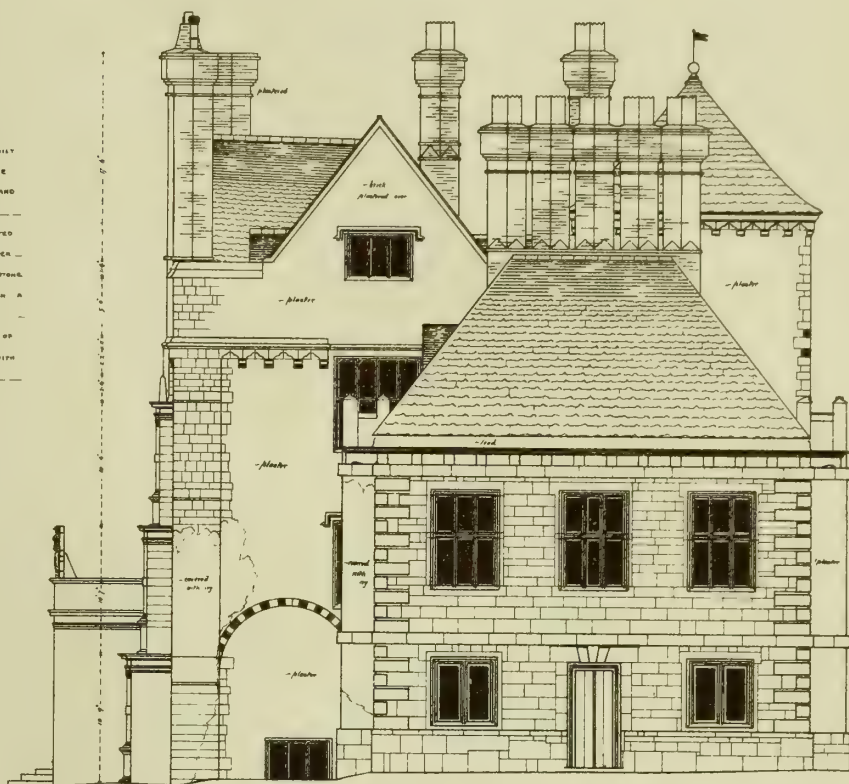


NORTH ELEVATION





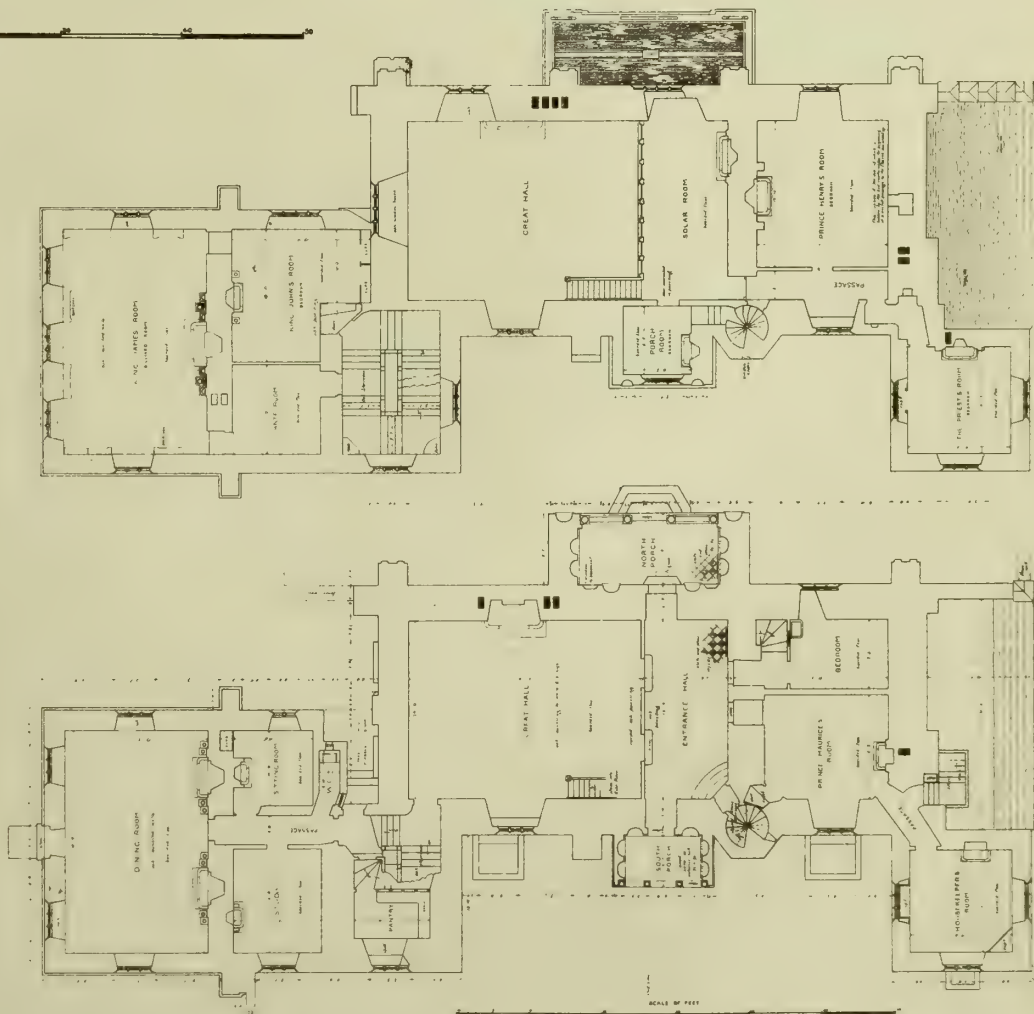
THE WALLS ARE RUBBLE BUILT  
WITH CHALK TISBURY STONE  
FLINT AND IRONSTONE AND  
ARE FACED WITH PLASTER  
THE GABLES ARE CONSTRUCTED  
OF BRICK AND PLASTERED OVER  
THE SOLAR HAS 18 IN TISBURY STONE  
WITH IRONSTONE INTRODUCED IN A  
FEW PLACES  
THE WEST FRONT IS BUILT UP  
TOOLED TISBURY STONE WITH  
RUBBED JOINTS



THE MANOR HOUSE DORSET

WEST ELEVATION

SCALE OF FEET



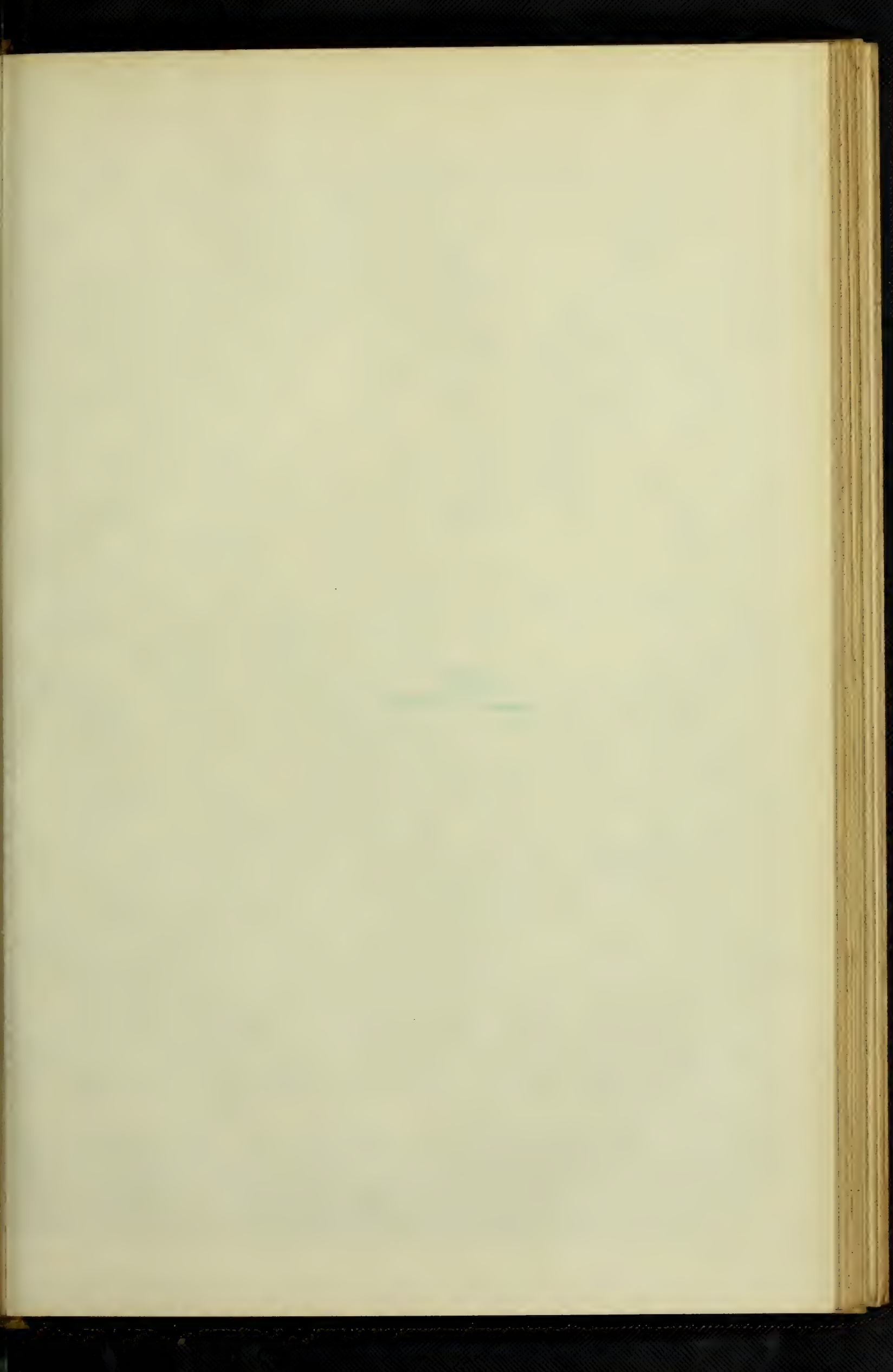
FIRST FLOOR PLAN

GROUND PLAN

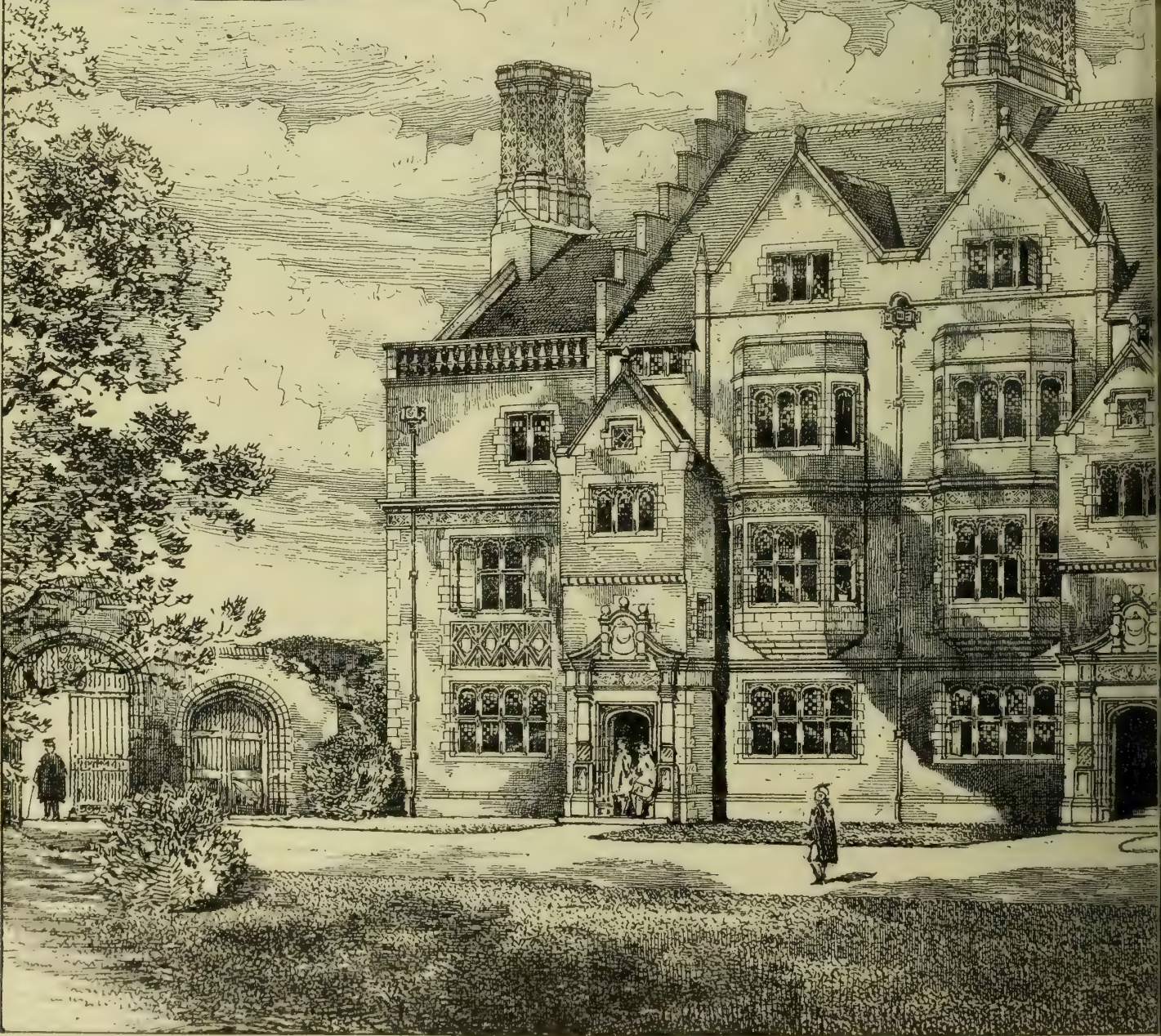














MAY 23, 1890.

TRINITY HALL (CAMBRIDGE)  
NEW BUILDINGS.  
GRAYSON & OULD, ARCHT.



Photo-lithographed & Printed by James Akerman, 6, Queen Square, W.C.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1847.

FRIDAY, MAY 30, 1890.

## THE FINISHING TRADES AND THEIR PROVISION.

A GREAT deal of the improvement and comfort found in modern buildings is to be ascribed to the goods supplied by the ironmonger. A glance down the list of items in a bill of ironmongery will suffice to show the number and variety of the articles used or supplied, from ordinary butts to the fittings and appliances of rooms. Though small and miscellaneous in their character, and scarcely of much consequence to the architecture, they yet help to make up the sum total of the finishing features, and to impart character to the design. Many architects are so strangely indifferent as to the form or design of a door-handle or finger-plate, that they are perfectly willing to leave these etceteras to the contractor or to the taste of the owner. This is a mistake from the art point of view. If we are to elevate our art industries and artistic manufactures, it ought not to be considered too trivial to devote attention to details of hardware, such as door furniture and fireplace grates. Certainly by ignoring such things the architect is playing into the hands of the trade, who are foisting upon us foreign goods and inferior design. He cannot expect to be looked up to as a worthy disciple of the Pugins and other pioneers of the Art Revival who thought it not too insignificant to design hinges and escutcheons, and even fire-irons. Can, indeed, our art manufactures be raised by leaving the selection of these articles to builders' foremen and ironmongers? Of what value are the collections at South Kensington if not to place before the student examples of the wrought iron and hammered metal-work of the 15th and 16th centuries of Nuremberg and elsewhere?—but it is of no use encouraging a taste for good design in our artists and manufacturers if all the work actually required in our buildings is to come from other countries. The architect is largely responsible for not patronising some industries, as he has it in his power to specify or order a very large proportion of the goods manufactured in this country—perhaps 70 per cent. of which are made for buildings. But, commercially, there is a strong reason why the architect should have control of the trades, like that of the ironmonger. First, because by non-interference the goods specified are ordered of firms who obtain foreign manufactures, and thus injure the English markets; and, second, because the articles are inferior imitations of designs, and the system directly encourages trade discounts and illicit commissions. We might fill pages with instances of "commissions," "discounts," and other trade customs which have been brought under our notice by some of the correspondents who have been discussing the subject of "Provisions in Quantities." What we say is that the system of specifying in contracts directly countenances the practices complained of, and encourages the custom of contractors taking the difference in value arising from lessened cost of production. In the case of ranges or grates, a large per cent. discount off first prices may be lost in this way to the contractor, and the owner obtain goods of so much less value. The system of trade discounts is fostered by the indirect ordering of goods of his description, and the middleman trader and his traveller profit at the expense of the manufacturer. Items of ironmongery have been too long exposed to trading of this kind;

the contractor who has given a low tender making it a source of profit. In an article in our contemporary, *Ironmongery*, this weakness has been pointed out. The builder has to affix prices to the bill. Instead of going to a respectable local ironmonger and submitting the specification to him for prices, he consults a traveller who has a variety of foreign-made articles at the lowest prices, and who gives long credit. It is needless to say very trashy goods are supplied in place of genuine wares, and what is worse, the architect has no check; he is not willing to give the attention which he should to details of this sort: the consequence is very inferior wrought butts, doors furniture, and fastenings are put in, which turn out a constant source of trouble and disappointment. For improved fastenings for sashes, such as those of Verity's lines and pulleys, mortise locks, and handles, &c., stays for opening skylights, as those made by James Hill, are substituted commonplace articles. The architect is much to blame for this remissness. All improvements of this kind are now known, or ought to be known, through advertisements; it ought not to be possible for any approved fastening or appliance to escape the attention of the architect, and it is his business to see that they are specified by name. Responsible firms of tradesmen ought to bring to his notice any new and improved article. One valuable means of instruction is the building exhibition, when it does indeed represent the wants of building, and does not descend into the bazaar; but this seems almost impossible from the way such exhibitions are promoted.

To mention a few of the things in this trade that concern the architectural finish of buildings, let us take door furniture. The commonest goods are often seen on doors that ought to have superior fittings. Something can be done to improve their shape and design. The old rim lock was once a feature on a door worth looking at; the old door knobs of brass of the 17th and 18th centuries were artistic in shape compared with the modern spheroidal-shaped door knob, and the black lacquered lock of iron without the slightest pretence to design. The architect has not seriously set the question before him whether the ordinary "rim" lock could not be made attractive instead of repulsive and clumsy? Some little improvement in brass furniture is to be found, it is true, in houses designed by a few leading architects in Queen Anne, in which the old style of brass knob pear-shaped and turned with corrugations has been introduced; but these goods are costly and are seldom noticed in ordinary houses and villas. Mechanical improvements, too, of great value have been made in the construction of locks and knobs, such as the self-adjusting spindle, the push-and-pull lock; but confining our remarks to forms of improved door furniture, we notice that, for the reason already hinted, this class of goods is not employed as it should be. The builder often selects the commoner qualities, and the architect passes them; therefore we find that foreign-made fittings continue to handicap improvements in design and manufacture. The cost of bringing out improved and artistically designed articles of this description is considerable, and can only recoup the manufacturer when he can insure that architects will specify and insist upon obtaining them. In stoves the same disinclination is felt. The retail dealer finds the common stoves pay better: he is able to supply them at a profit, and to allow a good trade discount, which is an inducement to the small contractor. To take a higher class of metal-work of an ornamental kind, such as gates, grilles, wrought iron work for churches, standards, brackets, door hinges, lecterns, gable crosses, the wholesale manufacturer who can supply everything per catalogue

at reduced prices, gets the lion's share of the trade. More artistic skill has been expended on ecclesiastical metal-work than on constructional ironwork, but original design is still rare; we find architects constantly selecting patterns that ill suit the style of building, because the cost of executing their own designs is too high. We should like to see a guild of metal-workers emulating the Mediaeval smith in turning out forged work; welding, chiselling, and manipulating the folial parts of a design, welding together the branches and twigs or leaves, and resorting to the traditional methods of the old smiths, instead of so much that is mechanical and spiritless. Architects who have any love for the art might then be inclined to give their aid in the work; but it may and will be agreed that such emulation and zeal will find little response in these days of contractorship, low tendering, and profit-squeezing-by-discount-taking. The profession must set their faces resolutely against the finishing trades of building being allowed to fall into hands which see no harm in extracting discounts and in encouraging inferior foreign manufactures. Painters, grainers, stained-glass and ceramic manufacturers, modellers paper-hangers, and all those who provide for the decoration of our walls, floors, ceilings, and furnish rooms, have a great deal more on their hands than they know how to do with satisfaction—all because the architect specifies a scheme of decoration which he does not take the trouble to formulate, or which he considers trivial things that can be left to the taste of the client or the decorator. We can well understand how the cry against profit-sharing may be urged in these trades; but we will rather dwell on the other aspects of the question—how the work is actually turned out under the usual contract system, and the injury inflicted on artists who have made the decoration of buildings a special study. In the first place, it may be mentioned that the business of decoration comprises a great deal more than is properly included under the term. The decorator is now intrusted with many artistic finishes which formerly belonged to the plasterer, modeller, carver, metal-worker, and glass-painter. This combination has been due to the development of the contract system and to the desire on the part of architects and contractors to include kindred trades under one responsibility. A great deal of labour in estimating and specifying has been thereby saved, besides much friction between the several trades; on the other hand, the separate trades have suffered. "Slop" shop work is now tolerated, as the master decorator has encouraged the labour of inferior artists, instead of those who have made themselves masters of their respective trades. The painter, for instance, is often turned from one kind of work to another, instead of being allowed to complete one thing. Modelling and carving are done by men who have not been specially trained, either by art teaching or experience, to the work. Many of the branches which the modeller and carver once undertook, and which gave them the prospect of becoming artists in the 16th, 17th, and 18th centuries, are now superseded by the substitution of papier-mâché, carton-pierre, fibrous plaster, "Anaglypta," "Lincrusta," and like appliances. These productions are brought to a degree of perfection which leaves very little to be desired, except one thing, and that is the taste and control of the architect. He may insure this supervision by providing specific sums for them in the specification and quantities, and selecting his own patterns and firms. As the prices depend so entirely on design and manufacture, it is impossible to insure success otherwise than by stating prices attached to certain selected patterns. But how seldom he troubles about the matter! And then, when special artistic skill is required, the



quotation of prices is misleading. The prices of leading firms vary of course with the class and situation of work. If a vestibule or hall is to be decorated, it is absurd to imagine that such a work can be priced from general drawings and quantities with any satisfaction. Those who tender in competition, being desirous of winning, will underprice this class of workmanship, because it is uncertain and indefinite in character and extent. A guess is made, but the guess turns out to be very inadequate. Detailed drawings of medallions, panels, arabesques are not even indicated on the general elevations, and have not been given in the quantities. These and the schemes of colouring ought to be made by the architect, and an idea of the cost obtained from a respectable firm. The sums may then be stated with some approach to accuracy in the quantities. But if the designs for decorations in the rough were submitted to artists for their suggestions and prices, the lowest offer being accepted, the decorative arts and crafts would assume an independent position instead of being as they are now, subsidiary to the building and other trades, under the general contract. The items of decoration, instead of being as now, the accommodating provisions in a contract—to be modified, cut down, or left out to suit the circumstances—would be considered necessary to the completion of the building in its entirety.

#### ADDITIONAL STORIES.

THOSE who are engaged in raising buildings or adding stories to them do so often without any consideration of the risks attaching to the operation. In towns the prospects of an extension of premises should be always present to the mind of those who build, and as this extension cannot take place laterally, and in few cases rearwards, it follows that building an additional story or two is the only method of enlarging the premises. But, for some reason or other, architects do not think of the probabilities; they design their elevation and build their walls without a remote idea of an addition to the height. When the owner or occupier thinks of adding a story, the difficulty of the matter comes into view; the walls are found insufficient to bear the additional weight, or it is found that thicker walls are necessary to comply with the section of the Building Acts referring to party structures. Many building owners, and those who advise them, however, do not allow these considerations to have any place in their proposals; they are prepared to add a story, and would for this purpose doubtless carry out their intentions if the district surveyor were not on the alert. Possibly the old party-walls are sufficient and thick enough; but in many cases the full height allowed by the schedule has been given them, so that the addition of another story makes it necessary to rebuild the party-walls. In the case of old buildings the condition of the party-walls is sometimes defective through age, or former alterations; the jambs in some cases have been moved, thereby weakening the wall; sometimes underpinning operations have weakened the foundations; excavations for drains may have been brought so close to the walls as to have caused settlements in the work, which would render it inexpedient to add weight to them. All these are reasons for examination and care on the part of district surveyors. A fractured wall is not fireproof. If flame broke out in a house having a wall of this kind with fissures, the safety of the adjacent premises would be seriously impaired, as a passage for flame and heat would be found through the broken bond. This is one of the dangers of unsound party-walls. There may be unnecessary demands made on building owners,

nevertheless. The wall may not require to be wholly rebuilt, if thick enough. A new roof, for example, may be substituted for an old one, and the surveyor may require the party-walls to be rebuilt; but suppose the walls on each side of the roof are the separate property of the owner and do not belong in common to the parties of the adjoining houses. In this case it seems to be unreasonable to call upon the owner to rebuild what is his own property and ceases to separate the buildings of the adjoining owners. The case heard at the Mansion House the other day, in which a builder was charged with having failed to comply with a notice to erect two party-walls, appears to be an instance. The summons in this case was dismissed. The contention was that the walls on either side of the roof were not party-walls, and this contention was that of the ruling of the Judge in "Weston v. Arnold." In that case a wall divided the property of one party from that of another to a few feet in height, and in so far they were joint owners, and the wall a party structure. Above the wall was affirmed to be a separate property or an external wall belonging to one of the owners; but in this case the owner had acquired a right to windows in the upper part, and the adjoining neighbour wished to raise his building, which would have darkened them. In the Metropolis the introduction of windows in such a position is not common, neither is it sanctioned by the Act, so that the argument does not exactly apply to party-walls in London. The question is whether it is expedient to compel the statutory party-walls to be carried up on both sides of a building when not walls of separation, or because a steeper roof is proposed to be erected?

An individual, therefore, who proposes to add a story or two, or to reconstruct an old roof, should be well advised as to his obligations. He has to comply with the schedule of thicknesses, and with the rights of the adjoining owner, according to the rules of the 85th section. Suppose, for example, he proposes to put a story on his house, by which it will not exceed, say, 60ft. in height, and the length of wall is 45ft., he must have two stories of 18in. wall, and the remainder in height must be 13½in. thick, which means the addition of 4½in. to the thickness of the wall above the first story to the top of the second story, and the addition of the same thickness to the topmost story. No objection can be made to the rules of the Act in theory. When a wall being raised becomes an external wall above the adjoining roof, it ought to be built of the same thickness, for appearance and stability; but when a trifling alteration only is made, it appears hard in practice to call upon the owner to rebuild. Party-wall legislation has, in some respects, retarded the raising of buildings. We do not desire uniformity of height in the London street architecture, and in this respect the regulations have acted beneficially; but the huge blank spaces of walls and chimney-stacks are beginning to be almost alarming in their extent and ugliness. Cast-iron stacks tied to the walls and supported by all sorts of ingenious metallic supports are painful enough to the aesthetic sense, and one is glad to see still the old bulky and irregular masses of brick chimneys with their uneven tops. The cast-iron and zinc pipes, square and round, raking at unpleasant angles, appear as makeshifts, and suggest the speedy rebuilding of the adjoining premises, and in this way a building raised above its neighbours invites them to follow the example.

Mr. Thomas Layton, F.S.A., of Kew, who has for many years past been occupied in forming a museum of the prehistoric antiquities of that district, has contributed on loan to the British Museum a case containing a series of bronze swords, spears, and axes, all found in the river Thames between Richmond and Battersea.

#### THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—VII.

By R. OWEN ALLSOP, Architect.

(Author of "The Turkish Bath: Its Design and Construction.")

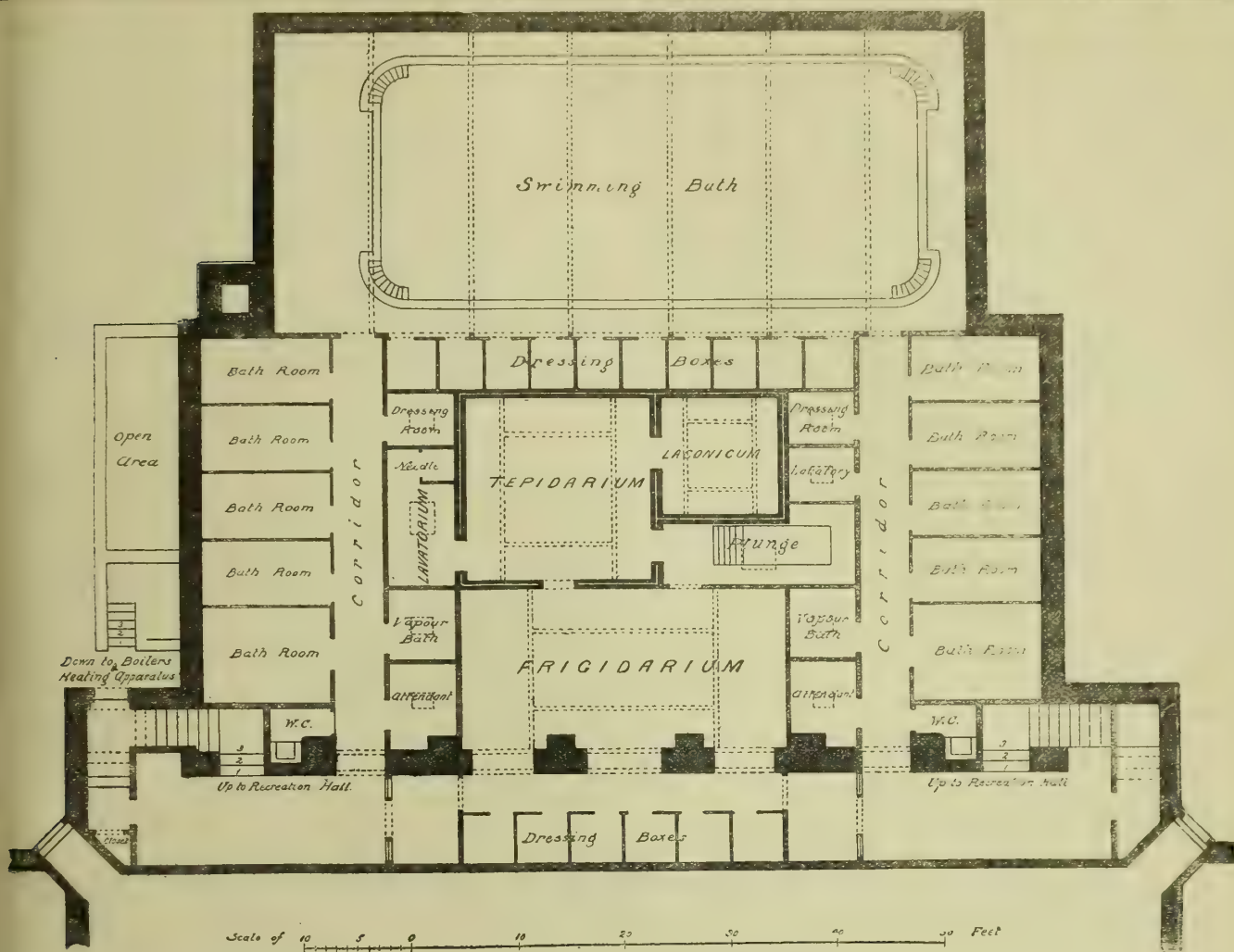
INDIVIDUAL opinion of the hydropathic practitioner modifies to a greater or less degree the nature of the bathing accommodation at the various establishments. In all cases, however, where the resident physician is properly qualified for the duties he undertakes, it will be found that the bath-houses are arranged in harmony with the ascertained principles of action of the system of hygienic medicine called "hydropathy." The bath are, or should be provided, with regard to their curative and remedial values, and thus differ from those of make-believe hydropathies, where they are merely allurements for visitors. Everything is done upon scientific principles; and although the course of treatment may vary at different establishments, it is, in all cases, based upon certain primary laws of hydropathic practice.

Hydropathy has been defined by Dr. B. W. Hunter, in an admirable article in the ninth edition of the "Encyclopædia Britannica," as a *treatment of disease by water, of which the active agents are heat and cold.* For an elucidation of the principles of hydropathy and a concise description and explanation of the action of various baths, the reader cannot be referred to a better work than this article by Dr. Hunter. It will form the basis of study of the medical value of baths and bathing—a study that all who have to do with baths, whether of the hydropathic establishment or of public or private bath-houses, should make, as it is impossible to properly plan any kind of bathing establishment whatsoever without a knowledge of principles underlying the method of treatment of disease by water. For it should be remembered that the slightest application of water to the body, or parts of the body, produces changes, however slight, unimportant and temporary, in the organic structure, and influences, for good or evil, the vital forces, according to the mode of administration, the duration of the application, and the temperature of the water. And although in the hands of the medical practitioner, the power of thus affecting the human frame is all turned to good account, so great is it that, when employed by persons ignorant of the true principles of hydropathy, or *thermo-therapeutics*, positive harm may be done, and life at times endangered.

If, then, it be duly recognised in hot certain and powerful a manner hydropathy acts upon the system, we shall be prevented from falling into yet one more error in the building of hydropathic establishments, and that error relates to the providing of baths without reference to their medical uses. Often we see bath-houses, not only arranged in so unpractical a manner that they are a source of constant inconvenience to the bath men and bathers, but so fitted as to prevent effective treatment. And not only in hydropathic establishments, for in the planning of public baths, baths for civic corporations, and those erected as speculations by private persons, unscientific planning is to be noticed. Evidences of this are to be found in the invariable structural alterations made now here, now there, in bath-houses, and the disuse of fittings and apartments ignorant and misplaced in the first instance.

It is a great thing to rid oneself of the notion that baths of all kinds are merely aids to cleanliness of the visible portions of the human economy. Every bath has some therapeutic property, and this over and above its mere cleansing powers. In medicinal parlance, it may be derivative, stimulative, sedative, alterative, or tonic, &c. The chief end of scientific bathing is to stimulate the functions of life, by assisting the wasting tissue and by aiding the recuperative action.





CRAIGLOCKHART HYDROPATHIC ESTABLISHMENT.—PLAN OF BATHS.

regenerative forces of nature. Hydropathy, more directly than any other system of medicine, aims at assisting the *vis medicatrix nature*.

In the various works of writers on hydropathy, such as those of Hunter, Gully, Johnson, and many others, more or less comprehensive lists of hydropathic baths are given; but in the article above referred to they are grouped according to their therapeutic uses. The author says: "The appliances and arrangements by means of which heat and cold are brought to bear on the economy are—(a) Packings, hot and cold, general and local, sweating and cooling; (b) hot-air and steam baths; (c) general baths, of hot water and cold; (d) sitz, spinal, head, and foot-baths; (e) bandages (or compresses) wet and dry; also (f) fomentations and poultices, hot and cold, sinapisms, stupes, rubbings, and water potations, hot and cold."

Every serious hydropathic establishment should be provided with such bath-rooms, heating appliances, and fittings as will enable treatment, embraced in the above list, to be administered to patients.

Of this list, (a) and (e) only affect the design of the building by necessitating the provision of the bath-house, of private dressing-rooms of such ample size as to admit of full-length couches whereon the packings, &c., may be administered, and the contiguity of a well-appointed douche-room with concluding tonic baths, such as the needle, shower, &c.

Class (b) now means a complete and perfect Turkish bath for the application of heat or heated air for sudorific purposes. The Turkish bath has taken the place of the temporised lamp baths used by the early postles of the "water cure" for inducing perspiration. Steam baths are whole or

partial. Of old, the vapour box was used; but now this apparatus shares with the Russian bath the duties of a sudorific chamber with a vaporous atmosphere. The former is a partial bath, while in the latter the bather is wholly surrounded by and breathes the steam-laden air. The Russian bath should be arranged off the shampooing-room of the Turkish bath; vapour boxes are best placed in a corner of the general douche room, or tonic bath-room, or placed in a chamber connected with this apartment, so that the bather may conclude with the needle or douche, &c., as the bathman may dictate.

Class (c) are the baths of the douche room—the needle, shower, wave, douche, ascending douche, spray, and the more complicated baths of this nature that ingenuity, which may be styled *misapplied*, has devised. They are used either as separate treatment, and as comprising distinct baths in themselves, or as tonic applications to conclude the processes of different baths, as packs, massage, sweatings, &c. The relation of the douche room to the other bath-rooms thus becomes a matter of very considerable importance. If not studied, great inconvenience will result from the neglect. A minimum of passages and corridors, and intervening doors, should connect the miscellaneous bath-rooms with the douche room, and the ways of intercommunication should be so heated and free from cold draughts that bathers may not be exposed to the risk of taking a chill.

Class (d) may be termed *local baths*, as distinct from those just described. Spinal and head baths must be included in the general douche room; but sitz baths may either be simple and movable and placed in the private dressing-rooms, or complicated with various fittings and fixed in a separate

chamber connected directly with the douche room.

Class f may mean simplicity or great elaboration. If the object of the treatments detailed under this head is to be effected with simple means, it will be necessary to perform dry massage in private rooms or dressing-rooms, and wet massage in the douche room or shampooing-room of the Turkish bath; but if all modern resources for cure are to be included in the bath-house, costly arrangements for massage dry and wet, for massage with douching (as the Aix-les-Bains), electric baths and electric beds, and "movement" rooms or Swedish gymnasia, must be made. The simpler treatments included in class (f) call for no comment: they are administered in patient's bedrooms, or the private dressing-rooms of the bath-house.

It may be said that the most able exponents of hydropathy—regarding that term as meaning a system of treatment comprising, in addition to bathing, every hygienic aid to cure, such as regulated living, dieting, exercise, &c.—are the least bigoted; that is to say, the true hydropathist avoids the *nostrum* principle, and seeks rather to derive help from every source. It is the quack and charlatan who avers that certain baths, &c., are sovereign remedies for every disease under the sun. Viewing hydropathy in this light, one may assert that the treatment of the allopathic physician is daily becoming more influenced by its principles. The old, hard-and-fast drug system is decaying, and giving place to a method of practice founded on a deeper and more accurate knowledge of the laws of health, and established facts of hygienic science. In a sense, it may be said that the allopathic and the hydro-



pathic practitioner are meeting on common ground; whereas, in the early days of the cold "water cure" bigotry was evidenced on both sides.

That hydropathy has more powerfully influenced the old system than the latter has modified hydropathy, is a very patent fact. Hydropathy and the progress of "hygienic medicine" has, to a greater or less degree, lured the allopathic physician from his favourite tenets, while the hydropathist has never been tempted to revert to drug medication. It may be said again, then, that while the allopathic practitioner has been lifted up, the exponent of hydropathic principles has had his mind expanded since the days of the first introduction of the "water cure." This expansion has influenced the design and arrangement of the hydropathic establishment. Formerly the appliances to be found in these institutions comprised little more than the wet-sheet pack, the compress or water bandage, and the cold sitz and colder douche. Now, the hydropathist has relaxed the old method and pursues a more gentle treatment, so that, with perseverance, he is enabled to regenerate the most enfeebled constitution. In addition to the baths of the early practitioner, he brings to his aid every variety of treatment based on sound principles, in accordance with ascertained physiological facts and the laws of hygienic science.

*Compactness of plan* is the chief desideratum in the bath-house of a hydropathic establishment, as in any other system of baths, public or private. *Intercommunication* is another point to be regarded, as without easy and convenient access from bath to bath and bath-room to bath-room, it becomes impossible to effectively carry out treatment involving a course of different baths. This is especially necessary where any peculiar treatment compels the bather to conclude with the tonic-baths of the douche-room.

In the preceding articles, the plans of the several establishments illustrated clearly show the arrangement of the baths attached to, or included in, the building. They embrace for the most part a similar scheme of baths, including all the ordinary and simple hydropathic expedients, each having a Turkish bath, douche-room appliances, vapour baths, and miscellaneous bathrooms and dressing-rooms. As a further illustration of the different ways of arranging bath-houses, another plan of an existing institution is given herewith. The baths at the Craiglockhart Hydropathic Establishment were designed by Messrs. Kinnear and Peddie, architects, of Edinburgh, who kindly supplied the plans. The baths are adjoining, but at a lower level than, the fine recreation hall, which extends below the plan, and is reached by staircases from both ladies' and gentlemen's baths, each of which has its separate corridor. A Turkish bath—used at certain times for ladies, and at other times for gentlemen—is placed compactly in the centre. On either side are grouped bathrooms that may be used as douche rooms, or for ordinary baths, and for sitz baths. The swimming-bath—a pleasant addition to a large establishment, but expensive to keep up, unless unusual supplies of water are at hand—is also so arranged as to be convenient for either sex at stated hours. Under the bathrooms, on the left-hand side of the plan, are the stokeries, boilers, heating apparatus, &c. This illustration is a good example of a set of baths with a single Turkish bath, which is invariably to be found in hydropathic establishments, in spite of the fact that the want of a separate ladies' bath is often seriously detrimental to effective treatment. Readiness, at all bathing hours of the day, of every kind of bath for both sexes, doubles the power for good of the resident physician.

(To be continued.)

## NOTES ON BUILDING PRICES.

By JOHN LEANING.

### INTRODUCTORY.

THE references in existing books to the principles of pricing are few and imperfect, and their discovery requires considerable search; much of the teaching they afford is obsolete and mixed with irrelevant particulars; such parts as are worth the knowing are familiar to most fairly-taught students of architecture or surveying. It has been the object in the following notes to eliminate as far as possible everything not directly bearing upon valuation. Upon the importance of the subject it is unnecessary to enlarge. The measuring surveyor who is not an expert in prices is but an imperfect product of professional education, and brings to his vocation less skill than his employers may properly expect of him. A knowledge of building values is an important element in the preparation of quantities, and materially assists the surveyor's judgment as to the order and manner in which items shall be presented so as best to facilitate the pricing. Judicious pricing is the latest acquired faculty of the surveyor, and the severest test of his capability; perhaps it is his most difficult task to deduce analogies in the application to a measured account of the prices of a schedule prepared by an ignorant man. Whatever may be the system of measurement adopted, the reasonable principles of pricing are everywhere similar, and this may be a reasonable excuse for the adoption of many London illustrations. There is always an advantage in learning one system thoroughly, if coherent and complete, even though it may be in some of its details imperfect. In it the student possesses a definite starting-point—a base for the development of a system in which his individuality will find more ample scope. The constants of labour are derived from various sources, and if the student adopts the advice here given he will be able, as his knowledge increases, to make many for himself. Their value as a condensed register of experience is great, and the principle of their application deserving of more attention than it has hitherto commanded. The instances given hereafter of sums for water, attendances, &c., are derived from genuine estimates, and are the work of practised estimators. That the study of the architect, the building surveyor, and the builder's clerk is in many respects similar excuses the inclusion of some information which would seem the exclusive concern of the latter.

*Builders' Price-Books.*—The natural resort of the inexperienced in pricing is a builders' price-book, and while one must admit the value of the great store of information they contain, it is beyond question that they abound in difficulties for the neophyte; the rates of profit vary on different things, some of the prices are list prices, some with a large trade discount, some with a small one. In some of the books this trade discount has been modified; in some it has not. Moreover, no explanation is ever given in a price-book of the way a particular price is arrived at. Modifications to meet a special case is consequently impossible; the difficulty is increased by such artless statements as "8d. to 1s. 3d." If the student buys all the current price-books, his last state is worse than the first, for he finds none of them alike, and even their diversities are not uniform in degree. A builder's price-book to be truly valuable should show the absolute cost of all materials and builders' work; but it should be remembered that no set of prices can be applied to any two buildings without some changes. Every work will possess some special features which will modify its value. There are various causes which contribute to increase the difficulty of framing a set of prices of universal application. Inefficient supervision by the contractor often enough makes the difference between a profit and a loss on a building; besides this, foolish and harassing interferences by the architect or his clerk of works, delay in furnishing details, and general indecision of superintendence, are all elements of value which no price-book can measure; but a builder will modify his profits in various degrees dependent upon the peculiarities of the circumstances.

*Good and Bad Work.*—The difference in value of good and bad workmanship is sometimes alleged, but often unreasonably, as reason for modification of price. Good work and high finish is mainly the result of a good system of business management, and a proper selection of

men; it does not necessarily involve a great outlay, and generally would be represented by very small percentage of the cost.

*Trade Discounts.*—So much has been said written about trade discounts of late that little need be said here on that subject except that the student must learn all about them and take them into consideration in the assessment of his prices. One may say in passing, that wholesale houses not connected with the building trades, with few exceptions, content themselves with giving discount of 2½ per cent. for cash, the house supplying building requisites vary in their practice, giving a discount of 10 to 50 or more per cent. in addition to the discount for cash. The evil effect upon a man's moral nature of association with horses or pigeons has been remarked often enough. Is there some similar occult influence in building operations?

*Use of Priced Bills and Pricing.*—Another resource of the student in prices is a collection of old priced bills of quantities; but these do not help him much. Comparison of the sets of quantities for the same building priced by different men will show a diversity for which it is sometimes very difficult to account. The occasion for pricing presents itself in various ways; the preparation of an estimate from a bill of quantities or from drawings and specification; the items of a measured account or of a day account the position of the man who prices is also varied—he is the surveyor appointed by the architect, in which case he is popularly supposed to administer justice between the building owner and the builder, but is not unfrequently special pleader for the former, or he is estimating clerk to a contractor or a surveyor employed by the builder. In either case pressure is often exerted to induce him to raise every plea in his employer's favour which ingenuity can devise. How far this may be legitimately carried is a question of the morality of advocacy upon which we need not here enter. In the pricing of an estimate, the experienced man has in his mind a store of approximations to the truth which he applies on all occasions. If it were not so, it would be necessary to calculate every price in detail, and it would not be possible in a large business to do the large quantity of work which estimating involves. Preparation for such work is another matter; the student must arrive at every price by careful calculation in detail, and he should beside this be always on the watch for parallel cases and generalisations. When pricing a bill, it will be advisable to write neatly on clean sheets of paper (not rough scraps which are liable to loss or destruction), the calculation used of cost of concrete, brickwork, timber, &c., and the rate of profit, not only as a check upon other calculations which they may affect in the same bill, but for future reference, and if necessity should arise, for the vindication of the judgment. To those familiar with office work it will be unnecessary to speak of the importance of dates. Every document should have written legibly on it the date of its production.

### MEANS OF PRESERVING AND ARRANGING INFORMATION.

The general neglect by the student of surveying of the obvious methods of acquiring thorough knowledge of prices (the most important part of his work) is patent to all experienced persons. A surveyor whose capabilities are only equal to the taking out of quantities is a mere clerk. Unfortunately, many building surveyors know little else. As the examination of the Surveyors' Institute increases in their stringency, prices will probably take a more important place in them, to the advantage of all concerned. Doubtless, the expert in price begins with a mind naturally formed for the study, and without that natural faculty probably none become eminent in that direction; but patience and assiduous attention will bring to any mind that adopts the study a familiarity with values far beyond the average, and in their company the confidence of clients or professional colleagues, with their consequent substantial pecuniary reward. Nor will this be all: it will give the student a faculty of generalisation and a power to trace analogies even more valuable than a memory of rates. Important means to this end are a collection of trade lists and the common-place book. The student should obtain trade lists of every raw material or manufacture article used in the building trade. When he receives a list he should write legibly on it the



ate of its receipt, the trade discount, and the discount for cash. The smaller lists (not books) should keep in a guard-book, which is most conveniently secured by a strap around it. It should be paged, indexed, and cross-indexed, thus: "Ashton and Green," slate merchants, should appear in A Ashton and Green, slate merchants, and in S, slate merchants, Ashton and Green. The bound books or thick pamphlets should each be marked with a number entered in an index, as last described, and kept in portfolios or on a shelf. The student should not merely procure these lists and arrange them: he should make himself familiar with their contents and thoroughly understand them, and he should settle by inquiry any doubts raised by their perusal. The estimator should also keep a book, in which he should enter all the rates of railway carriage. The collection of information as to materials, cost prices, railway rates, &c., is necessary to the man who would achieve distinction in the study of prices, and some method of arrangement for facile access is required. If one of these methods, the common-place book, it is impossible to overrate the importance. The larger number of those men who have become distinguished in any profession have adopted it. By no other means can such a store of professional knowledge be acquired, nor will it in any other way be so readily accessible. The experience of anyone will be sufficient to recall the recollection of long and tedious search (perhaps of days) for information cursorily read and almost forgotten which might have been by those means found in a few minutes. Much depends upon the system adopted. The leading principle is easy and clear reference. There are two kinds: one, the "index rerum," as it has been called, which contains references only to passages of interest. The other, the "common-place book" proper, mainly a collection of the passages themselves. Directions for the management of the "index rerum" are thus given by Dr. John Todd, author of "The Student's Manual":—1. When you meet with any subject of interest, note the subject, the book, the page, and any word distinguishing its qualities. The index should be your constant companion when you read. 2. Make your index according to subjects, as much as possible selecting that word which conveys the best idea of the subject. 3. Put, at the upper left-hand corner of the page, a capital letter as A, B, &c.; in the centre one of the first five vowels, as a, e, i, o, u. 4. Place the principal word in the margin under the first letter in that word, and the first vowel in it. For America, I turn to capital A and the vowel i, because A is the first letter and e the first vowel. A book with faint lines is best, and it should be ruled as below:—

A	a	A	e	B	a	B	e

Examples of the entries are as follows:—

A	e
America.	Supposed to be known in time of Homer. Thomas's "History of Printing," Vol. I. p. 20.
Atheism.	Of France, picture of. Schlegel's Lectures, Vol. II. p. 199.
B	a
Bradford.	Governor, Notices of. American Quarterly Review, Vol. II. p. 497.
B	o
Brougham.	Graphic and powerful description of. Post, Rhetorical Reader, p. 248.

The scale of apportionment of pages recommended by Todd is as follows:—

A 3	J 2	S 6
B 6	K 2	T 4
C 4	L 3	U 3
D 3	M 6	V 3
E 3	N 2	W 6
F 3	O 2	X 2
G 4	P 6	Y 2
H 4	Q 2	Z 2
I 3	R 4	

The foregoing will not be found an infallible guide; various circumstances will arise to modify the proportion—as a peculiar direction of study. A commonplace book may be constructed in a precisely similar form, except that instead of a mere reference to subject, volume, and page, we adopt subject, page, volume, extract, or it may be a mixture of both, or it may include newspaper cuttings and small original memoranda of which you may desire to preserve a record.

Q	"
Quantities.	I advise employers not to let the quantities be taken by anyone who can be made out to be their agent, nor to recognise them in any way except as after mentioned with reference to a schedule of extras. Sir Edmund Beckett, "A Book on Building," p. 32.
B	e
Bedrooms.	Decoration of, remarks on. "House Decoration," R. and A. Garret, p. 30. This might also appear as below.
D	e
Decoration.	Of bedrooms, remarks on. "House Decoration," R. and A. Garret, p. 30.

The reference word should express the leading idea, and should be selected with judgment. Another method of keeping a common-place book has been recommended by Mr. G. A. Sala, and is the method adopted by him. He says:—"Take a book, large or small, according to the size of your hand-writing, and take care that at the end of the book there shall be plenty of space for an index; begin at the beginning, and make your entries precisely as they occur to you in unsorted sequence. But after each entry place a little circle or oval, or parenthesis, thus—( ), and in a portion of these spaces put consecutive numbers. Here is the model for a page:—'The Prince of Wales wore the robes of the Garter at his marriage in St. George's Chapel, Windsor, all the other K.G.'s present wore their robes and collars. Mr. W. P. Frith, R.A., who was to paint a picture of the wedding for the Queen, stood close to the reredos to the right, looking from the organ-loft (1023).' 'Just before the liberation, in 1859, of Lombardy from the domination of Austria, the audiences in the Italian theatres used to give vent to their pent-up patriotism by shouting Viva Verdi; the initiated knew that this meant to signify Viva V. (for Victor), E. (for Emanuel), R. (for Re), D.I. (for D. Italia), (1024).' Now, all you have to do is, immediately you have made your entry, to index it, and if you will only spare the patience and perseverance to cross-index it. Thus, under letter W you will write, Wales, Prince of, married in robes of the Garter (1023), under G, Garter, robes of, worn by P.O.W. at his marriage (1023). Under F, W. P. Frith, R.A., present at marriage of P.O.W. (1023). Thus also Verdi Victor Emanuel and Italy will be indexed under their respective letters V and I, and be referable to at 1024. Write the figures in the circumscribed spaces in red ink. The corresponding ones in index may be in black.' Of commonplace books, as compared with his "Index Rerum," Dr. Todd says, alluding to Locke's system: "Neither that nor any other commonplace book which I have ever seen will either come into anything like extensive use or be of any essential advantage to the student and man of literary habits: they require too much time and too much labour. Everything that is saved must be copied out in full, and then noted also in the index. Few have the time, and fewer still the patience, to do this." This is not by any means a general opinion. We recall the somewhat hackneyed but pregnant sentence—"Reading maketh a full man, conference a ready

man, writing an exact man." For the third reason, irrespective of the value of the store of knowledge amassed, the commonplace book is to be strongly recommended. The foregoing are those for the arrangement of general professional information. For prices there is still one other method—the arrangement of the average price-book in trades. The student should have a book for each trade, and enter every price that comes in his way in its respective book. Every element which has affected the cost of work, all the information you can get as to the working of particular materials, relative values, when you can get them, and weights and measures which are new to you; and in every case date the item and state its derivation, as both source and date are important. The student should also seize upon every opportunity which may offer of observing and making notes of the time and material expended upon certain quantities of work. The most valuable will be those of larger bulk, as from these more reliable results may be deduced for the valuation of smaller quantities. Example: The notes of the production of a thousand yards of concrete will yield a more reasonable average than ten. This practice will, besides enriching his store of information, help the student to foster habits of observation and precision such as would be worth very much more trouble to acquire.

**Profit.**—Profit may be best defined as a percentage to be added to every item after its complete cost has been computed. The rate of profit must be decided upon in any system of prices, and although the general usage does not countenance it, some estimators hold that it is in the case of pricing a bill of quantities best added at the end of the bill. Ten per cent., besides establishment charges, is the least that should be attached, except in a very large work. Sometimes contracts are deliberately taken at a less profit than this; but it is much oftener unwittingly done. It may be safely assumed that work at a less rate than 10 per cent. clear is seldom worth the doing. Undoubtedly work has been taken without profit for such reasons as the keeping together in a period of depression a well organised business and a staff of efficient workmen; but such a case is an exceptional one, requiring exceptional treatment. Profit should be higher on work or material in small quantities. Nails and screws (of which many are inevitably wasted), and small quantities of such things as paint, putty, solder, colours, &c., are examples. The adjustment of profit in cases of variation is usually defined by a condition of the contract that extras or omissions shall be valued at the rates of the original contract or analogous ones; in such case there is no base of argument. In its absence it seems reasonable that the special circumstances should be considered. Several hundred similar doors may be produced by machinery at first, at a much lower rate than one or two later; and these should bear a larger price. On the whole, it may be admitted that the equitable assessment of profit requires mature judgment, and almost every case demands modifications not exactly referable to a fixed rule. A collateral issue is well expressed by Mr. Matheson in his "Aid Book for Engineers." He says: "There are certain engineering undertakings in which it is very difficult to frame a schedule which shall apply fairly to additions or omissions. A contractor may have to provide expensive plant, machinery, and apparatus, the extent or cost of which would be but slightly altered if the quantity of work were to be diminished or increased. Therefore, having these fixed expenses already provided for extra work, could be performed at less rates than those in the primary contract, while deductions in price for omissions should also be made at a less rate, because the contractor would only save the material and labour deducted, and not a like proportion of his apparatus and fixed charges."

**Establishment Charges.**—It is best to preserve a distinction between profit and establishment charges; these latter represent the outlay other than labour or material before any profit can be realised, and are most conveniently considered as a percentage to be added to the prime cost of every item. In a well-drawn bill of quantities, the preliminary bill contains a number of items which, in the opinion of some, might be properly included in that percentage—as sheds, scaffolding, screens, &c.; but as these vary with the requirements of each building, they are probably best dealt with separately. The remaining items for consideration are:—Interest on capital, rent of offices and yard, clerks' salaries, including



cost of measuring, or waiting on an appointed measurer, depreciation of plant and machinery. The whole of the prime cost of the building operations for a year being ascertained from the books, exclusive of foregoing items, and a similar calculation of a year's outlay on those items made separately, their comparison will show the proportion and consequent percentage which should be added to every item of prime cost. The judgment and experience of an assessor are often considerably tried to form a reliable opinion in a given case. The conduct of some businesses costs twice as much as some others equally efficient but less pretentious. Sometimes when the rate of percentage is in question the builder will permit the surveyor to inspect his books (in confidence), when he can satisfy himself as to the reasonableness or otherwise of the claim set up. In default of this permission, the builder may be requested to furnish a statement of the detail of his calculation. When no items of the kind are included in a preliminary bill, establishment charges are commonly computed at 5 per cent. Sometimes as much as 7½ per cent. is allowed. Occasionally they are classed in two categories—5 per cent. on work done at the building, 7½ per cent. on work done at the builder's shops. The necessity of defining these charges before signing a contract is admitted, as, after a schedule of prices has been agreed to and the work done, the contention has been raised that the prices were not intended to include establishment charges. Probably the best way is to mention them in the preamble of a schedule.

#### SUPPLY OF MATERIALS TO LONDON.

The sources from which materials may be most conveniently procured, and the means of placing them on the site, will always be an important one, and in this connection the extent of the proposed work must materially affect the decision. Taking sand as an example, for a large work it would be procured by the barge-load at the cheapest rate; for a small work, the reasonable alternative would be to obtain it from one of those merchants of building materials whose yards are, as a rule, on the banks of the Thames, the canals, or their basins. Similar conditions regulate the supply of stock bricks. Bricks of all kinds are brought to London in large quantities by railway, the merchants having depots at their termini. Whether a truck or barge load shall be ordered direct from the field, or the bricks bought by the thousand from the London merchant, will depend upon the size of the work. The price of the smaller quantities thus obtained will be about ten per cent. higher than the larger ones otherwise procured. It will often be possible to save all trouble of barging and unloading, and yet avoid much increase of cost, if a large order can be given to one of the London merchants. It is obvious that the possibility of the builder's barging for himself must operate to keep down the middleman's profits. Much of the sand and ballast used in London is dredged from the Thames. Not nearly so much is brought from above bridge as from below, although the former is more generally specified. The contractors may either charter a barge, and purchase the sand when dredged, landing it at one of the Thames draw wharfs, where the privilege of unloading will cost him 25s. per day, and he must find his own baskets, barrows, and planks, or he may arrange for a barge load at a price per yard, including barging, unloading, and filling into carts. Pit sand is also brought by barge. Contractors may, however, generally buy sand (unless he occupies a wharf) as cheaply of the keeper of a draw wharf, who generally keeps a stock, or will have it there to order, and will arrange for its cartage and delivery if desired. From some of the suburbs, as Fulham, Hammer-smith, Epping, Walthamstow, &c., pit sand is still carted to London, and in such cases the carts take away rubbish on their return journey. Sand is also brought by truck or barge from Croydon, Redhill, Sevenoaks, West Drayton, Southall, Ealing, Dawley, &c. The supply of stocks and malms for the metropolis is derived from Kent, Essex, and Middlesex—Sittingbourne, Teynham, Faversham, Southend, Acton, West Drayton, Ealing, Hayes, and Southall are some of the places. Bricks are still made in the more immediate neighbourhood of London, as at Edmonton, Norwood, &c.; but as these must be carted all the way, it will generally prove cheaper to use bricks from more distant places conveyed by rail or barge. The supply of lime is derived from

Dorking, Merstham, Halling, Lewes, and Petersfield. A stock is always kept at the merchant's yard in London, and the price quoted generally includes delivery in loads of two yards, and when the lime is ground the use of sacks. The lias lime used in London is for the most part brought from Barrow, Leicestershire, or Lyme Regis, Dorsetshire. Portland cement is brought from Northfleet, Rugby, Arlesley, &c. Most of the manufacturers at these places have London depots, and there is no advantage in purchasing at the works, as it would probably increase the cost. The price generally includes delivery within the usual limits, and use of casks or sacks. The stone used in the metropolis is almost uniformly brought by rail; some Portland and York, however, comes into the Thames. The timber used in London comes to the Surrey, Commercial, East India, and West India Docks.

#### THE RIVER THAMES.

It is probable that the wharves of the Thames have been less used for the introduction of materials since the great development of the railway system, the rates for railway carriage being reduced to their lowest point wherever shipping comes into competition with them. Besides this, a coasting vessel of average tonnage carrying a cargo for delivery above London Bridge must transfer it to lighters before it can be deposited at wharves up the river, and this involves additional expense. This consideration does not affect the traffic from the Medway or the estuary of the Thames, which is carried in smaller craft, and consequently large quantities of bricks, sand, cement, lime, ragstone, &c., are brought from Kent and Essex by water. Deals and timber are also conveniently brought by barge from the Surrey, East and West India, and other docks to the river wharves, and as some of these belong to the railway companies, access is thus afforded by their systems to all parts of the country. There is still, however, a large traffic in sea-borne materials, as granite, Portland stone, Yorkshire stone, bricks, lime, slates, stoves, ranges, and miscellaneous iron castings, iron joists and girders, rain-water pipes and gutters, &c. The draw wharves on the Thames are much used for the shooting of rubbish into barges. Exclusive of loading and unloading, the lighterage from the Surrey or India Docks to any wharf between London Bridge and Westminster costs:—

25 tons and over, per ton, Deals, 1s. 6d.

25 " " " Mahogany, 1s. 9d.

Bricks, Southend to any wharf between London Bridge and Westminster, 4s. per thousand, exclusive of loading and unloading. These charges would include all dues. The Thames Conservancy tolls do not much concern the contractor, as he generally makes his bargain with either merchant or lighterman at a price which includes them.

#### EARTHWORK SLIPS AND SUBSIDENCES.\*

AS a large number of public works are undertaken in which excavations and earthworks are concerned, any information and suggestions of a practical nature cannot fail to be of use to engineers and others engaged in dock construction, embankments, waterworks, and other like construction. Mr. John Newman, A.M.I.C.E., has written a volume on the subject that has hitherto only been treated of cursorily. The main causes of slips and subsidences in different soils are described, and preventive measures are discussed. Among the chief causes of slips of earth, of which our author enumerates no less than 31, we may mention want of uniformity of earth, particularly as regards percolation, cohesive power, and resistance to change by the action of water, &c., the temporary or permanent exposure of earth to the effects of atmosphere, rain, frost, &c., the tapping of springs, erosion of a slope, slopes honeycombed and disturbed by rodents, particularly in clay soils, marls, discharge of water from land drains, local percolation of water, vibration, over-weighting, unequal loading, and other artificial causes. We are disposed to think many of the causes are distinctions without differences. We should say that No. 1 cause, "Want of uniformity of the earth, particularly as regards percolation, cohesive power, and resistance to change by action of water, &c.,"

covers causes numbered 2, 5, 10, 11, 12, 13, 14, 15, 16; at all events, the heads assigned may be reduced to about a third of the number. We should have rather classed them under the following heads: Slips or subsidences arising from geological and physical causes; want of cohesion; differences of structure; action of water; atmospheric causes, such as disintegration caused by frost, rain, and snow; mechanical causes, such as over-weighting, vibration, want of support. No less than 39 heads of causes of slips and subsidences in embankments are mentioned. Surely there is no need to name so many, and the summing-up of the causes given by the author on p. 8 appears to meet all the requirements for investigation. It is rather tiring reading. The author proceeds to give a few suggestions of value respecting the stability of earth works. 1. Avoid cuttings or embankment in drift soil, or upon the side of a hill. 2. Avoid all damming-back of flow of natural drainage waters, or heaping of snow by the erection of an embankment in mountainous or hilly ground. 3. In excavations "on the side of a hill, observe the natural configuration of the ground, or the wettest part, and remember that the shape of cutting may not stand unless at the same inclination, or the toe of the slope is supported by massive retaining wall and extensive drainage and that any disturbance may cause it to require a flatter inclination." Other useful advice is given which the railway engineer and earthwork contractor may profit by. A chapter is devoted to the probabilities of a slip, and time of the most frequent occurrence. The author discusses the slips in different kinds of rock; igneous or unstratified rocks are less likely to slip than those liable to surface decomposition and disintegration such as some varieties of basalt and clay-slate limestone, sandstone attacked by frost. The crystalline rocks are not so exposed as those of clay composition. Chalk, as in the Needle Rocks will stand perpendicularly, if free from faults, to a great height, the slopes of repose are 1½ to 1, 1 to 1½ to 1. Marly chalk requires a slope of 1½ to 1 clean gravel, of uniform size, 1 to 1; compressed hard clean sand, the same slope; loose sand, 1 to 1; irregular bed of sand, gravel, clay, and rock, 1½ to 1; and this latter angle is that of ordinary loamy sand and clay loams. Shifting sand is never stable, though when drained, and the toe is secured by a retaining wall, it will stand at an inclination of from 3 to 1 to 4 to 1. Some notes are given on methods of drainage which would have been more useful if accompanied by diagrams. Speaking of the normal pressure of earth, Mr. Newman refers to the limit to the height of an embankment—the height to which it may be carried without exceeding the safe load that the natural ground will sustain. The limiting height in feet is obtained by dividing the safe load in tons per square foot upon the original ground by the weight in tons of a cubic foot of the deposited earth. Thus, the limit of height for embankments unaided by retaining walls, and the slope soiled and covered with grass is, for surface clay 20 to 30ft.; boulder clay, 25 to 30ft.; ordinary clay, 30 to 40ft.; in cuttings, 60 to 65ft.; chalk 30 to 40ft.; gravel and sand about 60ft.; ditto in cuttings, 80ft. Other chapters consider coefficients of friction, forms of slope, preservation of the foot of a slope, covering slopes, and variety of other questions; also canal, reservoir, and river embankments. The book contains a fund of useful information, but would have gained by a little more condensation.

#### BRICKS AND BRICKMAKING MACHINERY.

By M. POWIS BALE, M.Inst.M.E.; A.M.Inst.C.E. Author of "Woodworking Machinery," "A Handbook for Steam Users," &c.

#### BRICK-KILNS.

AFTER the bricks are made comes the extremely important matter of burning them and unless this is well and carefully done, all previous labour is thrown away. To deal with the construction and working of kilns at length would occupy much more space than I have at my disposal. I must, therefore, for the present limit my remarks thereon. The chief points to be desired in a kiln may be briefly summarised as follows:—

- (1) Uniformity in burning and colour of bricks
- (2) Economy in labour and fuel. (3) Easy regulation of the heat. (4) Moderate first cost and

\* Earthwork Slips and Subsidences upon Public Works. By JOHN NEWMAN, Assoc.M.Inst.C.E., &c. London: E. and F. N. Spon.



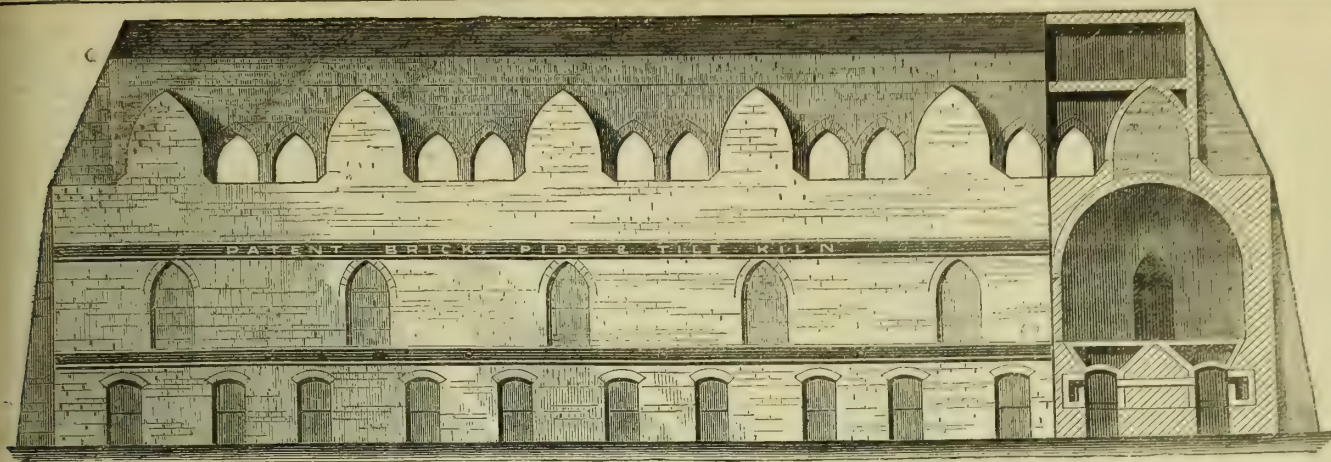


FIG. 20.

low cost of maintenance. A greater or less difficulty found in all kilns is that of securing uniformity of burning, and consequently uniformity in colour, hardness, and size of the bricks. To obtain this the kiln must be very carefully planned as regards size, draught, area of flues and chimneys, and number of furnaces. Then, again, the quantity of fuel used, the nature and shrinkage of the clay from which the bricks are made are very important matters. To secure uniformity in burning, the most advanced forms of kilns have been designed so that the heat can be regulated to a very considerable extent, chiefly by means of a system of air draughts, and directed to any desired part of the kiln. It is necessary, too, that the draught to the furnaces should be properly adapted to the nature of the fuel, &c., used; this is a point often lost sight of, but one of great importance in securing a constant and even heat. The furnaces and flues should, in all cases, be lined with firebricks, and when low cost is not important, it will pay well to line the whole kiln. Where drying sheds are in use, the flues can be arranged so that the waste heat can be afterwards utilised in them. The whole kiln should be well and substantially built, and the parts of the furnace which most rapidly burn out be made capable of being readily renewed. Kilns are built both round and rectangular, and with both up and down draught according to the direction in which the heat is conducted from the furnace. They are built also in chambers; this latter is the most modern and economical plan, and the one that will probably eventually be most generally pursued.

The want of uniformity in colour found in many bricks burnt in the same kiln has given rise to considerable difference of opinion as to the cause of this, and amongst other reasons given are (1), want of uniformity in the heat; (2), the admission of cold air on hot bricks, oxidising the iron, &c., in the clay; (3) the chemical constituents of the clay being unevenly distributed; and (4), owing to the steam discharged from the bricks whilst heated, producing with the carbonic acid of the fuel a chemical action, which showed itself after the bricks were burnt by discoloration. I am inclined to think the last is the chief reason, as it has been fairly well proved in practice that if the bricks are well fired, and all steam and moisture removed from them before they are brought under the action of the fire in the kiln, the colour is much better. This, doubtless, arises from the fact that by the removal of the moisture the smoke and dust in the kiln cannot so readily attach itself to the surface of the bricks, and so cause discoloration. For the effective removal of the moisture from the bricks, and to obtain a good colour, the author can recommend continuous-working chamber kilns in preference to any other with which he is acquainted. The originator of this form of the kiln was Hoffman, whose kilns have been largely introduced. They have, however, recently been considerably improved, and of these improvements we shall have something further to say.

Most of the bricks made in the London district, in which ashes, &c., are used, are burnt in "clamps" in the open without the aid of kilns, and this plan has some economical advantages, as the ashes contained in the bricks furnish part of the fuel for vitrifying or burning them. In addition to this, layers of ashes are placed between each course of bricks, graduating in

thickness from the bottom upwards. Flues or "live holes" are formed at intervals through the clamp, and filled in with wood, which is lighted from the outside, and the mouths of the flues closed. This fire lights the breeze between bricks, and gradually extends to the whole clamp, which continues burning for several weeks. To successfully burn a clamp of bricks requires very considerable skill and experience in the arrangement of the bricks, the thickness of the layers of breeze, &c., these often requiring modification, according to the nature of the clay, &c., which can only be learnt from practical experience.

The common kinds of kilns in use for brick-burning consist usually of a rectangular building or walls, the fires being arranged at the sides or ends of the buildings. The floor of the kiln is sunk somewhat below the surface of the ground, and the bricks are set in and drawn from the kiln through narrow doorways or openings at the side. These are arranged slightly above the surface of the ground, and they are bricked up when the bricks are being burnt. The fire-holes or furnaces are usually arched openings lined with firebrick. The kiln walls are made about 3ft. thick, the bricks being set in loam or fire-clay, mortar not being used on account of the lime contained in it, which would destroy the brickwork when heated. Lean-to roofs are usually erected on each side of the kiln to protect the fires and firemen.

Circular kilns are also in use; these are built with domed roofs with an outside wall to protect the fires. The fire-holes are narrow openings left in the kiln walls.

Many kilns of the ordinary forms in use are very wasteful of fuel, consuming as much as 10 or 12cwt. of coal for each thousand of bricks burnt. Both oil and gas have been used in lieu of coal for burning bricks with, we believe, considerable success. In America, crude oil as a fuel, in conjunction with a compressed-air burner, has been introduced, and it is claimed for this arrangement that the heat can be readily applied to any form of kiln, that it is absolutely under control, and can be easily graduated from the gentle heat necessary at the commencement of burning a kiln to a very intense heat if required. The burner is applied directly to the arches or chambers containing the bricks, and furnaces can be dispensed with. It is claimed for this process that to burn a kiln of average clay into good hard bricks requires about 40 gallons of crude oil per thousand bricks, and as the operation of cooling off is much more rapid than with the ordinary processes, a considerable saving in time is effected.

In erecting kilns, to obtain a successful result, and an equal quantity of hardness and colour in the bricks burnt, the point to be desired, yet difficult to attain, is a method of accurately ascertaining and regulating the heat so as to afford a uniform temperature. Messrs. Lauth and Vogt, of Paris, have recently made a series of experiments with the different pyrometers in use for ascertaining the amount of heat in a kiln or chamber, and speak favourably of the water pyrometer invented by Boulier. This pyrometer consists briefly of a thin copper cylinder having one end closed and the other terminating in the tubes, one of which is connected with a reservoir of water, and the other is joined to a thermometer. In making a test of the heat the thin copper tube is inserted into the kiln, and a current of water is made to circulate from the

reservoir. The water in the cylinder is heated by contact with the hot air, and the rise of the temperature is registered by the thermometer at the exit. In order to insure the regular circulation of the water, an electric balance is introduced into the copper vessel, which, at the least interruption, stops the flow of the water. Another method for ascertaining very high temperatures has also been used in France with success. This consists of employing as tests different metallic alloys of known composition, and whose melting points are known. For temperatures between 960° and 1075° a gold-silver alloy is used; above this temperature an alloy of gold and platinum.

We illustrate above (Fig. 20) a chamber-kiln for drying and burning bricks, pipes, tiles, &c., from the designs of the Bedford Ironworks Co., Bedford. The kilns consist of a series of arched chambers, connected with an overhead main hot-air flue, through which the heat and waste gases are conducted to any chamber that may be desired, the heat and waste gases being afterwards utilised in drying the green bricks in the drying-shed. Each chamber of the kiln is fired independently from a grate beneath the chamber. They are also fed from manholes and handholes formed on the top of the kiln. The distribution of the heat is controlled by dampers in the various flues. The chief feature claimed for the kiln is the general arrangement of the flues, &c., and the utilisation of heat by means of the overhead flue, which diverts the heat into any given chamber, instead of its flowing to the chimney or drying-shed at once from the kiln. The consumption of small coal per 1,000 bricks is stated to be from 1½cwt. to 3wt., according to the size of bricks and kind of clay.

Amongst the more modern form of chamber kilns, that of Hoffman is the best known, the one that has been most largely adopted, and upon whose principle of working most of the later improvements have been founded. These kilns are made either rectangular or circular, and fitted with a number of chambers so arranged that their action is continuous—that is, as the bricks are finished burning in one or more chambers, other chambers are at the same time being piled with green bricks, which before being burnt undergo a preliminary drying by means of the waste heat and gases which pass away from the chambers where the bricks are being burnt. In the ordinary kilns this heat is usually passed away into the air and wasted. An additional economical feature is also secured by utilising the heat from the cooling bricks, after they have been burnt, by employing it to warm the air which is used to supply the furnace fires, so that the air necessary for combustion is raised to a high temperature before being introduced to the fire. The heat required to warm the ordinary cold air to the high temperature necessary to combustion is therefore saved. The flues from the furnaces and various chambers are so arranged, that by means of valves and dampers communication between the flues and chambers and the kiln chimney may be cut off at pleasure. As some of my readers may not be familiar with the working of a Hoffman kiln, I give the working of an ordinary circular kiln, taken from a paper read some years ago by Professor Thompson, who says:—"The kiln is built in the form of a large arched passage like a railway tunnel, bending round in going forward to the ground



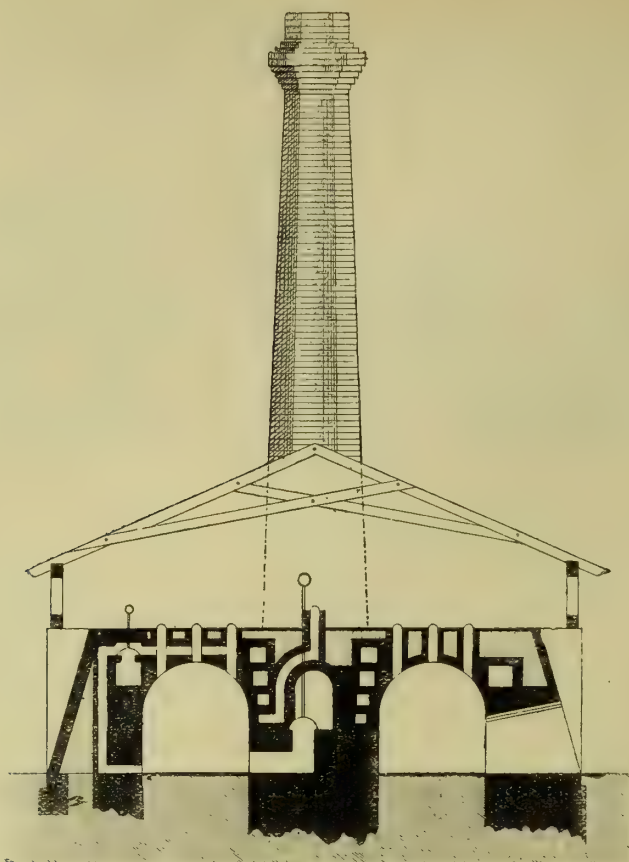


FIG. 21.

fill it closes with itself, to form a great circular ring-chamber, within which the burning of the bricks is carried on. This ring-chamber may be of any convenient dimensions, 160ft. diameter being a suitable size. Round its circumference there are 24 entrance doorways, admitting of being closed with temporarily-built bricks and clay, so as to retain the heat and exclude all entrance of air by the doorways so built up. The great ring-chamber may now be conceived as consisting of 24 compartments or spaces, with one of these doorways to each. In the centre of the ring a high chimney is erected, and from each of the 24 compartments of the annular chamber an underground flue leads into the chimney. There are, then, 24 of these flues converging towards the centre like the spokes of a wheel, and each flue has a valve by which its communication with the chimney can be cut off. Arrangements are made by which a partition like a damper can be let down at pleasure, or otherwise placed, so as to cut off all communication between any of the 24 compartments of the ring-kiln and the next one. Let us now suppose the working of the kiln to have been already fairly established; for, after being once kindled, the fire is never extinguished, but the burning of new bricks and the removal of the finished produce are carried on by a continuous and regular process from day to day. Two adjacent compartments have this day their entrance-doors open, all the rest being perfectly closed. By the arrangement of the valves in the flues, and the large partition, the air which gets admittance alone by the two open doors has to go round the whole circuit of the ring-kiln in order to be drawn into the chimney. From one of the two open compartments men are taking out the finished and cooled bricks, and in the other one they are building up newly-formed unburnt bricks which are not yet quite dry. The air, entering by these two compartments, passes first among bricks almost cold and takes up their heat, and then goes forward to warmer bricks, and then to hotter and hotter, always carrying the heat of the cooling bricks forward with it till it reaches the part of the ring diametrically opposite to the two open-and-cold compartments. At this place it gets a final accession of heat from the burning of a very small quantity of small coal, which is dropped in among the bricks from time to time by numerous small openings furnished with air-tight movable

lids. Thus at this part of the kiln there is generated the full intensity of heat which is required for the burning of the bricks. The hot air, including the products of combustion, which, for brevity, we may call the smoke, though it is really perfectly gaseous and free from sooty particles, then passes forward to the bricks, which, by its continuous current, are being heated; and it passes on among them from hot bricks to those which are less and less hot, heating them as it goes, and then passes on to those which are still damp, drying them as it goes; and then it passes to the chimney, in a state almost cold, and saturated with the moisture, in the form of steam or vapour, which it has taken from the damp bricks. On the following day to that on which the operations just described have been going on, the partition is shifted forwards by the space of one compartment, and a corresponding change is made as to the flue which is to communicate with the chimney, and as to the pair of compartments open for the admission of air and for the removal of finished and cold bricks, and the building in of fresh damp bricks; and so the air, including the products of combustion, at the end of its circuit in the annular chamber just before passing off to the chimney, now passes among the fresh bricks which were described as built in on the yesterday of this new day. The place where the small-coal fuel is thrown in is also advanced round the circle by the stage of one compartment, and so now the whole process goes on just as it did yesterday. The fire thus makes a complete circuit of the annular chamber in twenty-four working days. The whole process may be left dormant on Sundays, merely by the closing of all apertures for the admission of the current of air."

We illustrate herewith (Fig. 21) an improved form of Hoffman's continuous-working chamber kiln, patented by Mr. F. H. Jung, of Parkstone, Dorset, who incorporates a heated air system with the ordinary chamber kilns. In this kiln a flue arrangement is constructed between the chamber arches and the floor of the kiln, by which means the outer air is heated to about 600° Fahr. This heated air can be directed into any part of the kiln, which is filled with green bricks, and it is claimed that by this hot-air flue system the green bricks can be thoroughly dried in from one and a half to two days. Any part of the kiln or any chamber can be connected with or disconnected from hot-air flue as may be re-

quired. The hot-air flue and drying chambers are not connected directly with the chimney fire. The air in the flue is heated by the hot brickwork and hot sand on the kiln, and the draught from the kiln chimney causes the circulation of the air through the flue, and at the same time carries off the vapours from the drying chambers. With this arrangement it is claimed that the bricks burnt are of much better average colour than those burnt in ordinary chambers, there being a much greater freedom from steam stain, which largely affects the heads and faces of bricks under ordinary circumstances. Mr. Jung says this is solely caused through the green bricks not being perfectly dry when brought in connection with the fire, the consequence being that the bricks sweat, and the passing smoke and gases from the fire adhere to their damp surfaces, and effect a stain which cannot be burnt off. By drying the bricks thoroughly in a chamber before passing into the kiln, this stain is largely prevented; at the same time, the burning proceeds much more rapidly than is the case with damp bricks, as the steam which in this latter case arises has a tendency to damp and check the progress of the fire.

We are informed that a considerable number of these improved chamber kilns are now in use, giving very satisfactory results. The inventor guarantees to burn from 6,000 to 10,000 bricks with one ton of small coal, according to the nature of the clay—say 6,000 bricks of sandy or fire clay, and from 9,000 to 10,000 bricks from rich clays.

#### HILL'S MANSION, SHREWSBURY.

THE accompanying illustration represents the only old example of the brick-and-stone period now remaining in Shrewsbury. The "shell" is all that remains of this building—the fine stone porch and entrance door, the upper floors and ceilings, old chimney pieces, and staircases, &c., having been taken away and sold for what they would fetch.

The interior of the building is completely stripped, most of the windows are filled in with either brickwork or louvres, and the basement is used as a lumber-room to an auction mart. At the back are some fine examples of half-timber work, used formerly as the servants' quarters, stabling, &c., but now in a very ruinous condition. The date on one of the lead cistern heads is 1618.

The front faces a very narrow street, and being closely built up all round, it is difficult to get a sight of much at a time. The sketch was made in the spring of 1889.

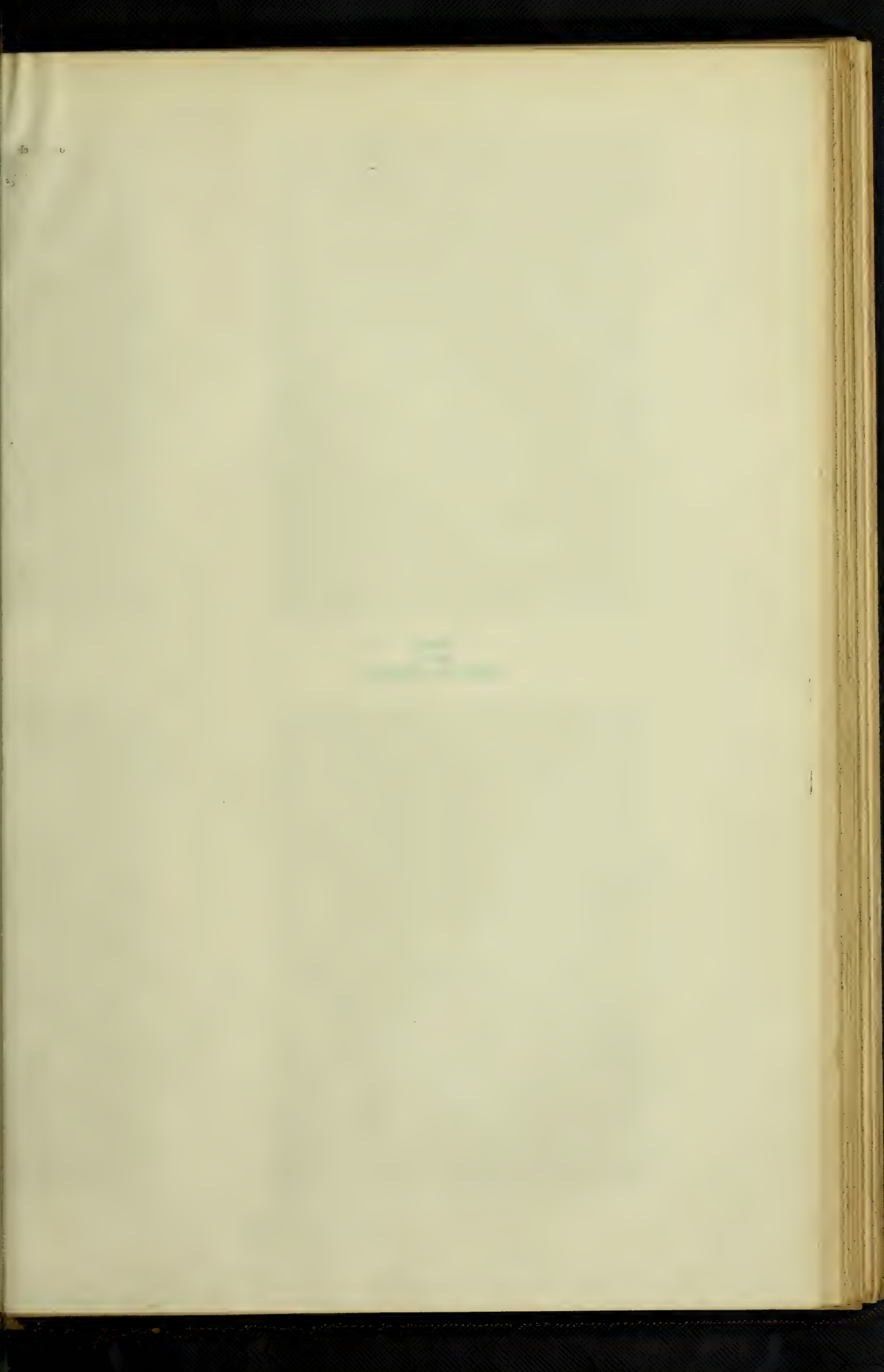
GEO. P. BANKART, Leicester.

On Monday the newly-erected post-office in Hall-street, Bilston, was opened for business. The new building, which has cost £2,700, was erected by Messrs. Bradney and Co., Wolverhampton, from plans furnished from the Office of Works, London.

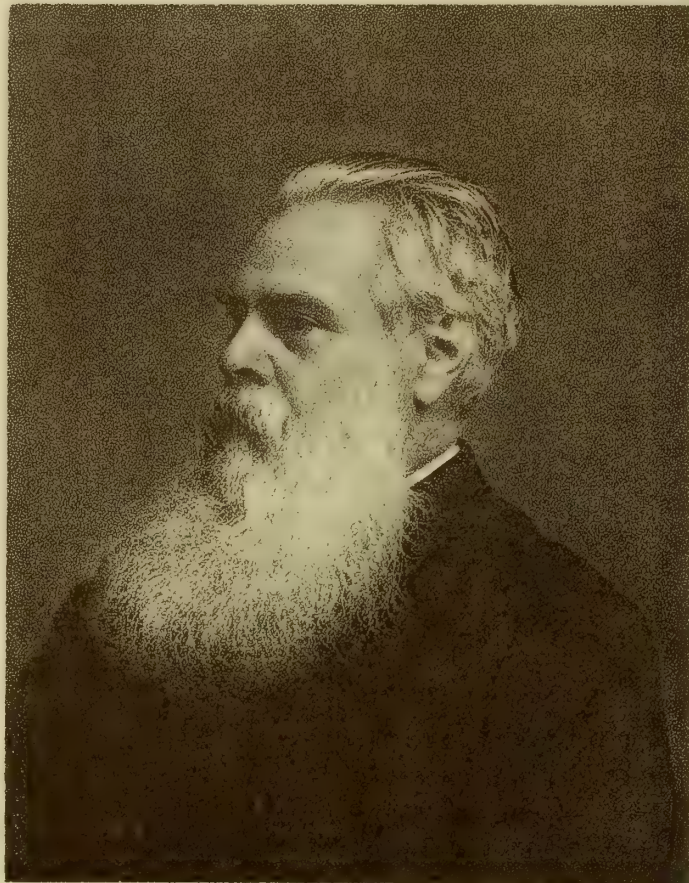
A new Presbyterian church in Belvedere-road, Sunderland, was opened last week. It is built of red Dumfriesshire sandstone, and has a lofty tower, the style being Perpendicular Gothic. Sitting accommodation is provided for 1,000 persons, and there are folding seats, to be used when required, for 200 more. The large hall will seat about 720 persons, and the lesser halls on the ground floor 320 and 110 respectively. The halls and class-rooms are on the Stockton-road side of the church. The planning admits of all the buildings being used separately, or all in combination, so that 2,210 persons will be able to sit in the building at once. The architect is Mr. John Wilson, of Glasgow, and Mr. Robert Hindon, jun., of Sunderland, is the contractor.

Above £1,000 has been raised during the past few days at a bazaar held at Selby, on behalf of the restoration fund of the abbey church in that town, and the total sum now in hand or promised reaches about £5,500. Mr. J. Oldrid Scott is the architect for the restoration, which will include the repair of the choir, thoroughly overhauling the roof, the filling of the great east window with stained glass, the replacing of the very ugly modern windows on the south side of the edifice by others more in harmony with the main architectural features of the abbey, and the relaying nearly all the floor of the choir and side aisles. The fine arcading on the north and south sides of the aisles is also to be renovated, and all that part of the structure which stands east of the tower is to be thoroughly restored, made weather-proof, and otherwise presentable. The nave was restored from the late Sir Gilbert Scott's plans in 1872-3.









*Thomas Woolner*

THOMAS WOOLNER · R.A.



*Alfred Gilbert*

ALFRED GILBERT · R.A.

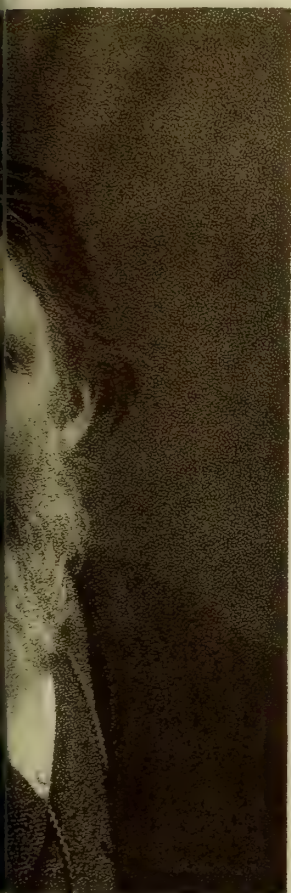


PROF.  
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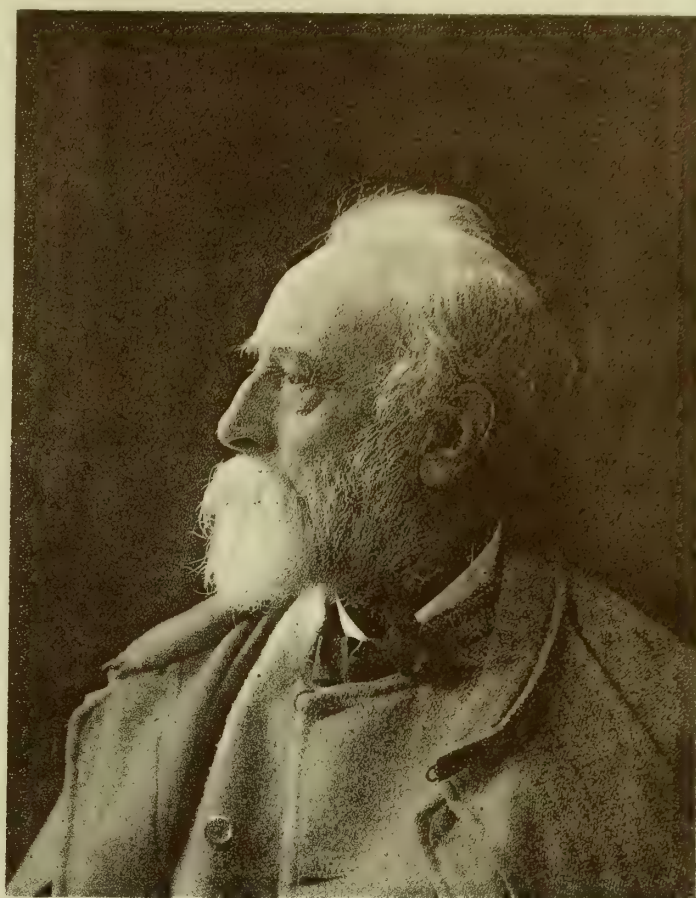
C.E.





*Ruskin*

SKIN · M.A.  
OF · ARCHITECTURE



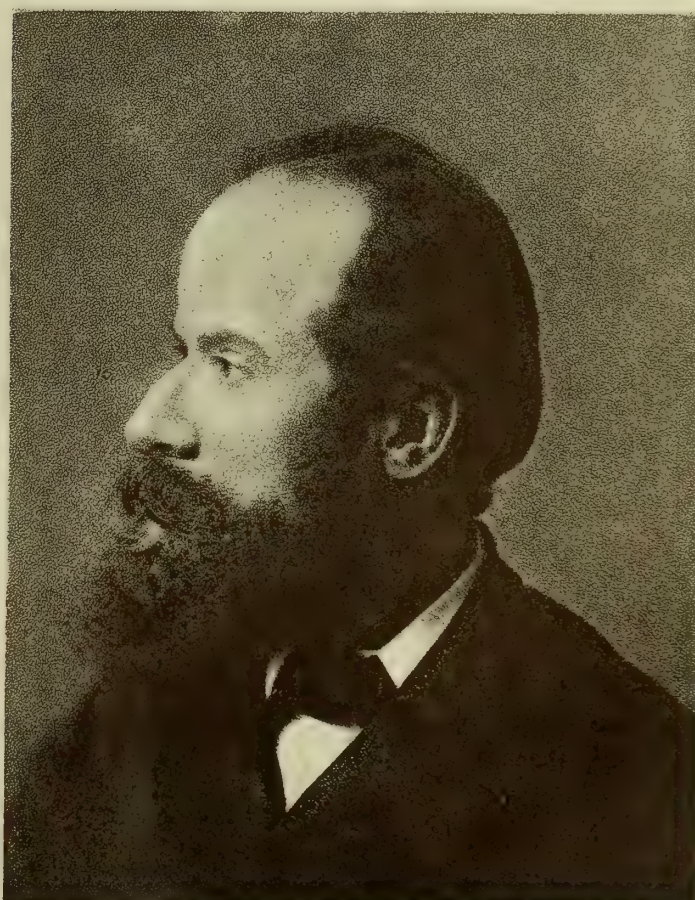
*G. F. Watts*

G · F · WATTS · R.A.



*C. V. Birch*

RA.



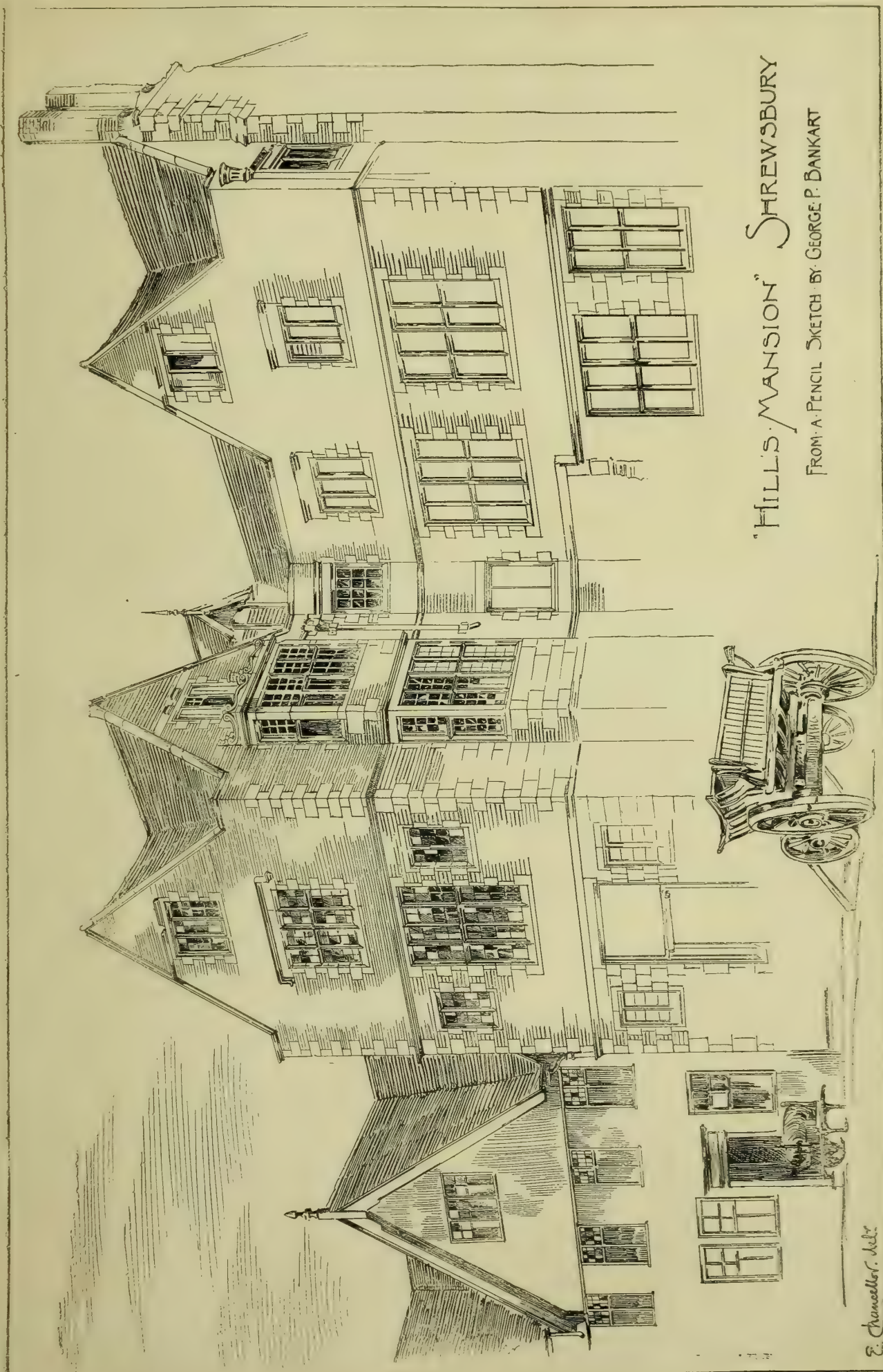
*G. Tinworth*

GEORGE · TINWORTH ·









"HILL'S MANSION" SHREWSBURY

FROM A PENCIL SKETCH BY GEORGE P. BANKART

E. Chancellor. del.



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## Our Illustrations.

## CONTEMPORARY BRITISH SCULPTORS.

(See description on p. 782.)

## THE GLASS AND DECORATION OF FOLKESTONE PARISH CHURCH.

Our illustration shows part of the wall of the north aisle which has recently been ornamented with mural decoration, pictures, and stained glass by Mr. A. O. Hemming, of Margaret-street, Cavendish-square. Over the door is a group of angels, of which we only show a part, and to the west of the doorway is the largest picture, which is over 12ft. long. The stained glass represents five of the principal Archbishops of Canterbury, with scenes from their lives. One of the windows is given by Sir Edward Watkin. Mr. Hemming is now busy on the south wall, and hopes to complete this series of pictures, which illustrate the "Stations of the Cross," during the summer. The design for this work is now being exhibited on the line at the Royal Academy.

## C. E. MISSION HALL.

There are no particulars worth having of this. It is a sketch design prepared for a Cambridge College, and is estimated to cost £3,000. The site is near the Old Kent-road.

## BEDFORD GRAMMAR SCHOOL.

We give a double-page illustration from a drawing, now at the Royal Academy, of the new building in course of erection for the trustees of the Harpur estates, Bedford. It is situated near St. Peter's Church, at the southern end of the cricket and football ground. The architect is Mr. E. C. Robins, F.S.A., of London. Mr. Spencer, of Bedford, is the builder, and the clerk of works is Mr. Tanner, of Bristol. The design is in the Tudor style, and an endeavour has been made to give an exterior and an interior view in one and the same drawing, which, moreover, is also accompanied with a small plan. The building is faced with red Cattybrook bricks from Bristol, with Weldon stone dressings and Broseley tile roof covering, pitch pine being used for the internal hall roof and other timber and joiners' work. Provision is made for 1,026 pupils, in 41 classes—6 of 36, 11 of 30, and 24 of 20 pupils in each. The building is three stories in height, with four staircases. In addition to the above class-rooms, there are the administrative rooms for the headmaster, office and printing room, masters' common room, and waiting room; also lavatories and a.m.c. on each floor. The various rooms are grouped around three sides of a great hall, 50,000 square feet in area and 50ft. high, with a double tier of galleries, the southern side being sustained on an arcade of stone. About 1,200 persons may be accommodated in the hall and galleries. Much to the regret of the archi-

tect, and for reasons not under his control, it is not a perfect example of the "hall passage system." On the north side, under the great hall windows, is an external ambulatory, broken in the centre by a projecting organ-chamber, and a turret for the flagstaff and bell. A ventilating roof turret is situated in the centre of the hall roof. The cost of the building, exclusive of school fittings, is under £20,000, or less than 5d. a foot cube. A chemical laboratory, completely arranged, is projected as a separate block, to cost another £3,000. Houses for several of the masters are also in hand by the same architect.

## CHURCH OF OUR LADY AND THE ENGLISH MARTYRS, CAMBRIDGE.

The exterior of this church has been previously illustrated in the BUILDING NEWS; the interior now given is exhibited this year at the Royal Academy. The church is almost finished, and the "Stations of the Cross," now being fixed, will complete the internal fittings, which have all been designed in harmony with the style of the church by the architects, Messrs. Dunn, Hansom, and Dunn, of Newcastle-on-Tyne and Bristol. The High Altar, with oak baldacchino (now being decorated by Mr. Westlake), together with four other altars, the stations, and the statues at the west and tower doors, have been executed by Mr. R. L. Boulton, of Cheltenham; and the beautifully-worked oak screens which surround the chancel are by Mr. Ralph Hedley, of Newcastle-on-Tyne. All the windows are filled with stained glass. We gave a description of the plan and general treatment of the design when the exterior view appeared, so that it is needless to recapitulate.

## MUNICIPAL LODGING-HOUSES IN GLASGOW.

THESE plans are interesting just now on account of the proposal made by the London County Council to erect such buildings within the metropolitan area. In all large towns there are always a large number of people who have no home, and the horrors of the casual ward are familiar to many more persons than the well-to-do have any idea of. Common lodging-houses have fallen into disrepute among the better class of itinerant lodgers, though periodical inspection on the part of the authorities has done much in preventing these places from becoming perfect pest-houses. The Corporation of Glasgow a few years ago erected seven large model lodging-houses, capable of sleeping 1,929 persons in the aggregate, and in any one of these 3½d. per night will insure a clean bed, light, fire, and appliances for cooking. That which we give the plans of is to-day in Clyde-street, and we are indebted to Mr. J. Williams Dunford, the architect to the Salvation Army, for the loan of the originals, which were supplied by the authorities of H.M. Office of Works, when it was thought practicable to erect similar buildings for the work of the Salvation Army. The plans readily explain themselves. In the basement there is a caretaker's house and a large dining-room and kitchen, a hall, and general shop for sale of cheap provisions. The ground-floor entrance is central, and it is commanded by an office. The day room occupies the front, and to the rear is a dormitory for 32 beds, with lavatory and w.c. adjoining. Above, the whole space is devoted to dormitories, one for 48 beds, one for 40, and one for 32 beds, with an isolating landing and staircase between the two wings. The front-wing arrangement is repeated on the second floor. The sketch given of the bunks shows how each sleeper has complete privacy. The door of the first bunk is shown open, and the bed is on the top tier. The sleeper in the next bunk is below, so that by this hit-and-miss arrangement the utmost is made of the available space, and each lodger is independent of the other. The doors bolt, and there are two hooks in each bunk to hang clothes upon. The passage between the rows of bunks is 5ft. wide, and the whole series standing free of the walls has an entire circulation of air round, with a cubical air space of 400ft. per head. A woven wire spring mattress is provided, 2ft. 6in. wide, and each bed has a hair mattress, two hair pillows, one sheet, and a pair of full-sized blankets folded in four. Round the walls of the kitchen are lockers, for one of which every lodger may have a key if he deposits 6d. for the time he holds it. Everyone cooks for himself, and teapots, saucers, and basins are provided. The kitchen fire does all the cooking and heats the house throughout. Feeding is confined to the basement. These houses pay a dividend,

and the total revenue proceeding from them for 1888 was more than 4½ per cent. on the original cost. Of course, they are very plainly designed. The houses are for males only, with the exception of one in Russell-street, where there are 96 beds for women.

## COMPETITIONS.

**BARNSELY.**—The unfortunate dropping of the date in June out of the advertisement of the Barnsley Town Council in our last issue has, we fear, caused trouble to many. The date by which designs for the reconstruction of the large hall are to be sent in is the *ninth* of June.

**RAWALPINDI.**—In the recent competition for designs for the Lansdowne Institute, at Rawalpindi, Upper India, the drawings submitted by Mr. W. Arundell, M.S.A., were awarded the premium of 300 rupees, and will be carried out subject to slight modifications. The object of the building is to provide accommodation for theatricals, concerts, and dances, while ordinarily it will be used as a library and reading-room. The hall is 67ft. by 33ft., with a screened gallery for native ladies at one end and the stage opening out from the other, with retiring-rooms, green-room, carriage porch, and verandahs. The style is a modification of that of the Mogul Dynasty, and the central portion is surmounted by a 20ft. dome. The estimated cost is 26,000 rupees.

**SALE.**—A free library is to be built at Sale, and a limited competition has been held among the following architects: Mr. George Truefitt, of London; Messrs. Heathcote and Rawle, of Manchester; and Mr. Robert J. MacBeath, of Sale. On Monday last, at a meeting of the local board, the report of the sub-committee was adopted, unanimously electing Mr. MacBeath as the architect for the work, which will be proceeded with at once. It was announced at the meeting that £1,000 had been already subscribed towards the erection of the building.

## CHIPS.

At the Tavistock County Sessions last week an action was brought by the Tavistock Highway Board against Messrs. Relf and Pethick, the contractors engaged in the construction of the Lidford Junction Line of the London and South Western Railway, claiming damages in consequence of injury caused to three roads by the heavy traffic in connection with the making of the new railway. The defendants were ordered to pay £56 11s. as damages with costs, but the Bench agreed to state a case for the superior court.

Last week the new Trinity Wesleyan Sunday School erected in Roundhay-road, Leeds, was opened. The school is built in the Italian style of red pressed bricks and Harehills stone dressings. There is an assembly-room, with accommodation for 400 persons, lighted by clerestory windows at the sides and large windows at each end. On both sides of this room are class-rooms—ten in all, and at one end is an infants' room seating 180 children. The building has been erected from the designs of G. F. Danby, Leeds, at a cost of £2,100.

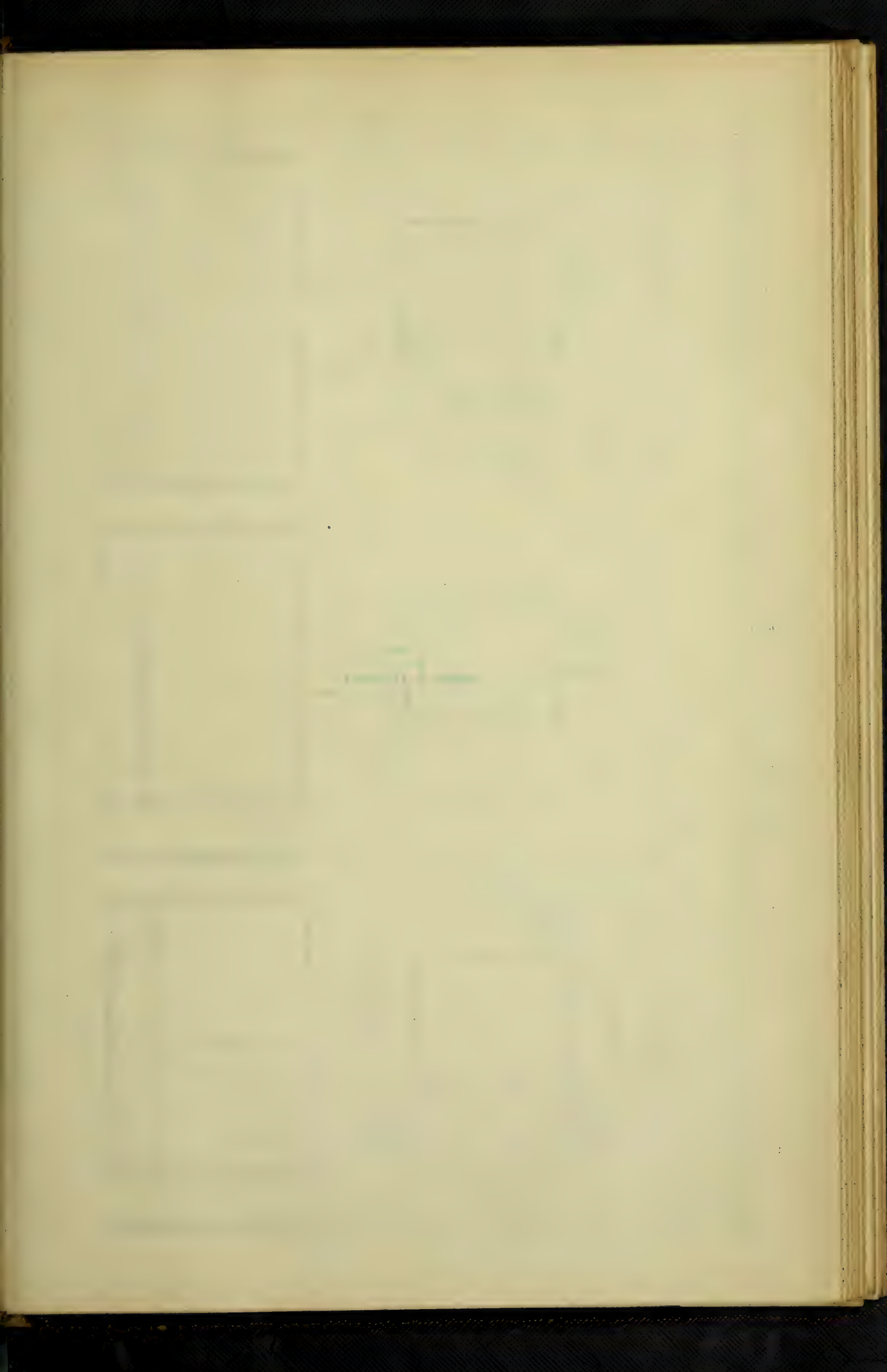
At a meeting of the Association of Public Sanitary Inspectors, held on Saturday at Leamington, an address by the president, Sir Edwin Chadwick, was read, in his absence, by Sir Douglas Galton. In it the writer insisted on the necessity of forming a central sanitary authority for the kingdom, with a Minister of Health added to the Cabinet. Sir Douglas Galton also enforced the necessity of creating such a public department.

The Plymouth, Devonport, and South-Western Junction Company's new line from Lidford to Tavistock, Devonport, and Plymouth will be opened for traffic on Monday next by the South-Western Railway Company, whose trains will run over the line in connection with their through services from London and with the North of England via the Midland Railway and Templecombe. This new railway, which is a double line throughout, will enable considerable accelerations in the journey between Waterloo and Plymouth to be made.

The Tivoli Theatre, Music-hall, and Restaurant in the Strand, which was built, so far as the carcass was concerned, from Mr. Walter Emden's designs, and has been completed by Mr. C. J. Phipps, was opened on Saturday.

The loan collection of works of art with which the new premises of the Corporation Art Gallery at Guildhall will be inaugurated will be opened by the Lord Mayor on Tuesday, June 10, at two o'clock. Some valuable and interesting paintings and sculpture have been lent to the City Corporation for the occasion.

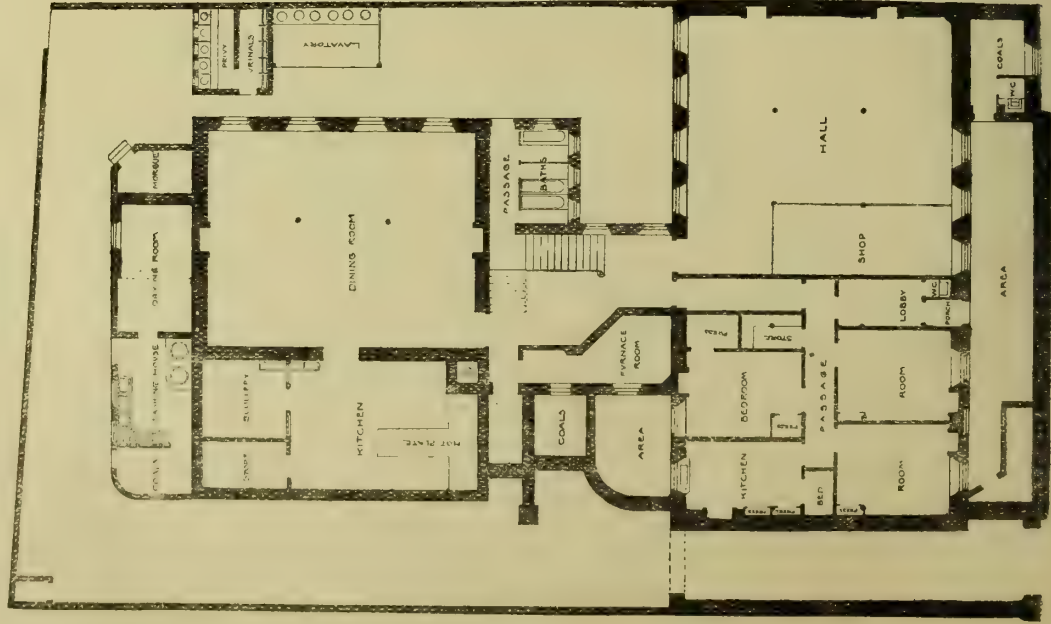




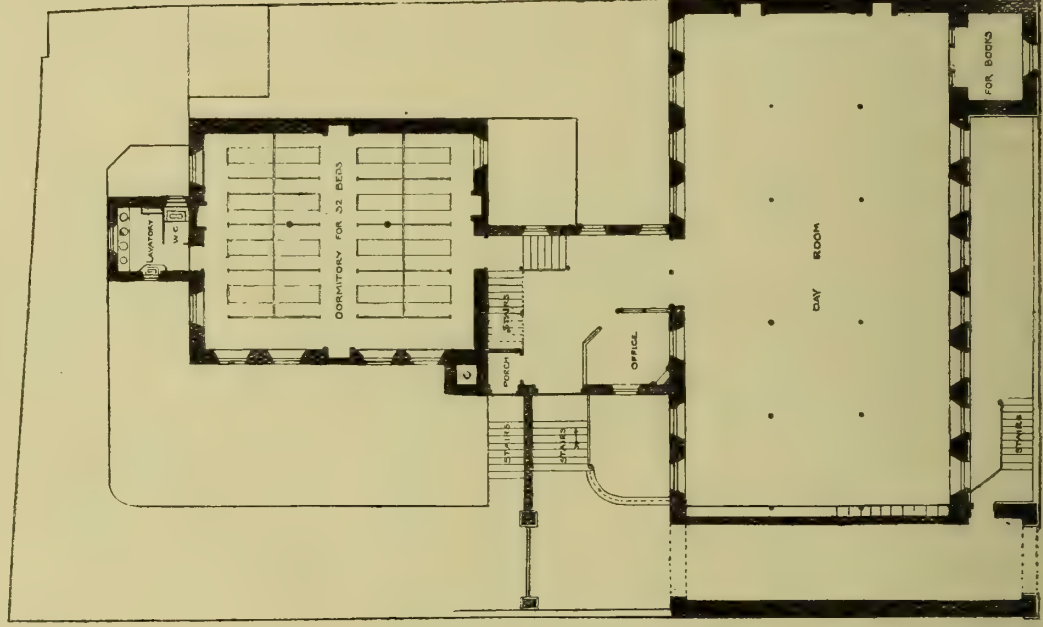


PUBLIC LODGING-HOUSE CALTON GLASGOW  
ERECTED BY OFFICE OF PUBLIC WORKS

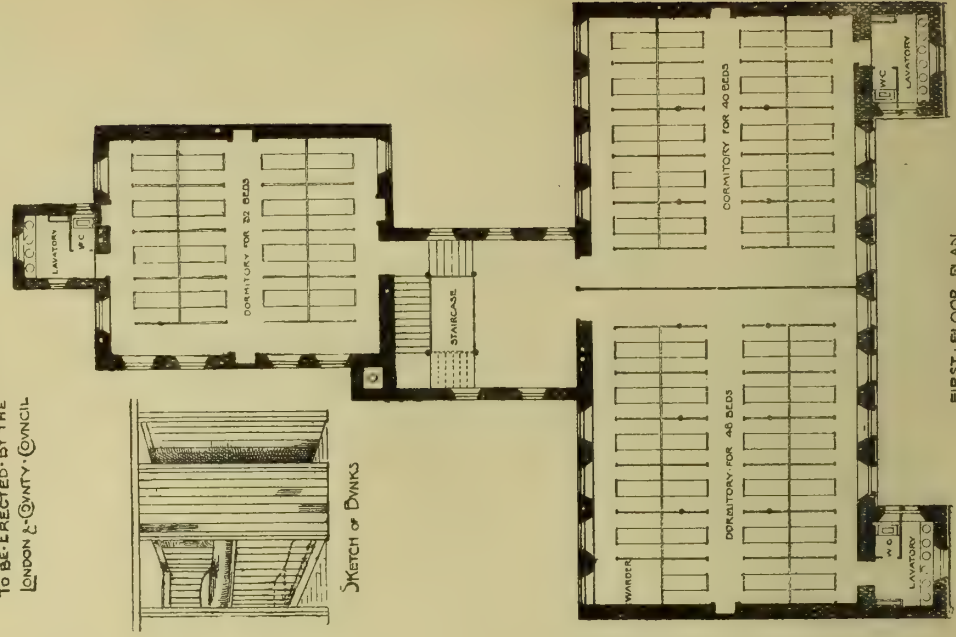
TYPE OF BUILDING PROPOSED  
TO BE ERECTED BY THE  
LONDON COUNTY COUNCIL



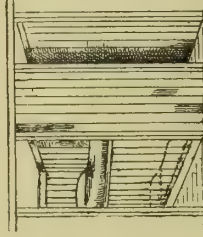
BASEMENT PLAN



GROUND-FLOOR PLAN



FIRST-FLOOR PLAN

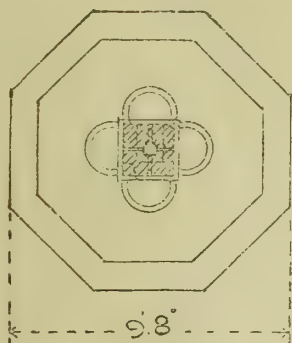


SKETCH OF DINING



# NEW DRINKING FOUNTAIN & DOG TROUGH ERECTED IN VICTORIA PARK.

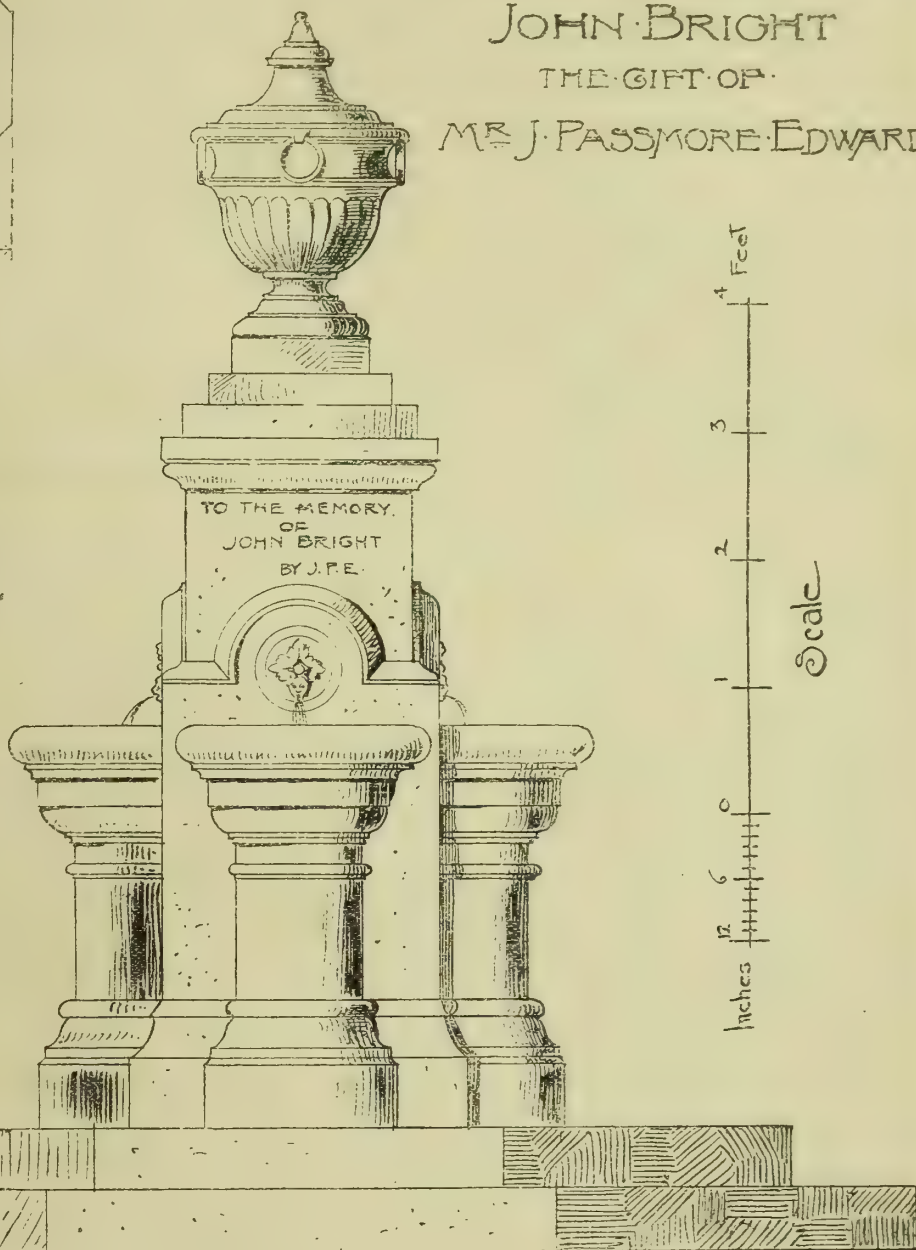
TO THE MEMORY OF  
JOHN BRIGHT  
THE GIFT OF  
MR J. PASSMORE EDWARDS



PLAN

HEIGHT ..... 9'9"

WIDTH AT BOWL 4'8"



ELEVATION

DESIGNED BY ROBERT KEIRLE, FRIBA, ARCHT

E.C. del.

## NEW DRINKING FOUNTAIN IN VICTORIA PARK.

THIS new drinking fountain, lately uncovered in Victoria Park by Sir E. H. Currie, is one of a series which Mr. J. Passmore Edwards, the proprietor of the *BUILDING NEWS*, the *Echo*, the *Weekly Times and Echo*, the *English Mechanic*, the *Southern Echo*, the *Hampshire Independent*, &c., is erecting in London and the provinces to the memory of distinguished public characters and personal friends. The Victoria Park fountain is dedicated to the memory of John Bright, and is appropriately simple and solid in character

and design. It is composed of Cornish granite, quarried by Messrs. J. Freeman and Sons, of Penryn, and was designed by Mr. Robert Keirle, F.R.I.B.A., architect.

The area of forest land in India demarcated and reserved by the State is steadily increasing year by year, especially in the Central Provinces, which now contain by far the largest area of reserved forests of any province in the peninsula. There were at the close of 1889 54,917 square miles of demarcated forest, as against 17,705 square miles so recently as twelve years since.

St. Peter's parish church, Little Driffield, was reopened after restoration and partial rebuilding on Friday. Mr. Temple Moore was the architect, and Messrs. George Shepherdson and Son, of Driffield, were the builders: the outlay has been £1,200, besides special gifts.

A new Bible Christian chapel in Locking-road, Weston-super-Mare, was opened on Friday. It is built of native stone with freestone dressings, and the fittings are of pitch-pine. It is seated for 400 persons, and has cost, with schoolroom at the rear, £1,400. Messrs. Hans Price and Wooler, of Weston, were the architects, and Mr. T. Allen, of the same town, was the builder.







## WAYSIDE NOTES.

IT is quite possible for both parties to make a good case for or against the proposed changes in the Architectural Association. The reformers urge that the voluntary system has been tried in the balance and found wanting, while the keep-as-we-are gentlemen proclaim that the A. A. has been from its foundation a mutual, self-help society. Here we have clearly Liberal, if not Radical, sentiments, and good old English stick-in-the-mud Conservatism. At the discussion on Friday evening last the reformers had the best of it, as might have been expected, seeing that the "Bill," so to call it, for improvements in the organisation of the Association has been fathered by the "Government." The "Opposition," however, may be largely represented at this evening's meeting, and, if so, there will be a vigorous discussion on the merits of the scheme and the desirability of carrying it into execution.

It may be said in favour of those desiring the change, that their action is in harmony with a commendable spirit of improvement, while at the same time it may be asked, In what respect has the voluntary system been found wanting? Has it not done all that could be expected of it under the conditions imposed by the very nature of the Architectural Association? We do not say that a watch has been tried and found wanting because it does not inform us of the probable state of the weather or the direction of the wind. The change may be for the better, as it appears likely to be—for the student of architecture, at any rate—but the Association of the past will have disappeared. From a mutual self-helping society it will have changed to a teaching academy, and this point is one that should be well considered by members taking an active interest in the future of the A. A.; and at a crisis like the present all will be interested in the future. It is this latter point that those opposed to the reform, or revolution, will fasten upon as weighing heavily in their favour. They will hark back to the commencement of things, and declare that the Association was founded, not as an academy, but as a self-helping society, formed of young men interested in the study of architecture, who should mutually assist one another, and do all in their power to forward the common weal. They will say that the raising of the subscriptions, in conjunction with the abolition of the voluntary system of teaching, will result in the formation of a new mutual society for young and poor students. And these objections will be worthy of careful consideration by all interested in the true welfare of the Association, and all who are not led, by curious ambition or self-seeking, to favour a radical change in its working until it has been proved undeniably good and pleasing to the majority of members.

The reformers will have to show that the above objections are nothing worth. They will have to demonstrate, if possible, that the proposed changes will be to the benefit of architecture and architects, through architectural students—that is to say, that the greater perfection of educating machinery will produce architects of superior skill and more powerful to advance the interests of architecture and of architects, which must of necessity go hand in hand. If they can do this, few will be selfish enough to oppose merely because they feel that the change is for the student and not for themselves as members, continuing their membership for the sake of the interest and enjoyment they derive from fellowship and attendance at entertaining lectures, &c. Such persons have every right to object to changes in a society originally intended to be conducted on certain lines; but I suppose the meetings, &c., of the Association would, under the new state of things, continue much as heretofore, so that the grievances of non-student members would be more imaginary than real. The most realistic of any would be the raising of the subscription, not to a vast amount, it is true, but enough to cause opposition. Here, however, there should be a tendency for matters to right themselves, for, both theoretically and practically, the burden of the increased subscription would fall most heavily on the student class, and students have less money to expend than the older members. But it is the students who are to benefit, while the latter class of members do not benefit. There are exceptions to the above rule of students being poorer than young architects; and Mr. Com-

missionless, of the fourth-floor "back," who, it will be remembered, offered to take on the job of an assessor for a ten-pound note, says he knows a thing or two on this point. Nevertheless, the rule holds good in spite of exceptions.

The pith of this matter seems to be the attitude of the student himself. Does he want to pay one guinea subscription instead of the half-guinea, and receive supposed benefits? If he does, all well and good; let the scheme go through. If, on the other hand, he fails to recognise the benefit of the change, I don't see how the Association Council and its committee are to make him take kindly to the proposed innovation. They cannot stuff it down his throat willy-nilly. Students vary as the face of the sky; but as a class they are the same, and if A. A. students do not want the change now, it is not likely that those who will join the Association in days to come will be in a different frame of mind. If, as asserted by those bringing forward the proposed reforms, the benefits are for the student, let us ascertain first whether he is himself as enthusiastic in the cause as some imagine. One of the most sensible suggestions put forward on Friday last, was to the effect that a poll should be taken of members, to ascertain their views on the subject, and I would add all my weight to this suggestion. The matter may be decided by vote, and possibly this evening, so members holding decided views and having any reason or wish to vote one way or another, must bestir themselves to-day and wend towards Conduit-street at eventide.

There won't be any Channel Tunnel ready for the holiday exodus of architects and students to the Continent this summer; but since Carlyle's well-known and oft-quoted saying seems wonderfully applicable to a large portion of the English nation, who, having a "right little, tight little island," would literally undermine its tightness and rightness by constructing a dry thoroughfare from it to the Continent, there seems some reason to believe that in days that have grown yet more evil the tunnel will be commenced with serious intentions, be it ultimately finished or left incomplete. Of ideas and schemes there are plenty. What with tunnels and bridges, and a combination of the two means of crossing the silver streak, not to mention the marvellous designs for blowing-up or flooding a tunnel at a moment's notice—a fascinating subject to reflect upon, one would think, when in the bowels of the earth midway between Calais and Dover! The latest scheme, the details of which have been put before an admiring public, who take it all in for gospel, is that of M. Varilla, a Frenchman, who, according to the *Daily News* correspondent, "singularly resembles Napoleon." M. Varilla's scheme consists of bridges, combined with a tunnel. Piers or "bridges" would run out from the shores of either country, and at their extremities would be lifts to lower the trains into the tunnel. There is no denying the originality of the idea, which, it is to be supposed, was conceived with the object of rendering seizure of the end of a tunnel on the Watkin model impossible. Otherwise it might be docketed along with many other schemes as issuing direct from an inventor in Bedlam. The trains on this system would be run some way out to sea, let down 160ft. or 170ft., run along the tunnel, up the lift in the twinkling of an eye, along the other bridge, or pier, and there you are—if nothing goes wrong with the works.

M. Varilla is not aback in practical details, or, at least, in general practical scheming, which is often found to differ from practical detailing when the works are commenced. The tunnel has to be constructed with its two ends submerged, and this is to be done with caissons measuring 600ft. and 400ft. by 90ft., which will each form "a peaceful lake" in the waste of waters. One wears of these Channel tunnels in the air (where, by the bye, they are more easily constructed than in the sea), and it tries one's patience considerably to have to repeat them as they come along. Those wishing for fuller details as to this, the latest scheme for enabling persons to go under to Paris, may consult the *Daily News* of the 28th, wherein will be found the account of the correspondent's interview with the originator. Enough of the Channel Tunnel, and its variations in bridges, &c., except that I would point out that the foolish Great Tower

business and the Channel Tunnel have been fathered by one and the same person.

Descending from the airy flights into which the what "might" be done leads us, we arrive at ordinary works of architecture, and find that the summer competition season is upon us, when, emboldened by the fine weather, public bodies decide to invite designs at a time when the works should have been well under way. Instead of taking time by the forelock, and making architects busy indoors in the winter and out of doors in the summer, they neglect to get designs till the summer, and very often this bad management finds the building commenced in the worst of weathers. The two particular circumstances to which I allude may, however, be different. The Barnsley Town Council, possibly, may prefer that the work of reconstructing the interior of their public hall should be carried on at some particular time of year; and the time of announcing competitions for free libraries must necessarily depend upon the taking of the vote for the adoption of the Act authorising the imposing of the requisite tax, so it is to be charged to no one's account whether the parish of Bermondsey asks for plans for a free library in spring, summer, autumn, or winter. As competitions, these two advertisements require little notice. They are of the ordinary run, with nothing to lift them out of the commonplace, unless it be the fact that, judging from the wording of the announcement from Bermondsey, the commissioners for the public libraries of the parish unnecessarily waste the time of architects and their assistants or agents, by requiring competitors to call for particulars. GOTH.

## CHIPS.

The new parish church of Ancrum, N.B., was opened on Friday last. It has been built from designs by Messrs. Hardy and Wight, architects, Edinburgh, carried out in local red freestone, granted free by Sir William Scott, of Ancrum. The style is Early Decorated, the windows having mullions and tracery characteristic of the style. The church is seated for 470, 80 being in an end gallery. The most striking detail of the interior is a stained-glass window erected from a design by Messrs. J. Ballantine and Son, Edinburgh, and is a rendering of Da Vinci's "Last Supper." The works have been carried out at a cost of £1,650.

The dedication of a new memorial reredos which has been presented to St. Ann's Church, Birkenhead, took place on Friday, the Bishop of Chester being the preacher. The reredos, which is the work of Messrs. Norbury and Patterson, and wrought in oak, is a representation of the Lord's Supper.

The parish church of Milton-next-Sittingbourne was reopened for public worship on Wednesday week. The interior of the church has been restored, and the high-backed pews have been removed for seats of modern design, under the superintendence of Mr. W. Leonard Grant, of Sittingbourne. The work has been carried out by Mr. W. Beaumont, builder, of Milton, at a cost of £1,400.

The dissolution of partnership heretofore subsisting between Henry Saxon-Snell and Son, Southampton-buildings, Chancery-lane and elsewhere, architects and surveyors, is announced.

The following resolution was passed by the Society of Antiquaries at their meeting on Thursday, the 22nd inst.:—"That this society hears with deep regret that the 18th-century glass that was formerly in the north transept window of Westminster Abbey Church has been irretrievably injured by cutting it down to fit a new window of an entirely different design; and at the same time expresses a hope that the old glass now in the east and west windows will be preserved uninjured." A copy of this resolution was forwarded to the Dean and Chapter of Westminster.

The name of Alfred J. Beesley, Buckingham-street, Strand, architect, appears in Friday's list of receiving orders in bankruptcy.

The old grand stand on the Knavesmire at York, built from the designs of Alderman Carr, of that city, a well-known architect in his day, in 1753-4, is being demolished down to the ground story, and will be rebuilt on an enlarged plan, providing for 2,000 spectators. The works are being carried out from the plans of Messrs. Fisher and Hepper, of York, at a cost of £3,000.

The Home Arts and Industries Association will this year hold their meeting at Birmingham in the town-hall on Thursday, June 5th, and the intention, by thus localising the exhibition, is that increased interest and practical value for the working members attending the classes in this great centre of activity will be secured.



## CONTEMPORARY BRITISH SCULPTORS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS sheet, which includes a portrait of Mr. Ruskin, the author of the "Stones of Venice" and "Seven Lamps of Architecture," is the second plate given by us devoted to British Sculptors. No one has influenced modern art more in some respects than Mr. Ruskin, who, as an art critic, has no equal in this country, so that any series of photographs of architects and artists would be incomplete without his portrait. Professor John Ruskin, M.A., LL.D., was born in Hunter-street, Brunswick-square, London, in February, 1819, and he is son of a London wine merchant. He was the Newdigate Prizeman at Christ Church, Oxford, in 1839. He then devoted himself to painting. A pamphlet in defence of Turner was his first attempt at literature, and this was developed into a standard work entitled "Modern Painters," commenced in 1843 and completed in 1860. "The Seven Lamps of Architecture" was published in 1849, and the "Stones of Venice" in 1851-3. The works since written by Mr. Ruskin are too numerous to mention here. They include "The Two Paths: Lectures on Architecture and Painting," 1854; "Giotto and his Works," "Elements of Perspective," "Lectures on Art, Decoration, and Manufacture," 1859; "Ethics of the Dust," "Studies of Architecture in Our Schools," "Crown of Wild Olive," 1866, and "The Queen of the Air." Mr. Ruskin was Rede Lecturer at Cambridge in 1867, was elected Slade Professor of Fine Art at Oxford, and in 1872 published "Aratra Pentelici: Six Lectures on the Elements of Sculpture," given before the University of Oxford. He devoted £5,000 for the payment of a mastership of drawing in the Taylor Galleries at Oxford in 1872. "Arrows of the Chase" appeared in 1880. Prof. Ruskin resigned his Slade Professorship in 1884 on account of failing health. He founded and furnished a unique museum, now the property of the Corporation of Sheffield. His autobiography is published under the title of "Præterita." Mr. Ruskin's home is at Brantwood, Coniston. His portrait is from the studio of Messrs. Elliot and Fry, of Baker-street, W.

Mr. Thomas Woolner, R.A., was born at Hadleigh, in Suffolk, in 1826, and was educated at Ipswich. He was a pupil of Wm. Behnes, under whom he acquired skill as a sculptor and draughtsman. "Eleanor Sucking the Poison from Prince Elward's Wound" was exhibited at the Royal Academy in 1843, and a life-size group of "The Death of Boadicea" in Westminster Hall, the latter attracting considerable notice. "Puck" and "Titania with her Indian Boy" were shown at the British Institution, and an "Eros and Euphrosyne" and "The Rainbow" were placed in the Academy in 1848. Two years later Mr. Woolner, in conjunction with Mr. Millais, Mr. Holman Hunt, and Dante Gabriel Rossetti, took a leading part in publishing a paper called *The Germ*, which soon died. It was founded in the interests of the "Pre-Raphaelites." Mr. Woolner's work and statues are very numerous, and include Lord Macaulay at Cambridge; Sir Bartle Fere for Bombay; Lord Lawrence for Calcutta; Lord Palmerston for Palace-yard; Richard Cobden, Charles Dickens, Canon Kingsley, Lord Fredk. Cavendish, Sir Edwin Landseer's monument in St. Paul's Cathedral, Bishop Fraser at Manchester, and many others. His work this year at the Royal Academy is Sir Thomas Elder, G.C.M.G., for the Great Hall of Adelaide University, South Australia. He was elected A.R.A. in 1871, and R.A. in 1874. He was Professor of Sculpture in the Royal Academy in 1877-79. His portrait given to-day is by Messrs. Done and Ball, of Baker-street, W.

Mr. George Frederick Watts, R.A., was born in London in 1820, and first exhibited at the Royal Academy in 1837. He is best known as a painter. In 1843, at Westminster Hall, he obtained one of the highest prizes (of £300) for his cartoon of "Caractacus led in triumph through the Streets of Rome," and again in 1847, on his return from Italy, he took the highest honours at the competition, also in Westminster Hall. His two colossal oil pictures, "Echo" and the "Landing of the Danes," were purchased by the Commissioners for the Houses of Parliament. One of his statues is to the memory of the late Marquis of Latham, in Blickling Church, Norfolk. The equestrian statue of "the First Earl Grosvenor as he Hawked in the Welsh Marches" is another. His gallery at Kensington has for

years been open to the public on Sunday afternoons. We illustrated Mr. Watts's house in the *Building News* for Oct. 7, 1881. His portrait is the work of Mr. Donovan, of Brighton.

Mr. Alfred Gilbert, A.R.A., was born in Berners-street, London, in 1854, and studied his art under Boehm in 1874, after which he entered the Ecole des Beaux Arts under M. Cavelier. He went to Rome after three years in Paris, and executed his "Kiss of Victory" in marble. He first attracted attention by his "Perseus Arming," and a small bronze head exhibited soon after made a great impression among his brother sculptors. "Icarus" (1884), amongst other works, marked him out for early distinction, and in 1886 his "Enchanted Chair" was unquestionably a masterpiece, which resulted in his election as A.R.A. soon after. The bronze monument in Westminster Abbey to Professor Fawcett is one of his works. This year he shows a bust of Mr. Cyril Flower. He now is engaged on a great fountain for the triangular site at the end of Piccadilly, facing the top of Waterloo-place. He exhibited a bust of Mr. G. F. Watts, R.A., last year, and a bust of Mr. J. S. Clayton, and designed the medal for the Art Union. In 1888 he erected the statue of the Queen, at Winchester, in bronze; and lately he has designed the Pastoral Staff for the Bishop of London, in conjunction with Sir Arthur Blomfield, A.R.A. His portrait is from the atelier of Mr. Frederick Hollyer, of Kensington.

Mr. Charles Bell Birch, A.R.A., was born at Brixton in 1832, and his early art studies were conducted at Somerset House, and afterwards he worked in the Berlin Royal Academy, and was a pupil under Professors Rauch and Wichmann till 1852. In 1864 Mr. Birch won the Art Union prize of £600 for his group, "A Wood Nymph," afterwards executed in marble. Among a large series of portraits and other works, we may mention a colossal statue of S. T. Chadwick, M.D., in bronze for Bolton; "The Last Call," a group of heroic size in 1879; Lieut. Hamilton followed the next year, and the Maharajah of Bulrampore, a colossal statue, in 1881, done in bronze; Lord Beaconsfield, for Liverpool; General Earle; and a large group of "Godiva." Mr. Birch has long been engaged as a draughtsman on wood and stone for the *Illustrated London News*, and in 1880 he did a series of twenty designs for the Art Union of London in illustration of Byron's "Lara." A marble statue of Earl Dudley was erected in 1888, and in 1889 one of Professor Robertson, of Oxford. This year, Mr. Birch exhibits at the Royal Academy a medal design for the Company of Musicians, and a bust of Mrs. J. Morgan Richards. He designed an equestrian statue for Blackfriars Bridge. In 1885 the bust of the late Sir Horace Jones was shown by him at Burlington House. He was elected an Associate of the Royal Academy in 1880.

Mr. George Tinworth was born in a cottage in Milk-street, near Camberwell-gate, Walworth, on the 5th of November, 1843. His father was a master wheelwright, in a very small way of business. At an early age Mr. Tinworth began to work at his father's trade, and to help him in the shop. In 1860 he first heard of the Lambeth School of Art, which had been founded by Canon Gregory in 1854. The young student entered it in 1860, and on the 22nd of December, 1864, he was admitted to the school of the Royal Academy. On his modelling "Hercules" from the antique in 1865 he gained the second silver medal in the Antique School, and for modelling the "Dying Gladiator" he won the first silver medal in the Life. In 1878 the French Government awarded him the silver medal and a decoration, making him an officer of the French Academy, for the work he sent to the Paris Exhibition that year. He left the wheelwright's trade when he was 23 years of age, and has worked for Sir Henry Doulton ever since, during which time he has designed many works of great importance, including the panel for Mr. Street's reredos in York Minster, besides 28 panels for him in the Guards' Chapel in Birdcage Walk, which he designed and modelled also under the direction of that great architect. He also did the figures and panels for Mr. Oldrid Scott's reredos in old Lambeth Church, and seven panels for Sir Arthur Blomfield's Church at Copenhagen; likewise a figure of David in Wells Cathedral; the Ascension for the reredos in St. Mary's Church, Tooting; and many other works, both at home and abroad, some of which we have illustrated in the *Building News* at various times. His photograph is by Messrs. Done and Ball, of Baker-street.

## NEW NEWSPAPER OFFICES IN BREAM'S BUILDINGS.

AN extensive block of buildings, built for the publishing and printing offices of the *Queen, Field, and Law Times* by Messrs. Dove Bros., builders, is approaching completion in Chancery-lane, from the designs of Messrs. Satchell and Edwards, architects. The new structure is self-contained, and presents a long frontage towards Bream's Buildings, the angles pronounced by cupolas arranged in pairs at each end. The elevation is of stone and red brick, the two lower stories being in the former material, massively treated as an arcaded basement. Slight projecting wings forming staircases crowned by cupolas mark the ends, and these are of stone exteriorly. On the ground-floor are a suite of publishing offices and paper stores, and other offices well lighted by three-light windows in the arched recesses. A roadway paved with Claridge's patent asphalt, a very excellent specimen of the Company's work, leads through the building to the back premises, and we note that the arches and flats, damp and vertical courses of the basement are protected by this asphalt about  $\frac{1}{2}$  in. thick. The roadway and footways are laid with a  $\frac{1}{2}$  in. thickness of the material, finished at the sides with skirtings and fillets, all done by the workmen of Claridge's Asphalt Company. In connection with the basement we may mention the commodious machine-room, constructed of iron and glass, having a central roof carried on lattice ribs of wrought-iron, and surrounded by lean-to aisles glazed. The floor of hard slab paving extends under the main building to the front, where it is amply lighted by Hayward's semi-prism lenses introduced horizontally on a level with the paving of street and vertically. White glazed bricks round the walls reflect the light also, and add much to the effect. The floors of the main building are constructed on Homan and Rodgers' system of iron and concrete, with dovetail brick to form the key of the ceilings. The flooring to the corridors, &c., is of marble mosaic and granolithic paving. Lowe's wood-block flooring is used in many of the rooms. Ascending by a stone staircase, one at each end, we find hydrants placed on each landing, and double-folding iron doors at the doorways. Reaching a spacious and well-lighted corridor, the front rooms are entered—one of these is the principal, Mr. Cox's room, with a walnut dado. Miss Lowe's apartments are at the east end of corridor. Lavatories fitted with George Jennings's appliances are on each floor. On the second floor are Mr. Phillips's apartments and those of the composers, lighted by windows on both sides, with white glazed-brick facing and red glazed-brick dado, Mr. Lowe's wood paving being laid throughout. The third floor is devoted to another large room for composers, lighted by skylight; also to readers' rooms. Ascending to the roof, which is a flat, the whole surface, excepting the raised skylight, is laid with Claridge's patent asphalt, having an easy gradient, and with the Company's system of asphalt skirting and fillets round the parapets and skylights. Altogether an area of roof of about ten thousand superficial feet has been covered with this material, in addition to the flats in other parts of this very efficient and complete building. We may add that Mr. T. Fiske is the clerk of works under the architects. We understand the Architectural Association paid a visit to the building last Saturday afternoon, and expressed their satisfaction with the work.

## BUILDERS' IRONMONGERY AND STAINED GLASS.

WE have seldom seen such comprehensive and sensibly-arranged builders' catalogues as the three sent us by Messrs. Young and Marten, of the Caledonian Works, Stratford. The prices are moderate throughout, and the reputation of the firm is a sufficient guarantee of good value. The sanitary catalogue contains 83 pages and 404 illustrations. The elaborately got-up sheet of leaded cathedral lights illustrates 139 subjects, embodying all classes of work, and, of course, at all prices, but always moderate and marked by good taste. The "No. 13 Tariff of Wholesale Trade Prices" is revised to date, and is a perfect builders' *vade mecum*. We notice, glancing through it, on page 7, some Stucco Centres, combining extreme lightness, extreme cheapness, excellent designs. On page 16 is



A SPECIAL report on the progress and present condition of the Ordnance Survey has been prepared by Sir Charles Wilson, the Director General. The work began in 1784 with the measurement of the base line on Hounslow Heath; a trigonometrical survey for military purposes was ordered in 1791; but it was not until 1797 that the design of a general map of the United Kingdom, founded on a minute survey, was first conceived. The map was published on the scale of lin. to a mile, and by 1824 the whole south of England and parts of Wales and Scotland had been surveyed. The work was then suspended in order that Ireland might be surveyed on a scale of 6in. to a mile for a general land valuation, which was almost completed in 1840. The changes made in the work of the department have resulted in a programme which embraces the production of six sets of maps. These, with the degree of completion in each case, are as follows:—(1) Plans on a scale of 126·72in. to the mile of all towns with more than 4,000 inhabitants. These are all published. "The gigantic nature of this work may be gathered from the fact that no less than 374,470 acres, or 585 square miles, have been



surveyed on a scale sufficiently large to show detail down to the size of a doorstep and an area grating." (2) Parish plans on a scale of 25·344in. to a mile have been completed for all England and Wales, except Lancashire and Yorkshire. (3) County maps on a scale of 6in. to a mile, in two editions, one with, the other without, contours, have been practically completed, and are published for all counties except Devon, Salop, and Wilts. (4) A topographical map on the scale of 1in. to the mile was commenced in 1801, and completed in 1870. But a new 1in. map was commenced in 1872, of which about half has been published in outline and a fifth with hills. (5) A map on the scale of four miles to an inch is in the hands of the engraver. (6) A map on the scale of ten miles to an inch does not seem to have been commenced yet. The current work of the department includes the survey of new town areas which have come into existence since the original survey was made, and in revising old town areas, and in re-surveying on the 25in. scale counties originally surveyed on the 6in. scale only. In Lancashire and Yorkshire the town areas, which in 1842-54, when the original survey was made, amounted to 80,389 acres, now include about 120,000. On the portion of the Yorkshire coast recently surveyed it has been found that the sea has encroached 215ft. since 1852. Some extraordinary subsidences have been discovered on the re-survey; in the neighbourhood of Barnsley, Doncaster, and Rotherham the ground has sunk, over an area of 100 square miles, in some cases as much as 5ft. The force of the survey includes 319 officers and men of the Royal Engineers, 1,573 Civil assistants, and 437 labourers—in all 2,329.

#### CEMENT PAVING AT HEREFORD.

MR. JOHN PARKER, city surveyor of Hereford, in a paper on the sanitary works and water supply of that city, read before the Association of Municipal and Sanitary Engineers and Surveyors during their visit to Hereford on Saturday last, described a form of cement pavement which he is having laid in Broad-street by the corporation men, and which he regards as satisfactory. The bottom bed, 3in. thick, consists of clean gravel and cement, in the proportion of six to one, on a solid foundation, the surface or top coat being floated in 1½in. thick, consisting of 1in. clean washed sand, Dalbeattie (or Cleve Hill) crushed ½in. granite, and cement in equal proportions. As the success of such a pavement depends upon the quality and condition of the cement, the specification employed by Mr. Parker may be usefully reproduced:—

"The cement is to be Portland, of the best quality, ground so fine that the residue on a sieve of 5800 meshes to the square inch shall not exceed 10 per cent. by weight. A struck bushel shall weigh not less than 109lb., nor more than 116lb., the cement to be run through a hopper with spout 6in. above top of measure. When tested, should the proportion which will not pass through the sieve be greater than 10 per cent., a quantity of cement proportionate to such excess must be added. When delivered, it is to be put into a dry shed at Corporation-yard, and will not be accepted or paid for until it is tested by samples taken from different sacks or casks. About 10 per cent. of its weight of water shall be added and briquettes formed into moulds of 1in. sectional area at the weakest point. The briquettes, having in the mean time been kept in a damp atmosphere, are to be put into water twenty-four hours after being made, and remain in water until tested. It must not, at any time of the year, set in less than 1 hour, and must bear, without breaking, a weight of 350lb. to the square inch fourteen days after the briquettes have been made. If it does not, it will be rejected, and must forthwith be removed from the stores by the contractor."

A new Wesleyan Chapel at Upper Poppleton, near York, was opened on Friday. It is Early English in style, and is built of white bricks with stone dressings, and the whole of internal woodwork, including rostrum pulpit and seats is of pitch-pine. The chapel is seated for 165 persons, and has cost £900. Mr. C. Anderson, of Lendal, York, was the architect, and Mr. J. Simpson, of the same city, the builder.

A memorial to the miners who lost their lives in the disastrous explosion at Longton will shortly be erected. It takes the form of an obelisk of grey granite surmounted by a cross inscribed with the names of the unfortunate men, and resting upon a slab representing a coal seam, in the front of which a miner's pick and safety-lamp appear. Several designs were submitted in competition, and that of Messrs. Jones and Willis, of Birmingham, London, and Liverpool (described above), was finally selected, and the work placed in their hands for execution.

## Building Intelligence.

BIRMINGHAM.—An important block of buildings, consisting of villa residences, and having a frontage of about 500ft., is now approaching completion. These houses have good reception-rooms, kitchens, &c., entrance and back halls and vestibules, well-arranged bedrooms, bath-rooms, and other conveniences. Being situated in the best part of Edgbaston (the fashionable suburb of Birmingham), and being well adapted to the requirements of merchants, professional men, &c., these houses have every probability of being speedily tenanted. They have large gardens both at front and back. The front elevation is Gothic in character, with bay windows, two light windows above with stone columns, arches, labels, and tympana, Minton's tiles, large dormer windows, ornamental porches, &c. The total cost is about £10,000. The architect is Mr. J. Statham Davis, and the builder Mr. Edward Airey, both of Birmingham.

CANTERBURY.—The restoration of St. Anselm's chapel in Canterbury Cathedral being now complete, it has been set aside for purposes of private prayer and meditation. This chapel, which is on the south side of the Cathedral, and at the east end, escaped the fire of 1174; but when the present choir was built, its roof pressed upon the north wall of the chapel and crushed it. Accordingly various means were adopted to support the building and resist the thrust of the choir roof. Amongst these was a buttress wall, which was built across the apse of the chapel, and cut off one-third of the old Norman arcading. About two years ago Canon Holland undertook the restoration of the chapel, and after carefully strengthening the walls by iron girders and masonry, he was enabled to take down this buttress wall, and then there was discovered behind it, on the north wall of the apse, the fresco which has excited so much interest. The whole of the chapel has now been restored, under the guidance of Mr. J. L. Pearson, R.A.

DERBY.—At a meeting of the governors of the Derbyshire Infirmary, at Derby, on Friday, a report was presented from Messrs. Young and Hill, architects, London, who had been specially appointed to examine the building owing to the discovery of sanitary defects, which had led to an epidemic of typhoid fever amongst the nurses. The report disclosed a very serious state of affairs, the drainage being so bad that work was recommended which would cost £50,000, and as an alternative the architects suggested the entire reconstruction of the Infirmary, at a cost of about £60,000. The President, Sir William Evans, said all the in-patients who could be sent away had been removed, and no fresh ones were being admitted. A house had been hired for the nurses to sleep at, and a temporary wooden hospital and tents had been erected in the grounds for cases of accident or emergency. A strong committee was appointed to consider the best course to pursue in this serious crisis. It was stated that the institution had been regarded as a model hospital. The older part of it was built about seventy years ago.

DUNBAR.—St. Anne's Episcopal Church, Dunbar, was opened by Bishop Dowden, Edinburgh, on Friday. The cost of the edifice, as now erected, is estimated at £2,700 and sitting accommodation is provided for 250 people. In design the church follows on the lines of Mediaeval architecture. There is a nave 68ft. by 24ft., with choir and sanctuary 34ft. 6in. long, and the full width of the nave. On the north side of the nave and near the west end, is the entrance porch. Externally, the chief characteristics of the edifice are the traceried windows, between which there are large unbroken surfaces of solid wall. A large east window has been avoided, thus giving room for a high reredos. At present it is not intended to complete the tower. The work has been carried out under the supervision of Dr. Rowand Anderson, of Edinburgh, who has adhered as closely as possible to the original ideas of the late Mr. Hugh Wardrope, who designed the building.

GLOUCESTER.—The foundation stone of the new municipal buildings for Gloucester was laid on Friday by the Duke of Beaufort, K.G., Lord High Steward of the city. The buildings, which are expected to cost from first to last about £30,000, were designed by Mr. George H. Hunt, of Gray's Inn, London, whose plans were placed

first in the competition for the premiums offered by the Corporation, Mr. A. Waterhouse, R.A., acting as adjudicator, and Messrs. Bowes and Co. of Hereford, are the builders. The site, which was formerly occupied by Sir Thomas Rich's school, offered special difficulties to the architect, and though it was originally hoped that at least some portion of the existing building might be utilised, Mr. Hunt found this impracticable, and commenced by making a clean sweep of the old edifice. The offices are to be placed on the ground floor; the council chamber and committee rooms on the front part of the first floor; and a public hall at a slightly lower level to the rear. The town clerk's, surveyor's, accountant's, rate collectors', school board, and other offices are provided for, and also the mayor's parlour, retiring-rooms, and kitchen. The council-chamber is 45ft. by 31ft., exclusive of a public gallery; and the public hall is 78ft. by 40ft. with a platform and gallery. The main front is designed in a phase of the Renaissance style, and will be executed in stone; the floors and staircases will be of fireproof construction; the floors in the entrances, halls, and gallery in vitreous mosaic; the remainder of the galleries paved. The internal fittings will be of wainscot oak and red deal. We illustrated Mr. Hunt's design, together with those placed second and third, in the BUILDING NEWS for July 26th, 1889.

HEAVITREE.—The dedication of the new tower of Heavitree parish church took place on Saturday. It stands on the same ground as did the old tower. The latter was condemned some years before its demolition in 1887 as being unsafe; but it was found, after about 10ft. had been removed, that the masonry was solid, especially on the south side. Mr. Phillips, of Exeter, the contractor, had to resort to dynamite in order to separate the masonry of the old pile, which was about 45ft. high, and did so without serious injury being done to the church. In an open competition in the same year, the plans of Mr. E. H. Harbottle, Exeter, were selected by Mr. Ewan Christian, of London, the adjudicator. From those plans the new tower has been built, in the Perpendicular style. The foundations are of concrete, and the tower is built of limestone from the Babbacombe quarries, the main quoins being of Chudleigh limestone with Bath stone dressings. The height of the tower is 101ft.; the total height to the top of the vane is about 133ft. The west window is to be utilised for the erection of a memorial stained-glass window. It is also intended to have a peal of eight bells put in the tower. Mr. F. S. Mitchell, of Heavitree, has acted as clerk of the works; and Mr. E. T. Rogers, of Exeter, has executed the carving. The cost is about £3,000.

LEEDS.—The International Exhibition at Leeds was opened on the 21st May. The buildings consist of five courts, with dining rooms, kitchens, &c., covering an area of 4,000 yards. The exhibits comprise an interesting collection of works of art and manufactures, and include a variety of building appliances. The buildings and grounds have been lighted with arc-lights, the dynamos are driven by a gas-engine. The buildings have been designed and carried out under the superintendence of Mr. William Bakewell, architect, of Leeds. Messrs. Ives and Co., of Shipley, are the contractors for the work.

PERTH.—The new hotel at the joint station, forming with that structure the largest and most important building in Perthshire, has been built from designs by Mr. Andrew Heiton, F.R.I.B.A., Perth, and will be opened in June. The style of architecture chosen is Flemish with bold and effective gabled outlines. Light freestone from Dunmore quarries, with red Dumfriesshire stone facings, has been used, so as to form a contrast to the station walls. The central block, containing the kitchen and offices, is built of white glazed enamelled bricks, and all w.c.'s and lavatories are lined to the height of 5ft. with white glazed tiles bedded in cement. The principal floor of the hotel is on a level with the station platform, the connection from which is by means of a corridor, extending to the entrance hall. On this floor are situated the parlours, drawing-room, writing-room, coffee-room, commercial room, smoking-room, billiard-room, and the kitchen, in addition to still-room, waiters' pantry, and plate-room, boot-hall, store-room, larder, pantry, sculleries, manager's office and room, clerks' office, linen-room, steward's-room, private smoking-room, lavatories, bar, and luggage and porters' room. On the south-east



angle of the building is placed the drawing-room, which has a panelled plastered ceiling, panelled dado and stone chimney-piece. The coffee-room is the largest on this floor, being 48ft. by 27ft., and is finished with panelled wooden ceiling, and stone chimney-piece. The billiard and smoking rooms communicate with each other, and have lofty open roofs, the partition and folding doors being partly glazed. The kitchen offices are all one-story buildings, lighted and ventilated from the roof. On the bedroom floors there are 35 bedrooms for visitors, eight bedrooms for house and visitors' servants, and four private sitting-rooms, with bedrooms in connection, to form suites of apartments if required. Many of the bedrooms are arranged with doors of communication. There are six bath-rooms, four of which have fireplaces, and 15 w.c.'s. The lavatories on the first and second floors have floors of Portland cement carried on iron girders, the floor and walls being finished with tiles, and thus rendered sound and waterproof. The hydraulic lift is in the form of a double cage, the upper end being for passengers and the lower for luggage. The whole of the principal rooms, staircase, and corridors are heated by means of hot-water apparatus, consisting of piping carried round the several rooms, and coils of piping and radiators in the staircase and corridors. Fire hydrants have been introduced on the several floors, and large water-tanks are constructed for flushing drains and extinguishing fires. The operations have been carried out under the supervision of Mr. David Kidd, master of works. Including furnishings, the total cost of the hotel is estimated at £20,000.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**EDINBURGH ARCHITECTURAL ASSOCIATION.**—On Saturday the members of this association visited Bridge Castle, Bathgate, under the leadership of Mr. Thomas Bonnar, who described it as a baronial mansion of the regality of Ogilvie, in the parish of Torpichen, situated in a beautifully-wooded dell rising up from the Barbauchan burn, a small tributary of the Avon. The party then proceeded to Torpichen, which Mr. Bonnar said was historically interesting from its association with the once-powerful and famous order of military Churchmen, the Knights of St. John of Jerusalem, who were also known as the Knights of Malta and of Rhodes. Mr. Bonnar also briefly sketched some of the incidents connected with the order and its preceptors, from the date of its establishment in 1153 until the final suppression and extinction of the Knights of St. John in 1560. The party next proceeded to Linlithgow, and returned to Edinburgh by rail.

**NORTHUMBERLAND AND DURHAM ARCHÆOLOGICAL SOCIETY.**—On Saturday these archæologists held their first meeting for the present season in Northallerton district, when they visited the parish church of Kirby Sigston, which is in process of restoration, being at present unroofed, and Mount Grace Priory, at Ingleby, Arncliffe. At Kirby Sigston Church the rector, the Rev. C. S. Atkinson, read a paper giving the early history of the church. Mr. C. C. Hodges explained the architectural features of the church, which had been recently exposed by the restoration, while the visitors were shown the historic stained glass in the east window. Afterwards a journey was made to Mount Grace, where papers on the history of the ruins and of the monks who once inhabited the edifice were given by Mr. Wm. Brown, son of the present owner of the ruins, and Mr. Hodges, after which the party visited Lady Chapel and St. John's Well, and drove back by way of Brompton to Northallerton, inspecting St. Thomas's Church at Brompton on the route. Interesting observations were made by Canon Greenwell, of Durham, on the objects of interest which came under notice by the way.

Lady Wolseley will lay the foundation-stone of the Church of St. Paul, Harringay, to-morrow (Saturday).

A terrace, a quarter of a mile long, with shelter halls, built by the corporation of Brighton at an expense of over £15,000, was opened on Saturday. The structure also includes a lift for the conveyance of passengers from the Marine-parade above to Madeira-road beneath, the sea wall at this point being about 50ft. in height. This practically completes the works on the sea front at the east end of the town.

## Engineering Notes.

**THE FORTH BRIDGE CONNECTING LINES.**—Another of the new sections of railway—that between Winchburgh and Dalmeny—which it has been necessary to construct in order to secure for the systems of the north and south sides of the Forth the full advantage of the Forth Bridge, was inspected on Friday by Major Marindin, on behalf of the Board of Trade. The new section forms the connection between the Edinburgh and Glasgow main line and the Forth Bridge. The construction of the line has presented no serious engineering difficulties beyond the erection of several over and under bridges and culverts. As an illustration of expedition, it probably stands alone in the history of railway undertakings in Scotland. The four and a half miles of which it consists, involving a number of heavy cuttings and embankments, have been completed in nine months, a large staff of workmen having been employed both night and day from the start. The contractor for the work is Sir William Arrol, who also constructed the Corstorphine and Dalmeny line, the operations under both contracts being carried on under the superintendence of the manager, Mr. Inglis. At the close of the inspection Major Marindin gave permission to begin at once the running of goods trains over the line.

#### CHIPS.

The foundation of a new Board school at Sciennes, a suburb of Edinburgh, was laid on Saturday. It will be the largest school yet erected by the Edinburgh School Board, and will accommodate 1,700 children. It will be three stories in height, in addition to a basement arranged as a gymnasium and swimming-bath. Mr. Robert Wilson is the architect, and the cost, including site, will be £28,000.

The parish church of East Farleigh, Kent, is about to be restored from plans by Mr. J. L. Pearson, R.A., at the sole cost of Mr. Herbert Ellis.

The organ in Rotherham parish church, originally built by Snetzler, was reopened on Sunday after undergoing restoration and enlargement by Messrs. Abbott and Smith, of Leeds.

New Board schools are being built at Clapham-terrace, Leamington, and will be opened in July. Mr. F. Foster is the architect, and Mr. John Feil the builder.

The new Episcopal Church of St. Leonard, Lasswade, near Bonnyrigg, was consecrated on Saturday by Bishop Dowden, of Edinburgh. It is a plain building, Norman in style, is seated for 200 persons, and cost about £1,000. Mr. Hippolyte J. Blanc, of Edinburgh, was the architect, and Mr. R. Ketchen, of Bonnyrigg, the builder.

A new bridge is being erected on the river Wear at Pensham for the Houghton-le-Spring and Sunderland district highway board. It is of iron with approaches of masonry from the Marsden quarries, and is being erected under the direction and from the plans of Mr. D. Balfour, C.E., of Sunderland.

The Council of the Glasgow Institute of Architects have agreed to place upon record their deep sense of the loss sustained by the city, the architectural profession, and that Institute by the death of Mr. John Carrick, the Glasgow city architect.

Mr. Thomas Tomkins, a well-known South Stockton contractor, died suddenly on Thursday night, at the early age of 31 years, from the bursting of a blood-vessel.

The Royal Hotel at Cardiff is about to be enlarged and reconstructed from plans by Mr. J. P. Jones, of the same town, at a cost of about £20,000. Messrs. Shepherd and Son of that town have taken the building contract. Mr. A. D. Dawnay, of London, will execute the garden work and concrete floors; the hydraulic lifts by the Standard Elevator Company (Limited), London; and the parquet floors by Messrs. Turpin and Sons, London.

Alterations have been made to the corporation offices, Glossop, embracing the ventilation, which is now carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air pump ventilator.

Through the exertions of Mrs. Thomas, widow of the late county surveyor of Carnarvon, what has been felt as a great need for the seafaring classes of Carnarvon was supplied by the opening on Monday of a sailors' home. The present county surveyor of Carnarvon has remodelled the building free of cost, and the furnishing of the home has been undertaken free of cost by the local tradesmen.

#### TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

#### TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

#### ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

#### SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

#### NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII, XLVI, XLIX, L, LI, LIII, LVI, and LVII may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—H. and H.—V. S. and Co.—R. S. and Co.—T. M. D.

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Sector," "Y" in a circle, "S. A. H.," "Dot," "Syak," "S. C. D.," "Piddler," "Menelaus," "Renaissance."

## Correspondence.

#### EDUCATION AND THE ARCHITECTURAL ASSOCIATION.

To the Editor of the BUILDING NEWS.

SIR,—I request permission to address the general body through you. It has for some time been evident to those members most intimately acquainted with the working of the Architectural Association, that a desire existed among the restless members for some change. A result of this is seen in a report from a sub-committee (who were appointed not by the Association but, in great part, by themselves) which was brought before us on Friday, 16th inst. It is evidence of their zeal; but it is unfortunately crude, ill-arranged, incomplete, and admittedly impracticable. It further mixes up a number of distinct matters which should be discussed separately.

The members who have put it forward are wishful that it should be passed *en bloc*: but those who are really anxious to raise the tone of education—who have been working for it for the last twenty years, and who wish to save the A.A. from being wrecked by ambitious and indiscreet zeal—desire to inaugurate a proper scheme, which will not have to be dropped again in a year's time, to the discredit of the A.A. and the discouragement of all true friends of education.

It is most necessary that the separate recommendations of Messrs. Stokes, Farrow, and some others should be fairly discussed one at a time; and, with this view, an amendment was moved in the following sense:—

"That the sub-committee be cordially thanked for the time and attention they have given to the report; and that it be referred back to them,



with a request that they will divide their recommendations into distinct sections, and bring them up by separate resolutions at a future meeting."

This suggestion, made to expedite the business, was not accepted; and, therefore, all members who wish well to the A.A. are requested to attend the meeting on Friday of this week (30th inst.), and to support it.—I am, &c.,  
May 28.  
HUGH STANNUS.

P.S.—I may add that if the question of an educational scheme were to be more carefully considered by a distinct committee of representative and experienced members before it is again brought before us, such a course might prevent any well-intentioned but damaging blunders being made in the cause we all have at heart. The time is becoming ripe, but we must not fail through undue haste. The world has rubbed along till now; surely another six months will not be lost if we should be spared a false step.—H. S.

SIR,—I dare say to an old fogey member the reforms proposed by the committee of the Association seem a needless and harmful departure from the traditional customs of the A.A.; but I cannot help thinking that his ideas are what they are just because he is an old fogey member, and unfamiliar with the latest developments of thought in the Association.

May I, therefore, try briefly to explain the reasons why any change is wanted at all?

First and foremost, I would place the great dissatisfaction which has been lately making itself visible among the students themselves, those actually working in the classes. I have, perhaps, mixed as much with students as anyone, and I can testify to the fact that there really does exist in the student-ranks of the Association a deep-set, earnest desire for change. And this desire is not confined to any particular "set" or clique. At the very time when the Classes of Construction met together and passed that series of resolutions which have given rise to this great educational movement, the Design men were striving in their own way to get the Board of Visitors to reform their classes in a similar direction. Besides, however, these concerted movements, individual grumbling has been almost incessant. I have even heard the Association course stigmatised as a "fraud." This is, no doubt, a hard and unjustifiable word; but it shows what some men think. Of course, it may be said, "These young men are foolish and inexperienced; they don't know what they want, and their complaints are only a form of insubordination, and must be put down by force, if persuasion will not do." But the Committee did not go this way to work; they appointed an Inquiry Committee, who inquired long, carefully, and patiently, with the result set forth in the Education Report. I hope I am not betraying confidence if I say that, when the Inquiry Committee first set to work, there was far from unanimity among its members; but their inquiries convinced them that a change was wanted, and now there is not a single member of that committee who does not believe in the urgent necessity for reform. Might not history repeat itself in the case of an ordinary member?

Then there is another great and potent force which demands some attention, and that is the scheme of examination established by the Institute. It is impossible for us to ignore this examination, even if we do not altogether approve of it. There are very few students who, seeing an examination before them for which their fellows are all preparing, can afford to despise it. Occasionally, of course, we come across a genius whose talents are so palpable that to pass an examination would be a superfluity; but most poor ordinary mortals are not so blessed, and when they begin to talk of not approving of examinations, they are apt to be reminded that there is such a slang word as "funk," and as they do not particularly care for such reminders, they go up for the examinations. This is but human nature, and, after all, it is for the poor ordinary mortal that we legislate, not the brilliant genius. Therefore, whether we prepare them or not, they will go up for the examinations, and the question then simply resolves itself into one whether we shall accept a certain existing fact, welcome or unwelcome, and build our argument on that, or whether we shall shut our eyes to the real state of things, and go on in our old way. I need not point out that the advocacy of the latter course will be a great encourage-

ment to private cramming, and if members think that by giving a fillip to cramming as it never yet has had, they will benefit English architecture, the Association, and the individual student, let them accept the responsibility and reject the A.A. Committee's petition for reform.

Why I have written this letter is to try and help those who have not actively worked in the Association for some years, to see that the "grand scheme" is not "a little game which a certain clique are endeavouring to inaugurate at Conduit-street." To say so is unfair and unjust to those who have, in an honest, even if humble, way, tried to solve the problem that their greater knowledge of affairs enables them to see before them. To maintain that the committee have gone the wrong way to work to solve the problem is perfectly justifiable criticism; but to say that the problem is non-existent implies a deplorable ignorance of the true state of opinion in the Association, and if the report be rejected on that ground, I foresee troublous times ahead. It is not always wise to fasten down the safety-valve on a boiler.—I am, &c.,  
London, May 26.

OWEN FLEMING.

#### THE INSTITUTE COUNCIL.

SIR,—In my letter last week a curious misprint, substituting the word *is* for *in*, occurs. What I intended to say was, "What is wanted in such a body as the Council are representative men."

Will you kindly correct this in your next issue, as it completely alters the sense of my letter? and oblige—Yours, &c.,  
F. T. W. MILLER.  
73, Queen Victoria-street, E.C., May 27.

#### CHIPS.

A pillar lamp and fountain, erected in the Market-square, Jedburgh, as a Jubilee memorial, was inaugurated on Saturday. It has been erected from designs by Mr. Bell, of Glasgow.

In accordance with the bequest of the late Miss Sanderson, of Wetherby, a stained-glass window has this week been placed in the west window of St. James's Church, Wetherby, Yorks. The subject is "Christ blessing little children." Messrs. Powell Bros., of Leeds, have executed the work.

The *Royal Cornwall Gazette* says: "At their last meeting the Redruth Local Board resolved to thank Mr. Passmore Edwards for the promised gift of a fountain to the town, and to look out for a suitable site on which to erect it. The offer of Mr. Edwards is most noble and generous, and the authorities will do their best to find a suitable and worthy site. It must be seen, though, that open spaces in the streets of Redruth are exceedingly small and most rare."

The eighth annual meeting of the Society for Preserving Memorials of the Dead was held on Saturday afternoon in the parish school-room, Lambeth. The parish church was visited, when the rector, the Hon. and Rev. Canon Pelham, read a paper on "The Monuments in the Church." A visit was afterwards paid to Lambeth Palace.

The Local Government Board have granted a provisional order approving of the greater part of the scheme for the extension of the municipal boundaries of Manchester. The townships of Crumpsall, Newton-leath, Openshaw, Moston, Blackley, Clayton, the hamlet of Kirkmanshulme, and half the local board district of Gorton are to be added to the city; but Moss-side, which had been included in the scheme, is excluded. The number of members of the City Council will be increased from 76 to 100, and an addition of about 110,000 will be made to the population, which will then be close upon half a million.

On Saturday week the opening ceremony of the John Bentley Gymnasium, in connection with the Warehousemen, Clerks, and Drapers' Schools at Purley, took place. A key was presented by the architect to Mr. S. Hope Morley, who declared the building open. The gymnasium is the gift to the institution of Mr. John Bentley. It is built from plans prepared by the architect, Mr. J. Kingwell Cole, of 28, Mount-street, Grosvenor-square, W., and follows the style of and is in close proximity to the main buildings.

The annual exhibition of the Home Arts and Industries Association will be opened in Birmingham on Thursday in next week, the 5th June, and will remain open till the following Monday.

The Council of the Royal Society of British Artists, at the request of the National Sunday League, have consented to open the annual exhibition of pictures in their galleries, Suffolk-street, Pall-mall, on Sunday next, and following Sunday, 1st and 8th June, from three till six p.m.

## Intercommunication.

### QUESTIONS.

[10286].—**Iron Oxide.**—Would some one kindly inform a subscriber of any mineral oxides or iron minims of different tints, principally reds, for colouring and using with Portland cement, and of guaranteed quality, free from any vegetable bodying?—H. H.

[10287].—**Ventilation.**—It is proposed to ventilate a large hall by placing ventilating tubes over sunlights. How do you calculate the velocity of air through tube? The tube proposed is 24in. diam., 30ft. long, with a bell-mouth at bottom, in which will burn 40 ordinary gas-jets. The internal and external temperature would vary 50°, and at times the internal air would be cooler than the external. Would there be any danger of a down-draught? or what would be the best form of cover externally?—WOMBAT.

[10288].—**Stains on Granite.**—How can stains of smoke and soot be removed from granite without re-chiselling the surface? Washing by jet seems utterly ineffective.—D. M. R.

[10289].—**Timber Conversion.**—Does it make any difference to the strength of a beam whether it be cut so that the annual rings run lengthwise or crosswise with the section? which is best for floor boards?—H. W.

[10290].—**Preserving Stone.**—I should be glad if one of your practical readers will say which is a good preservative solution for stonework. I have found painting ineffectual.—GETRA.

[10291].—**Fire-Proof Floors.**—Which system of iron construction has been found to give the best results? I should like the opinion of any of your readers whether a floor 40ft. by 18ft. can be constructed of timber of sufficient strength for an ordinary warehouse floor, or whether iron joists and concrete is not better?—BUILDERS.

[10292].—**Portland Cement Manufactory.**—Would some reader kindly give me a rough estimate of the capital required to establish the above on a small scale? How much would be requisite for machinery, and how much for floating capital? Both the mud and chalk contain the necessary constituents, and are within a distance of two miles of each other by water.—HARVEY A. DIXON.

### REPLIES.

[10279].—**Italian Oak.**—This variety of oak is used for shipbuilding, ornamental panels, furniture. Italian or Sardinian oak, as it is called, is of a brownish tint, very hard, and, I believe, capable of a fine polish.—G. H. G.

[10280].—**Provisional Amounts.**—Contractor cannot justifiably ask for a trade discount from specialist if the amount has been included in quantities, though many contractors do so.—G. H. G.

[10281].—**Bench-Mark.**—From the bench-mark, most certainly.—GUP.

[10281].—**Bench-Mark.**—This is the starting-point of a line of levels, and the heights are so much above or below this point, whether it be on the ground or 10ft. above it.—R. WATSON.

[10281].—**Bench-Mark.**—The expression "below bench-mark" means below the mark itself, which is generally stated.—G. H. G.

[10284].—**Shores.**—Consult "Stock's" work on shoring, or G. H. Blagrove's treatise.—J.

[10285].—**Continental Cathedrals.**—In Germany several instances of two-storied churches are to be found. The church of Schwartz Rheindorf (1151) is one of these. The lower church is a sort of crypt. Ferguson mentions another at Nuremberg, and illustrates a two-storied chapel at Landsberg, near Halle.—G. H. G.

The members of St. Paul's Ecclesiastical Society will visit the churches of Stone and Northfleet tomorrow (Saturday) afternoon, under the direction of Mr. H. Roumieu Gough.

The memorial stone of the new Courts of Justice at York, about to be built from designs by Mr. Hugh A. Mearns, will be laid by H.R.H. the Duke of Clarence and Avondale in June.

The inauguration of the memorial which has been erected at Killin in memory of the Rev. James Stewart (1700-89), who was the first to translate the New Testament into Gaelic, took place on Friday. The monument, which occupies a site granted by the Marquis of Breadalbane close to the church of which the Rev. Mr. Stewart was pastor, is 15ft. in height. Upon the base rests a die of Peterhead granite, on two sides of which is an inscription, the one in English and the other in Gaelic. Above the inscription is an octagonal block of Aberdeen granite, and this is surmounted by a Celtic cross. The sculptor and designer was Mr. Beveridge, Perth.

The Jubilee festival of Wells Theological College took place on Friday, the special feature being the inauguration of new buildings. Early in last year the trustees and governors of the college purchased for £1,800 the old archdeaconry, a house of great architectural and historical interest, which had been alienated from ecclesiastical uses in the middle of the 16th century, and has been applied to secular uses up to the present date. Its noble halls and rooms have been restored from the plans of Mr. Buckle to their original proportions. For the restoration of the archdeaconry, and the building of a new house for the principal, £6,000 is required.



## LEGAL INTELLIGENCE.

**IN RE CHARLES KILLINGBACK.**—The debtor, who had carried on business as a contractor in James-street, Camden Town, applied on Friday for an order of discharge. He petitioned the Court on February 28 last, his liabilities being returned in the statement of affairs at £10,311, with assets estimated by the trustee as likely to realise £1,432. The debtor commenced business 20 years ago with a capital of £150 or £200. In January, 1839, his excess of assets over liabilities amounted to between £500 and £1,000, and he then entered into a large contract with the London County Council for the construction of sewers at Lee, Kent. He attributed his failure to a heavy loss upon that contract owing to flooding and to the nature of the ground not being in accordance with his expectations. The Official Receiver and the trustee opposed the application on the ground of insufficient bookkeeping and on other statutory grounds, and Mr. Registrar Brougham suspended the order of discharge for six months.

**COMMISSION FOR SALE OF BUILDING LAND.**—**PARR V. HEADDEY.**—(Before Mr. Justice Grantham and a Common Jury.)—The plaintiff in this action was a member of the firm of Parr Brothers, who carry on business at Peterborough as auctioneers and estate agents, and he sued the defendant for commission on the sale of 16½ acres of building land in that neighbourhood. The defendant's solicitor requested the plaintiff to find a purchaser, and promised a very good commission in the event of a sale being effected. The plaintiff, in consequence, brought the matter to the notice of the Rock Building Society, who ultimately bought the land for £3,300, which seems to have been its outside value. On this sum the plaintiff accordingly charged a commission of 2½ per cent., but the defendant considered that 1 per cent. was the proper scale of remuneration, and paid £35 into Court as sufficient to satisfy the plaintiff's claim. The scale of the Surveyors' Institution with respect to sales of freehold and copyhold estates and houses by private contract appears to be £5 per cent. on the first £100, and after that £2 10s. per cent. up to £1,000. The jury returned a verdict for the plaintiff for the 2½ per cent. commission—that is, £47 10s. beyond the amount paid into Court—and judgment was given accordingly.

**EVIASION OF BY-LAWS.**—Mr. J. C. Foulkes, Camden-road, was summoned to the Highgate Police-court on Monday by the Hornsey Local Board for a breach of by-laws of the Board. The defendant submitted plans for some warehouses to be built at Hornsey, and the Board passed them, and after the buildings had been erected shop-fronts were put in. The buildings faced Turnpike-lane, and the side in which the shop fronts were put in abutted on a public footway only 6ft. wide. The defendant said he was prepared to admit he was wrong, but thought the Board should have given him notice that he had infringed the by-laws. He was prepared to put matters right, and he hoped that if he paid the costs that would satisfy the Bench. The Bench were of opinion that it was a deliberate attempt to evade the by-laws, and fined the defendant 1s. and costs on each summons, and the Local Board's costs, ten guineas.

## STATUES, MEMORIALS, &amp;c.

**CRANBROOK.**—During last week a memorial was erected in St. Dunstan's Church, Cranbrook, by Mrs. Webster to the memory of her husband, the well-known Royal Academician. The memorial is the work of Mr. Hamo Thornycroft, R.A., and is placed in the south-west aisle on the west wall. The tablet is of white marble, with a dove marble margin, and is about 9ft. 6in. in length, by 4ft. in height. The figure of the deceased painter is represented in a recumbent position with the hands on the breast clasping a Bible and paint brushes. An angel kneels at the head holding a palm branch, and another at the feet with a wreath of immortelles. The angels are represented by winged boys, typical of the characters the deceased artist was so fond of portraying. The tablet bears the inscription:—Thomas Webster, Royal Academician, born 20th March, 1800; died 23rd Sept., 1886.

The private Bill granting an extension of time for four years within which to construct the Regent's Canal, City and Docks Railway, has been passed by a committee of the House of Lords.

Some workmen, while digging for the foundation of a new building in Watergate-street, Chester, have found the base of a Roman column standing on a foundation of boulder concrete. It is thought, together with similar relics that have been discovered in the neighbourhood, to have formed a portion of a Roman building that extended as far back as Common Hall-street. In addition, there were embedded in the foundation-walls the head part of a stone coffin in a good state of preservation, and portions of an Early English floriated coffin-lid.

## Our Office Table.

THE eighth annual exhibition of the Royal Cambrian Academy, opened in the Elizabethan Mansion of Plas Mawr, Conway, on Saturday, is only an average show; 216 works by sixty artists are hung, the president, Mr. Clarence White, being worthily represented by "Arthur in the Gruesome Glen," from Tennyson's "Launcelot and Elaine." Among the numerous landscapes, the most striking are "The Return of Spring," by Anderson Hague; "A Breezy Day off Anglesey," by Peter Ghent; "Half a Gale off Lys Faen," by E. A. Norbury, vice-president, and two works by Charles Potter. "Going to the Fair," representing a stillion being led for sale, is effectively treated by Charles Jones. Portraits by Leonard Hughes and J. D. Watson are among the best hung. Of the loan exhibits, the more noteworthy are Sir F. Leighton's widely-known "Elijah and the Angel," lent by the Corporation of Liverpool, two figure-subjects by G. F. Watts, R.A., and two by J. C. Hook, R.A.—"The Day for Provisioning the Lighthouse," and "The Return of Torello."

MR. GEORGE A. MACMILLAN, the hon. secretary to the British School of Archaeology at Athens, appeals for further aid in support of the examination of Byzantine architecture in Greece by two architectural students—Messrs. R. W. Schultz and Sidney Barnsley. For the last two sessions they have been making drawings of the Byzantine churches in and around Athens. During the early part of the present session they have been drawing the important Monastery of St. Luke, near Livadia, in Northern Greece. They are at present travelling in the Peloponnese for the purpose of studying and making drawings of the most important Byzantine buildings, and if sufficient funds are forthcoming, they intend to proceed to Salonica and Mount Athos. The last letter received from Mr. Schultz is dated from Mistra, and indicates that he and his colleague are very hard at work, and at the same time living in the most economical way. Messrs. Schultz and Barnsley will publish two illustrated monographs on the Byzantine churches in Greece and on the monasteries of Mount Athos respectively. Although many works generally descriptive of monastic life at Mount Athos have been published, no book has yet appeared illustrative of the architecture and general decoration of these unique churches, which exist to-day in much the same state as when they were first built.

FOLLOWING hard upon the opening of a committee of inquiry into the City water supply and its cost by the Corporation, the vestry of St. James's, Westminster, have invited the other vestries and district boards of the Metropolis to appoint delegates to a conference shortly to be held for the purpose of considering the whole subject of the Metropolitan water supply, and especially the desirableness of asking the Government to introduce a Bill (1) either to confer on the County Council power to acquire the present undertaking or to establish a competing supply; and (2) to require the water companies to supply water by meter at a fixed tariff.

THE London School Board, at its last meeting, considered the results of a recent experiment of placing a musical tube in the turret of a school in lieu of the usual bell. The experimental tube was provided at the London Fields School, Hackney, and a committee regarded the penetrative power of the sound as so satisfactory, being audible at a distance of nearly half a mile, that they recommended the Board to substitute these tubes for bells in all schools to be erected in future. The cost of providing and fixing one of these tubes was stated to be about £15. The report was adopted by the Board.

A LITTLE book on "German Labour Rates of Wages" supplies some details about wages and hours of labour that are peculiarly interesting during the present eight hours agitation. As examples of the pay received, we note that joiners, locksmiths, and upholsterers earn 3s. for eleven hours' work; painters, carpenters, and glaziers, 3s. 2½d. for eleven hours' work; and builders and plasterers, 3s. 6d. for eleven hours' work. Labourers or unskilled men work the same hours as the skilled or crafts men, and are paid 1s. 9d., 2s., or 2s. 6d. for eleven hours' work, according to circumstances. Two shillings

per day may be taken as the average labourer's pay. Nineteen shillings a week represent the average earnings of a workman.

## MEETINGS FOR THE ENSUING WEEK.

**SATURDAY (to-morrow).**—St. Paul's Ecclesiological Society. Visit to Churches of Stone and Northfleet, under the direction of H. R. Gough. Train from Cannon-street, 2.47 p.m.

**MONDAY.**—Surveyors' Institution. Annual Meeting, 3 p.m. Annual Dinner at Holborn Restaurant, 6.30 p.m. Society of Engineers. "Pick's System of Manufacturing Salt in Vacuum," by P. F. Nursey. 7.30 p.m. Royal Institute of British Architects. 8 p.m.

**TUESDAY.**—Institution of Civil Engineers. Annual General Meeting, 8 p.m.

**THURSDAY.**—Architectural Association. Supper at the Mona Hotel, Covent-garden. 7.30 p.m.

**Architectural Association, 9, Conduit-street, W.**—The Special Business Meeting, adjourned by resolution on May 16, will be resumed on May 31, at 7.30 p.m. On June 5th, Supper at the Mona Hotel, Covent-garden, at 7.30 p.m. Tickets, 3s. each, from W. Burrell.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

## Trade News.

## WAGES MOVEMENTS.

**ABERDEEN.**—The master-masons and stonecutters have agreed to advance the standard rate of wages of their operatives by a halfpenny per hour, the advance to take effect after 1st August. The advance brings the standard to 7d. per hour in the case of builders, and 6½d. in the case of stonecutters.

**TYNE DISTRICT.**—The house carpenters and joiners in the Tyne District, which comprises all the towns between Newcastle and North and South Shields, have arranged with their employers for an advance of a halfpenny per hour, commencing on Whit-Monday. This also applies to Blyth, and makes the rate of wages 8½d. per hour, overtime rising in proportion. The whole affair has been carried out by the Tyne District Committee.

**YORK.**—Work was resumed on buildings on Wednesday, the bricklayers' labourers having accepted the advance offered by the masters of ½d. per hour, raising wages to a uniform standard of 5½d. per hour.

## CHIPS.

Mr. John Winskill, of Settle, a retired builder and contractor, has died at an advanced age. Most of the houses and public buildings erected in the Settle district during the past forty years have been reared under Mr. Winskill's direction, and for several years Mr. Winskill was one of the Poor-Law Guardians for Settle.

A relay telegraphic station has just been built at Weston-super-Mare for the Commercial Cable Company, from the designs of Mr. Sydney J. Wilde, of that town. Mr. H. A. Forse, of Bristol, was the contractor.

Mr. J. L. Pearson, R.A., who has undertaken the completion of New College Chapel, Oxford, has added two rows of figures to the reredos; he expects to finish the whole by the end of the long vacation.

The foundation-stone of a new Wesleyan chapel was laid at Danderry, Plymouth, on Monday week. Mr. Madams is the contractor.

Mr. Shier, of Ilminster, has been elected borough surveyor of South Molton. Although the salary offered is only £100 a year, there were over forty candidates for the post.

It having been decided to rebuild almost entirely the old parish church of St. Werburgh, Derby, a subscription was opened a fortnight ago, and £3,500 has already been promised towards the sum of £9,000 required.

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### TENDERS.

\* \* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

**ACTON.**—For the erection of the Beaumont Park Board Schools, with the boundary walls and the making-up of playgrounds and drainage work of same. **Mr. E. Monson, Jun., A.R.I.B.A.,** Acton-valle, W., architect to the board:

Clifton, H. C., Bayswater ..	£16,416 0 0
Lyford, G., Shepherd's Bush ..	12,200 0 0
Allen and Son, Kilburn ..	12,100 0 0
Tout, W., Hendon ..	12,087 0 0
Balaam Bros., Old Kent-road ..	12,020 0 0
Scharien and Co., Chelsea ..	11,745 0 0
Brass and Son, Old-street, E.C. ..	11,673 0 0
Higgs, F. and H. F., Loughboro' Junction ..	11,500 0 0
Chappell, J. T., Pimlico ..	11,472 0 0
Lawrence and Son, City-road ..	11,425 0 0
Shillitoe & Son, Bury St. Edmund's	11,400 0 0
Flew and Co., West Kensington	11,347 0 0
Stimpson and Co., Brompton ..	11,360 0 0
Nye, T., Ealing ..	11,325 0 0
Hooper, G., Acton (accepted) ..	11,050 0 0
Pattinson, S. and W., Sleaford ..	10,938 0 0
Heywood, H. G., Hammersmith ..	10,240 0 0

**AYLESBURY.**—For proposed new sorting-room, New-street, Aylesbury, for Messrs. Francis and Son. **Mr. G. Luckett, M.S.A.,** Aylesbury, architect:—  
 Grimsdale, Aylesbury (accepted).

**AYLESBURY.**—For proposed new casting and machine shops, Milton-road, St. James's Park Estate, Aylesbury, **Mr. G. Luckett, M.S.A.,** Aylesbury, architect:—  
 Catherill, T., Aylesbury (accepted).

**BATH.**—For the supply of wood blocks for paving, for the city council:—  
 Holmer and Co. (accepted) ... £6 per 1,000

**BOSTON, LINCOLNSHIRE.**—For the erection of additional grain warehouse at the dock, for the harbour trustees:—  
 Lucas, J., Boston (accepted) ... £10,200 0 0  
 (Lowest tender received of thirteen sent in; highest, £13,000.)

**BETHNAL GREEN.**—For the rebuilding of the King's Arms p.h., Abbey-street, Bethnal Green, for **Mr. J. Johnson.** Messrs. Hammack and Lambert, 59, Bishopsgate-street, architects:—

Lister, W. J., and Co. ...	£2,315 0 0
Wood, F. and F. J. ...	2,253 0 0
Goodall, S. ...	2,240 0 0
Gould and Brand ...	2,219 0 0
Cox, C. ...	2,150 0 0
Hearle, J., and Son ...	2,145 0 0

**BRIDGWATER.**—For the enlargement of the schools at Eastover, for the school board:—  
 Pollard, H. W., (accepted) ... 400 0 0

**CANNOCK.**—For sewerage George-street and Platt-street, and four other private streets at High Town and Church-hill, Hednesford, for the Cannock local board:—  
 Barton, R. (accepted) ... £307 10 0

**CHESTER—LE STREET.**—For further alterations to premises, for **Mr. J. W. Luccock.** Messrs. Plummer and Burrell, Newcastle, architects:—

Thompson, J., and Son ...	£232 17 2
Jennings, J., jun. ...	204 8 0
Norman, W. ...	194 18 0
Mole, H. (accepted) ...	184 16 0

**DOLGELLEY.**—For raising the Penmainpool Embankment. **Mr. T. Roberts, Assoc. M.Inst.C.E.,** engineer:—  
 Roberts, J., Dolgelley ... £280 0 0  
 Williams, R., Harlech ... 273 0 0

Engineer's estimate, £276.

**DURHAM.**—For alterations to shop, Langley Moor, Durham. Messrs. Plummer and Burrell, Newcastle, architects:—

Shepherd, J., Durham ...	£75 10 0
Mole, H., Chester-le-Street ...	65 7 4

**DURHAM.**—For alterations to premises, Brandon Colliery, Durham, for **Mr. T. Lamb.** Messrs. Plummer and Burrell, architects:—

Kell, J., Durham ...	£144 11 10
Lazenby, G., Mainsforth (accepted) ...	125 6 3

**DURHAM.**—For villa residence near Durham city. Messrs. Plummer and Burrell, Newcastle-on-Tyne, architects:—  
 Whaley, J., Durham (accepted).

**EAST GRINSTEAD.**—For the erection of a pair of cottages at Forest-row, for **Mr. A. Powell.** **Mr. S. A. Ell, A.R.I.B.A.,** East Grinstead, architect:—

Norman, C. ...	£479 0 0
Stevens, F. ...	450 0 0
Morris, J. ...	389 0 0
Luxford, J. ...	367 0 0
Pledge, W. (accepted) ...	287 0 0

**HAY.**—For alterations to the Masons' Arms p.h. **Mr. A. H. Pearson, Ross,** architect:—  
 Lewis, L., Hay (accepted) ... £129 0 0

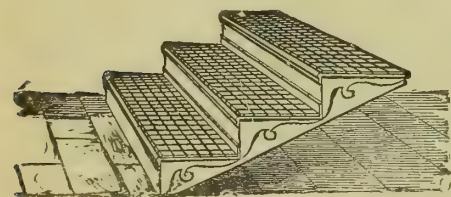
**HEREFORD.**—For the erection of a small detached villa on the Ryelands Estate, Hereford. **Mr. C. H. Godsell,** 20, East-street, Hereford, architect and surveyor:—  
 Taylor, R. (accepted) ... £360 0 0  
 (No competition.)

# HAWKSLEY'S PATENT TREADS.

Proprietor & Manufacturer: **J. WESTWOOD, Jun.**

**NAPIER YARD, MILLWALL, E.**

Telegraphic Address—"Westwood," London. Telephone No. 5065.



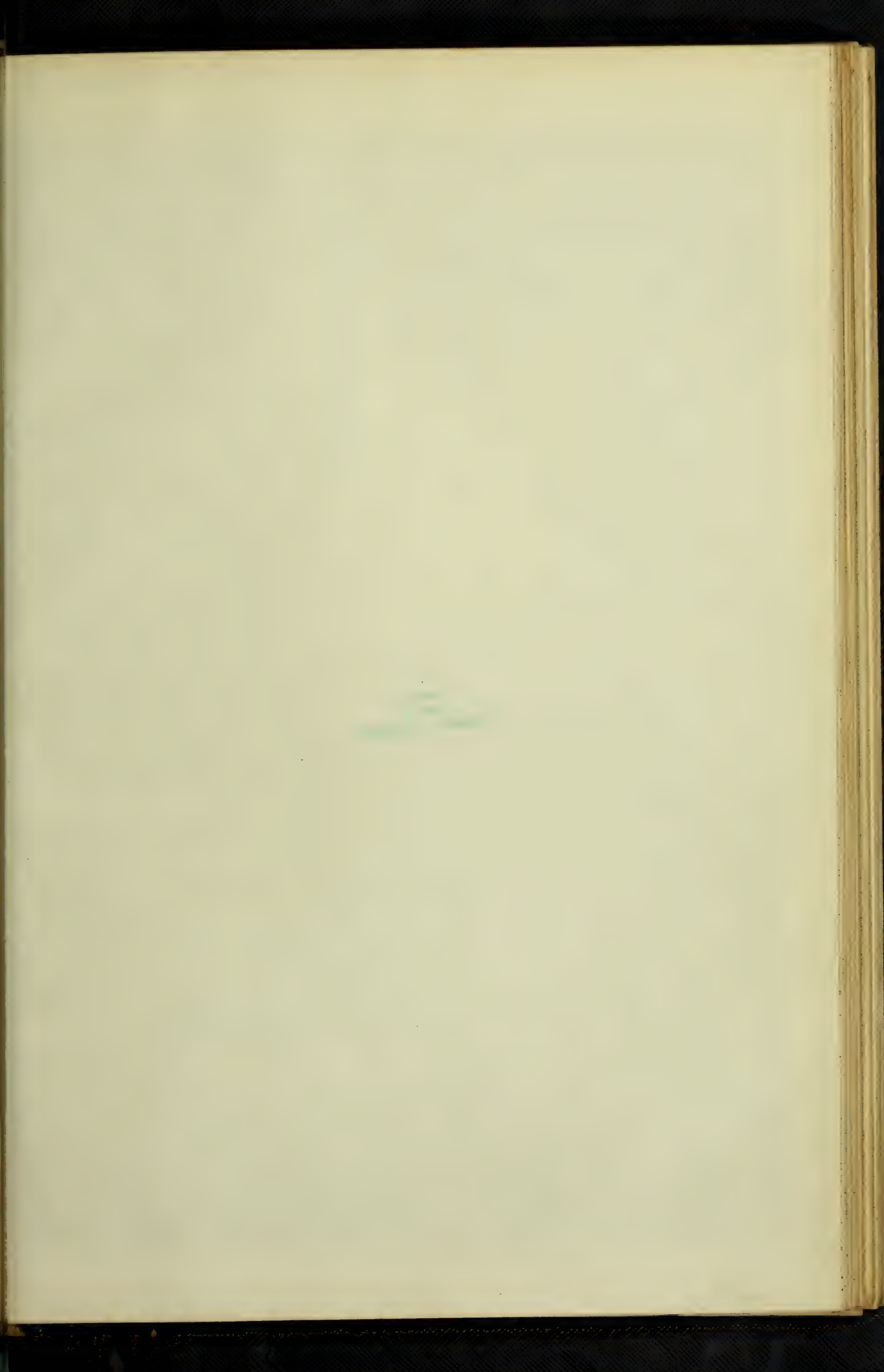
Recommended for durability, simplicity, firm footing, elasticity, and are perfectly noiseless; they excel lead, oak, teak, or stone; applicable to wood and iron staircases, new and worn-down stone stairs, spiral and other staircases, footpath flaps to cellars, covers for drains and coal-cellars, flooring for public buildings and aisles of churches, &c., &c.—The best and most durable Tread or Step yet invented.

### IN USE AT

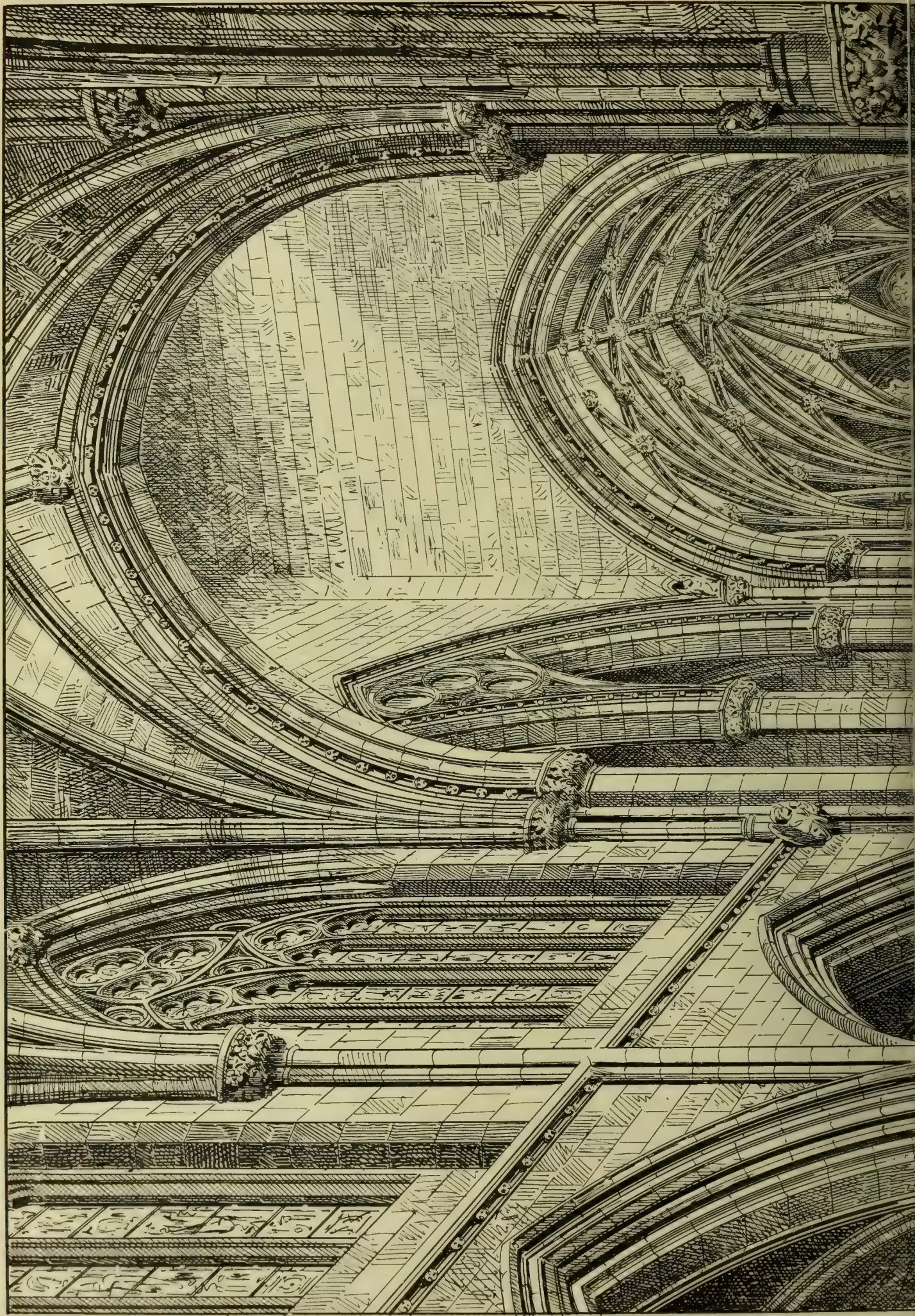
<b>Railway Stations.</b>	<b>Broadstone.</b>	<b>Ealing Terminus.</b>	<b>Kenilworth.</b>	<b>Monkwearmouth.</b>	<b>Slough.</b>	<b>Westminster.</b>	<b>Dublin Castle.</b>	<b>Schools, &amp;c.</b>	<b>Stratford, Colgrave Road.</b>
Accrington	Dublin	Earl's Court	Kensal Green	Soho	South Bromley	Whitechurch	Police Barracks	Belfast Method-ist College	Stratford, Salway Place
Acton Green	Burdett Road	Edgware Road	Kentish Town	Moorgate Street	South Kensington	Whitechapel	Eastney	Battersea, St. Sutton	
Aldersgate street	Edgware Road	Farringdon	Kilburn	Newcastle-under-Lyme	Southport	Whitefield	Fleetwood	Mary's Church St. Jude's	
Aldgate	Junction	Farringdon	Kilsby	New Cross	Speke	Whitley	Fulwood	Birmingham, Tayport	
Althorp Park	Bury	Fenchurch Street	King's Cross	Newport	Spring Grove	Widnes	Halifax	Cowper Street	Torrington
Altrincham	Borough Road	Finchley Road	King William Street	Newton Heath	Stechford	Willenhall	Hamilton, Glasgow	Clapham	Upton Cross
Aston	Mersey Tunnel	Firsby	Langley Green	North Brentford	Stepney	Willesden	Hulme	Colchester	Wandswoth
Ash Street	Canonbury	Forest Gate	Latimer Road	North Bridge	Stoke	Wood Green	Knightsbridge	Forest Gate	
Stockport	Camden Road	Forest Road	Lea Bridge	Northampton	Stourbridge	Wormwood	Leicester, Glen	Parva	Manway Place
Birmingham	Chalk Farm	Level Crossing	Leamington	(Castle Station)	Stratford	Scrubs	Leicester, Glen	Manchester	Harrow
New Street	Charring Cross	Fulham	Leyland	Nottingham	Stretford	Worsley	Parva	Newbridge	Haverstock Hill
Banbury	Cheddington	Geedley	Leyton	Oldbury	Sudbury	Wolverhampton	Manchester	Newcastle-on-Tyne	Orphan Working School
Barnsburry	Cheetham Hill	Gloucester Road	Leytonstone	Old Ford	Sunderland	Wolverton	Normanton	Northampton	Jamaica Level
Barnsley	Junction	Gower Street	Lichfield	Paddington	Sutton	Aldershot	Normanton	Northampton	Leyton, Gram-Guy's Hospital
Batley	Chequerbent	Grantham	Limehouse	Parsons Green	Sutton Coldfield	Ashton-under-Lyne	Northampton	Portsea	mar School
Bedminster	Clayton	Greenwich	Lincoln	Patricroft	Temple	Lyne	Portsea	Portsmouth	Leyton, Church County Asylum
Bescot Junction	Clifton	Hackney	Little Ealing	Penzance	Thornton	Barnet	Portsmouth	Preston	Road
Birmingham	Crooked Billet	Haggerston	Liverpool Road	Pickle Bridge	Tower of London	Belfast	Portsmouth	Regent's Park	Newhaven
Bishopsgate	Level Crossing	Hammersmith	Liverpool Street	Plaistow	Tring	Buddbrook	Regent's Park	Salford	North Bow
Blackfriars	Cross Lane	Hereford, Barr's	Llandudno	Plymouth	Tynemouth	Burnley	Salford	Shorcliffe	Old Ford
Blackfriars	Crumppall	Highbury	Long Buckby	Portsmouth	Victoria Park	Catherham	Shorcliffe	Trim	Netley Hospital
Blackfriars	Canon Street	Highway	Loudoun Road	Prestrich	Victoria Park	Chatham	Trim	Warley	Poplar, Byron & Peterborough
Blackfriars	Dalton	Hillman Road	Mark Hill	Radcliffe	Walham Green	Coventry	Warley	Woolwich	Bright Streets
Blackfriars	Daubhill	Hollinwood	Maidstone	Roads	Walsall	Curragh Camp	Woolwich	Wrexham	Southsea, Rubery Asylum
Bolton	Daybrook	Holyhead	Manchester	Salisbury Road	Waterloo	Dublin, Beggar's	Wrexham		Southsea, Omega St. Thomas's Hospital
Bolts Bridge	Donholme	Honerton	Manchester, Exchange	Seething Lane	Werneth, Old-Dublin	Dublin, Island			
Bombay, India	Dorby	Honley	Manchester	Shedwell	Werneth, Old-Dublin	Dublin, Ship			
Bow	Dryden	Hounslow	Manchester	Shoreditch	Westbourne	Dublin Royal Barracks			
Bowdon Central	Drighlington	Hounslow	Manchester	Sloane Square	West End Lane Dundalk				
Brick Lane	Dudley Port	Keighley	Manchester	Snow Hill, Birmingham					
Bristol	Dundee	Kemble Junction	Manchester						
Broadfield	Ealing Common		Manchester						
Broad Street			Manchester						

Descriptive Circulars, with Prices sent on application.

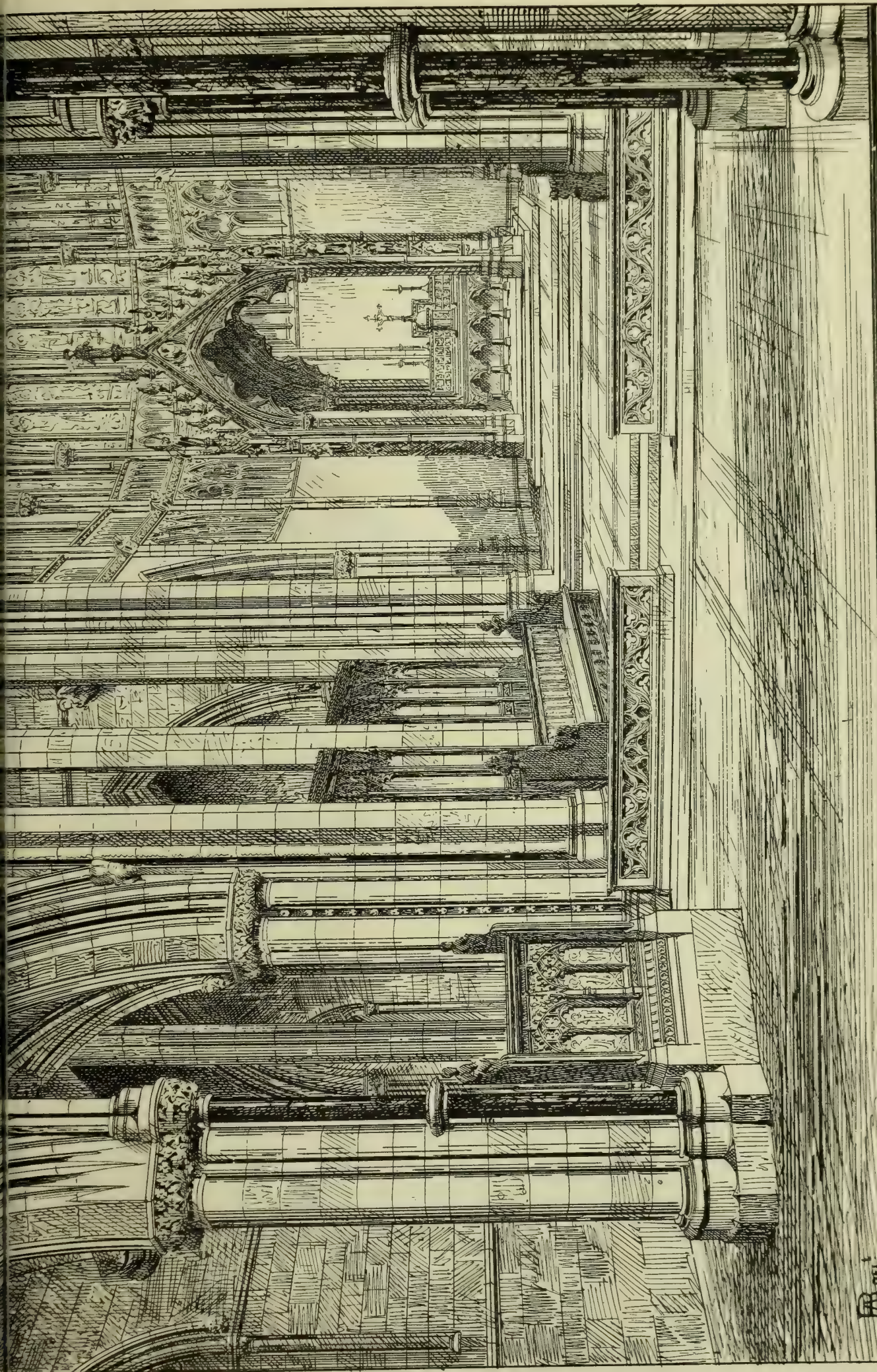












CHURCH OF OUR LADY & THE ENGLISH MARTYRS—CAMBRIDGE

DUNN HANSOM & DUNN.  
ARCHITECTS 1890.

Photo Lithographed & Printed by James Warren & Sons, Queen Street W.C.



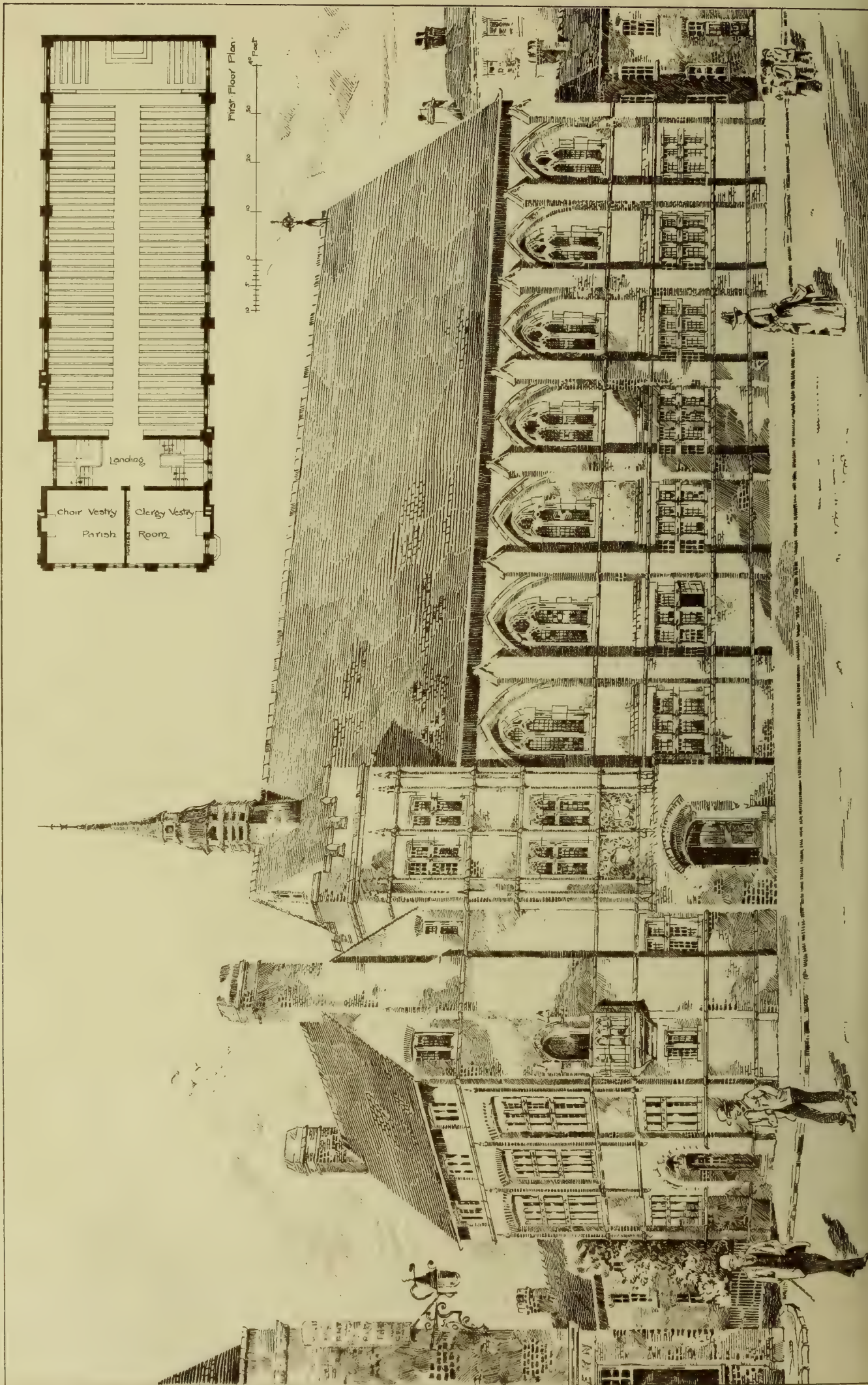








THE BUILDING DEWS, MAY 30, 1890.





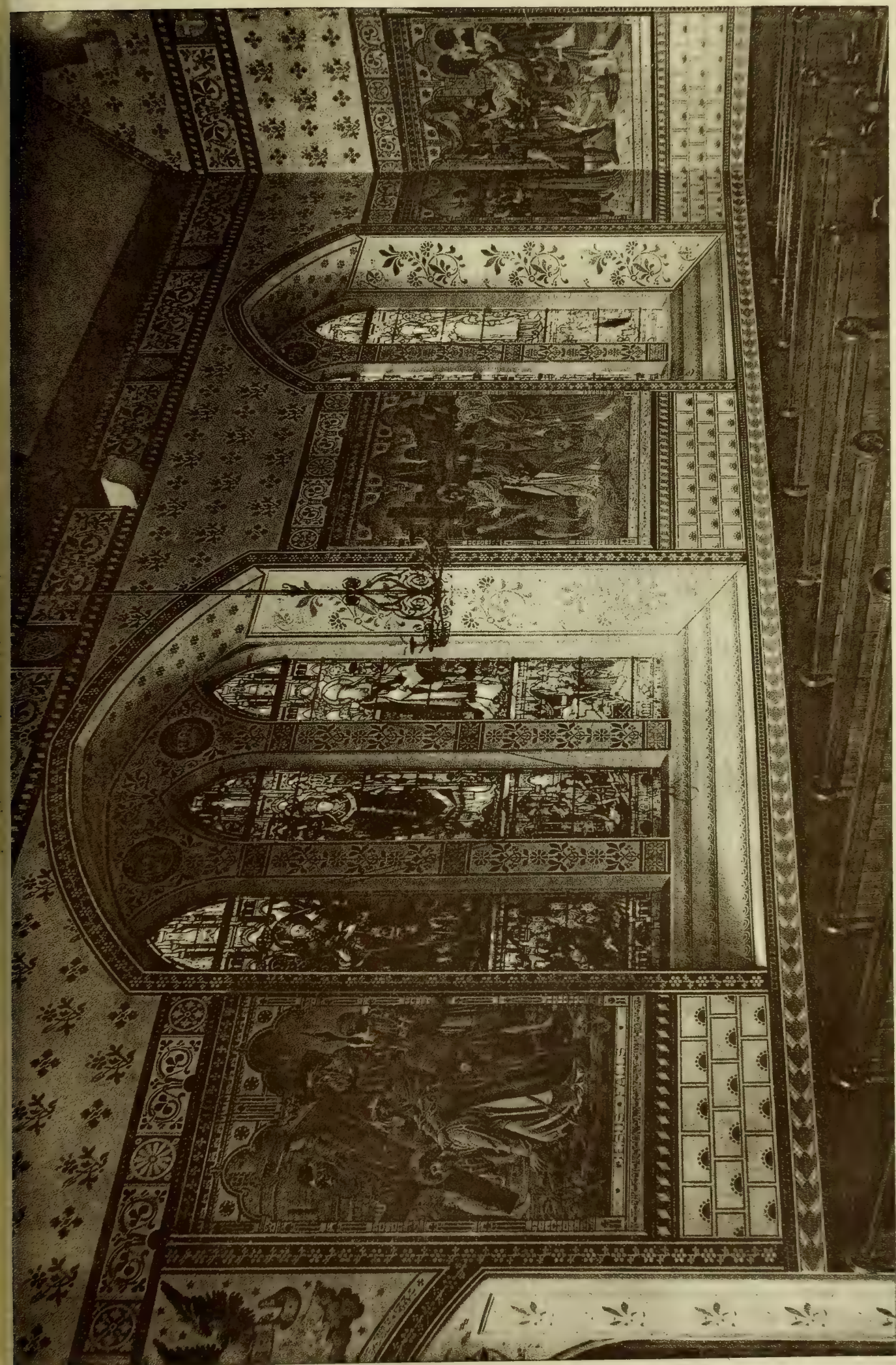


PHOTO TINT

DECORATION & GLASS. FOLKESTONE PARISH CHURCH. BY ALFRED O. HEMMING

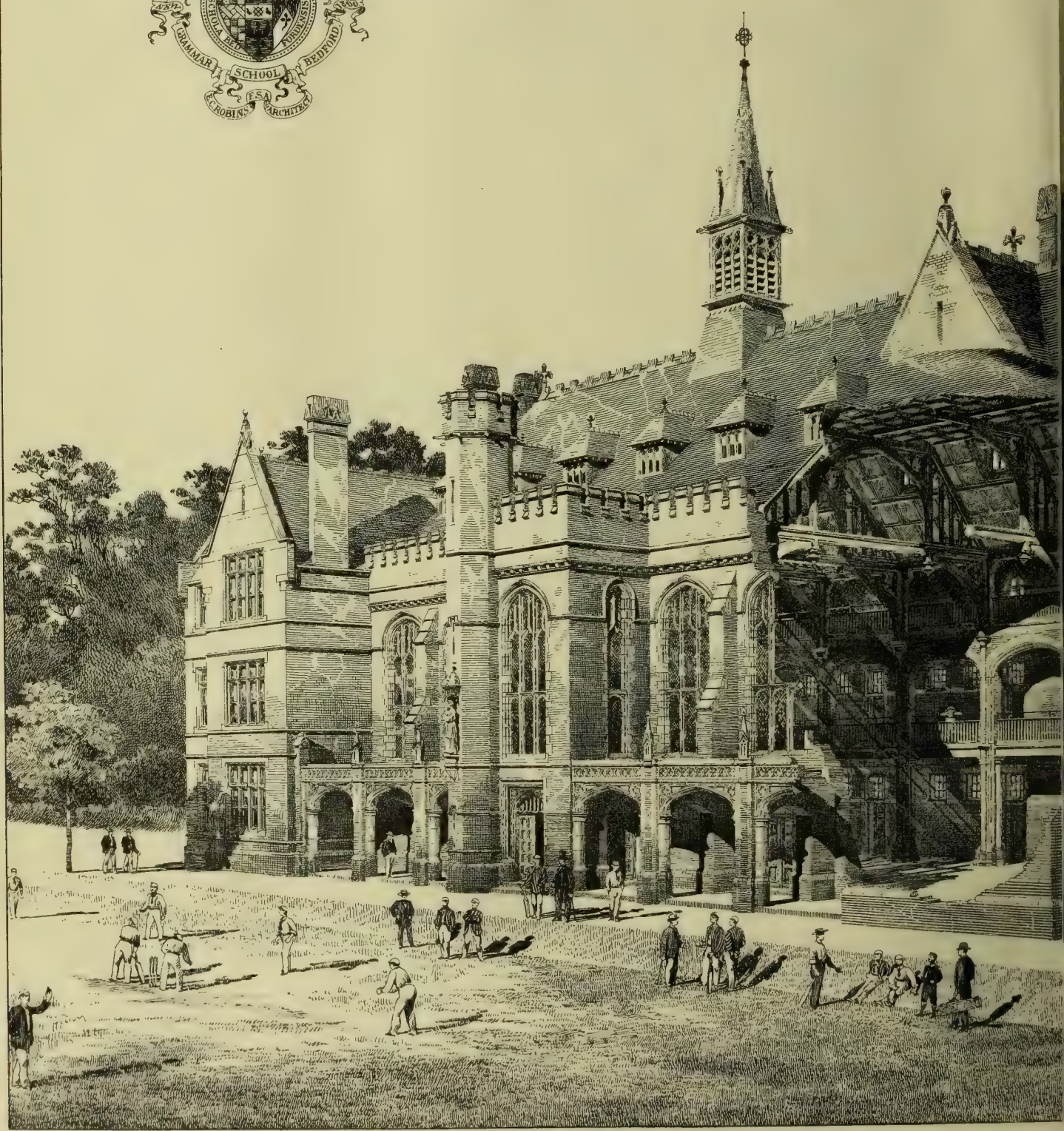














MAY 30, 1890.

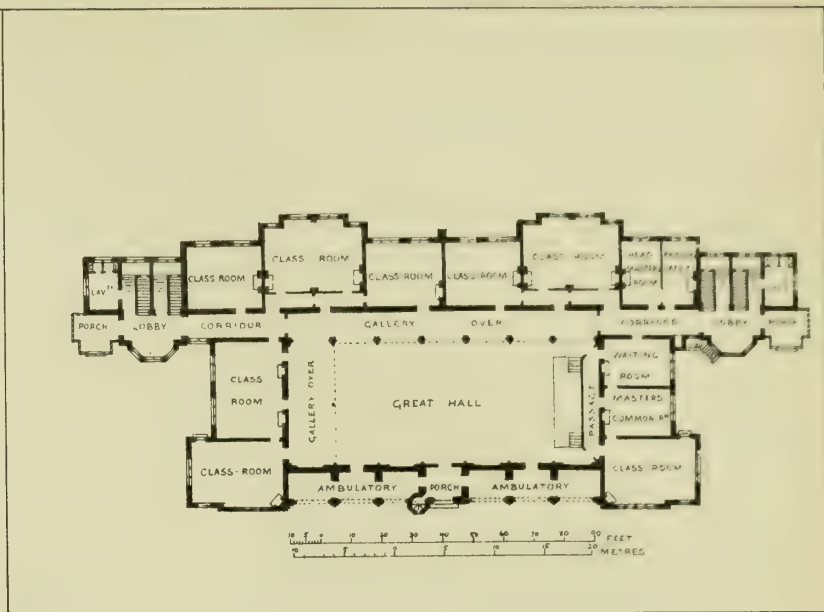


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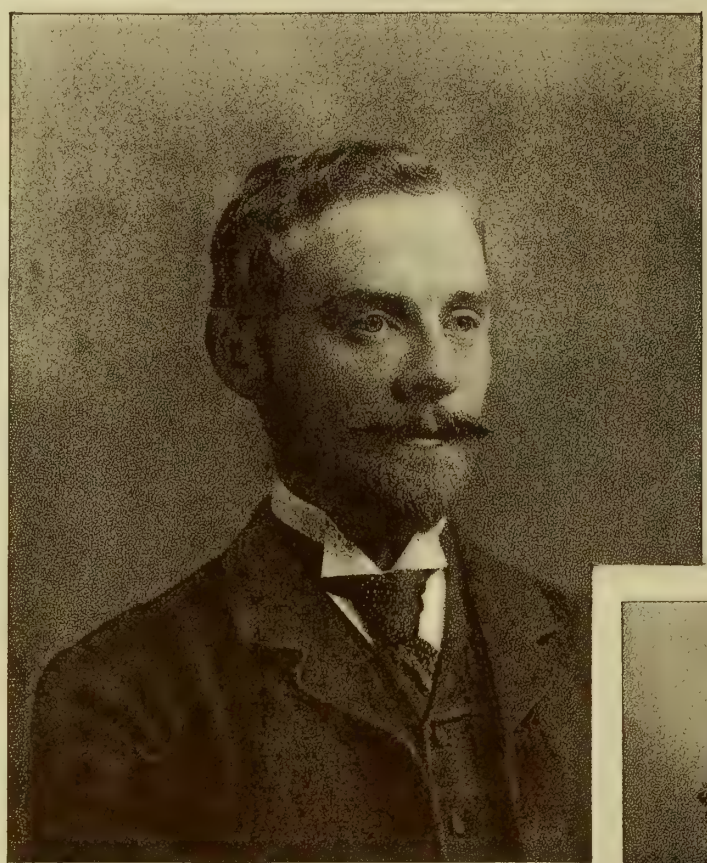






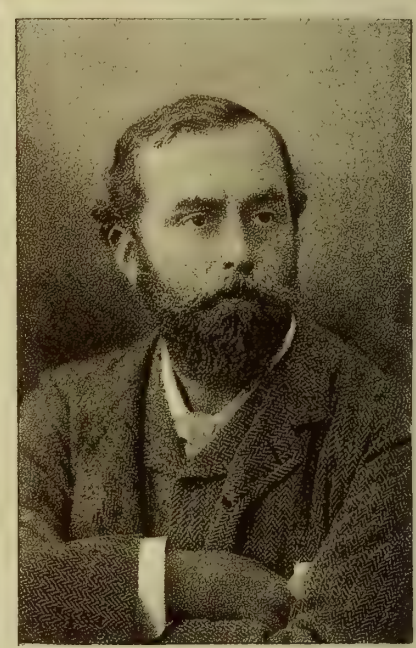






*Ernest Newton*

ERNEST · NEWTON · FRIBA  
ARCHITECT · OF · THE · HOUSE · OF · RETREAT · CLERKENWELL ·



HAROLD · A · PETO · FRIBA  
(MESSRS GEORGE & PETO)



HERBERT · A ·  
ARCHITECT · OF · T



*Thos. J. Bailey*

THOS · J · BAILEY · FRIBA  
ARCHITECT · TO · THE · LONDON · SCHOOL · BOARD ·



ROWLAND  
ARCHITECT · TO · THE · ARTIZANS · DWI



JUNE 6, 1890.



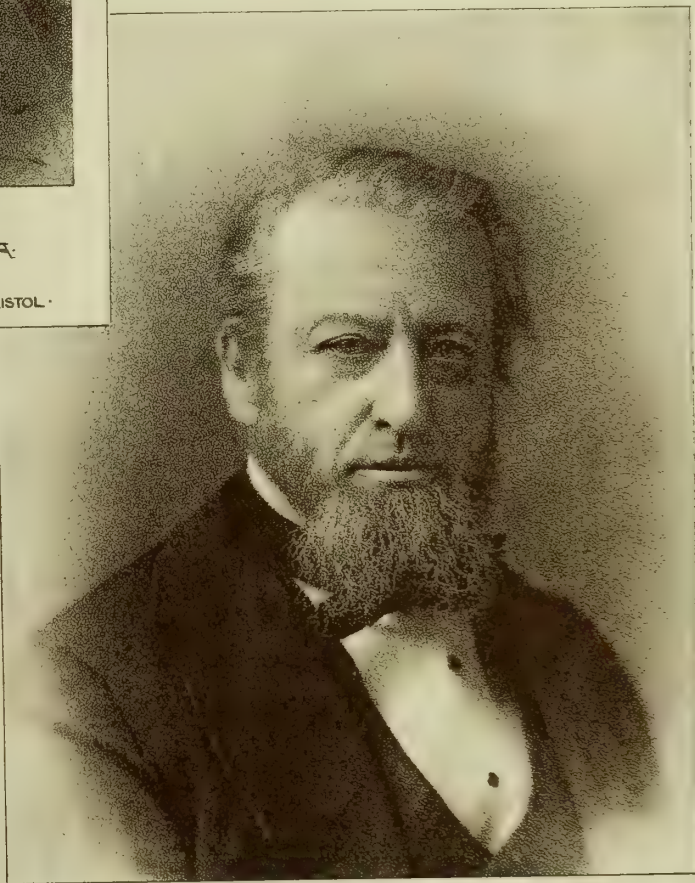
*John A. Gribble*  
JOHN A. GRIBBLE, FRIBA.  
BROMPTON



E. C. ROBINS, F.S.A.  
ARCHITECT OF  
THE MERCHANT VENTURERS' SCHOOL, BRISTOL.



*William Leiper*  
WILLIAM LEIPER, FRIBA.  
VICE-PRESIDENT OF THE GLASGOW INSTITUTE OF ARCHITECTS.



*Wyatt Papworth*  
WYATT PAPWORTH, FRIBA.  
MEMBER OF COUNCIL, ROYAL INSTITUTE OF BRITISH ARCHITECTS.



*Horatio Plumb*  
HORATIO PLUMB, FRIBA.  
COMPANY'S VILLAGE - NOEL PARK - N.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1848.

FRIDAY, JUNE 6, 1890.

## FREE PUBLIC LIBRARIES.

THE development of the free library movement throughout the country, and the erection of buildings to meet the requirements of the Act, have opened a fresh field and propounded a new problem for the architect. To some extent allied to museums and art schools, with which the library may be associated, the requirements nevertheless demand a distinct treatment, and as every town and village throughout the country is now promoting the erection of a free library, it may be of some practical value if we lay before the architectural reader the main principles that should be kept in view in the design of these buildings, and describe some of the more important buildings of the class that have been erected in the Metropolis and elsewhere—a few of which we have illustrated. For a number of years the Metropolis was far behind the larger provincial towns in establishing free libraries, and if it had not been for the efforts of the few, the Metropolitan Free Libraries Committee, who in 1878 set to work by appealing to the larger vestries, the progress would have been even slower than it is. The provincial towns have more readily availed themselves of the Free Libraries Acts. The first free library was established at Manchester soon after William Ewart's Free Public Libraries Act of 1850. It was, we believe, the earliest library at least which established the popular lending and reference system, which issued to readers during the first year 138,312 volumes. The plan represents one central reference library, with branch rooms for lending library, news-rooms, &c. Special reading-rooms for boys constitute an important department in the Manchester libraries. Bradford adopted the Act in 1871, and in 1878 lending and reference libraries and museum were opened in the present commodious corner building. In Liverpool the handsome group of buildings in Lime-street is a still more noble example of the movement due to the interest taken by the late Sir J. A. Picton. The library is in connection with the Museum and the Walker Art Gallery, and the buildings, conceived in a truly Classic spirit, are thoroughly monumental in character. Another imposing example of the united museum and library is the Harris Library and Museum, Preston, opposite the market-place, a notable instance of private munificence. It is a Classic design of Greek Ionic, quadrangular, symmetrical in plan, standing by itself. A portico of six columns gives access by flights of steps to the vestibule, which is 10ft. above the street level. There is a large central hall 54ft. square, with lantern over, which is emphasised by being carried up. On the south side is the news room, and on the north the reading-room, each 55ft. by 29ft., the large lending-library is 50ft. square, the other 55ft. by 29ft. On the principal floor are the reference-libraries, each 120ft. by 30ft., on each side of the central hall, which is set apart for casts from the antique. This monumental edifice ranks as one of the most complete buildings for the purpose. The north and south sides are 170ft. in length, the frontage 130ft. The cost has been about £100,000.

The Birmingham Free Library is one of the most spacious and sumptuously-fitted buildings, L-shaped in plan; it has a fine news-room, 100ft. by 64ft., furnished with polished oak desks and tables; adjoining at right angles is the lending library, 82ft. by

75ft. Both are lofty and well lighted, and decorated by bands of colour; the walls of deep red with terracotta arches; iron columns with foliated brackets carry the girders. Above is the reference library, also L-shaped, with the Shakespeare library, 30ft. by 21ft. The first has an arched-ribbed roof, 50ft. high, and side aisles divided by arches 23ft. high. The latter has wrought-iron elliptical ribs; both are lighted from the roof, and a clerestory filled by stained glass surrounds the larger room, which is apsidal-ended. An average of 10,000 people visit these rooms daily, and nearly 3,000 volumes are issued daily. Hot air and water heat the buildings. Externally, coloured materials, brick, terracotta, marble, and tiles are employed, and the style is Italian. The Salford Library and Museum was opened before the Act of 1850, and is a charmingly situated building, and the books for free circulation number about 80,000 volumes. Then we have the Leeds Public Library, housed in the New Municipal Buildings, which we illustrated—a fine Palladian structure—comprising a reading-room, lending and reference libraries; the first 80ft. by 40ft., divided into nave and aisles by arches upon polished granite shafts, carrying a vault of hexagonal bricks of various colours, resembling mosaic, the whole treated in a Romanesque manner. The library has 146,502 volumes. Newcastle-on-Tyne has also a handsome library and newsroom, designed in a Classic and dignified style, characteristic of the purpose. The Derby Free Library and Museum opened in 1879, designed by R. Knill Freeman, has a lending library 56ft. by 24ft., carried up, with gallery round, lighted by a lantern; the reference reading-room, of the same size, has a large bay for students. The Sunderland Museum and Library, by Messrs. Tillman, architects, is a single-story building, of an imposing Italian design. At Ipswich, a museum, library, and school of art was opened in 1881, in a pleasing Italian Renaissance style. Blackburn, Bristol, Plymouth, Norwich, Ipswich, notably Glasgow, have their libraries and branches; but it is needless to say more on the working of the movement previous to the recent revival of the Act—how spontaneously the provinces have adopted the measure.

Our present remarks are chiefly, however, confined to the development of the movement and the types of a few plans that have been adopted. One of the first of these is the free public library at Wimbledon, the designs for which we commented on in 1885. The plan is a simple parallelogram, the centre entrance and lobby leading into a central reading-room, top-lighted, divided by screens from a reference library on the left-hand side, occupying the whole length of block, and also from the lending department on the other side. In the rear are two other entrances, stores, and lavatories. The librarian's office at the front end of the lending-room enables that officer to overlook the entire area. The newspaper desks and tables are placed near the entrance, and the tables for those consulting books of reference in the more retired parts. The cost has been £3,000, and the building is designed in brick, of Late Domestic Gothic character. The rectangular plan is well utilised in Mr. J. M. Brydon's design for Chelsea Free Library, of which we gave the plans, sections, and elevation in our issue for June 7th, 1889. Here a central semicircular portico leads into a hall, with ladies' and boys' reading-rooms on right and left. The main body of ground-floor is divided longitudinally, the news-room 75ft. by 31ft. 6in. being on left side, and the lending library 49ft. 6in. by 31ft. on the right, each lighted by side windows. The librarian's room is placed in communication with, and to overlook, the lending and boys' rooms. In the rear, transversely, is a magazine room, 63ft. long and 24ft. 6in. wide, fitted with 12 tables. The accommo-

dation of news-room is for 116 readers at the tables, of which there are four rows of 20 tables, and 100 at newspaper desks, in all 216. The allowance is 15sq.ft. to each person. A total of 29,520 volumes is provided for books on floor and gallery—9 volumes to the square foot being the calculation. A stairs for staff is placed at the junction of the three main rooms. On the first floor is a reference-library, 63ft. by 24ft. 6in. transversely, and parallel thereto are four similar book-stores in the rear, accessible by the staff stairs. The reference library is lighted by a domical roof, and at ends, and has a gallery all round. There are tables for 72 readers, and book space for 15,920 volumes at 8 volumes per square foot. The book-stores give accommodation at the same unit for book-case space for 105,000 volumes. The design is of Georgian Classic, brick and stone. A smaller but very compact library of rectangular plan, is that recently built at West Norwood from the designs of Mr. Sidney R. Smith, A.R.I.B.A., the first of the buildings undertaken by the Lambeth Commissioners. Entering by a recessed lobby to a spacious hall, the lending library is on the right hand, with table and desk for librarian and assistant in front, commanding the news and reference rooms, which are arranged side by side behind, and are top and end-lighted. A side lobby leads to these principal rooms. A small ladies' reading-room is in front, corresponding to the lending library on the other side. The recessed portico and loggia over, and the ornamental red brick, stone, and terracotta front, and high-tiled roof make up a pleasing building of Renaissance design. Another library in the Gothic style of red brick and terracotta, designed by the same architect for Lambeth, is the Durning Library, Lower Kennington-lane, the cost (£10,000) having been defrayed by Miss J. Durning Smith. The Tate Free Library, South Lambeth-road, is a third library by the same hand. The awkward nature of the site has been ingeniously dealt with by placing the entrance vestibule, women's and private room in the corner of site at the junction of the two roads. The borrowers' lobby, taken out of the lending-room, 48ft. by 23ft., occupies one side of the main structure, and a news-room and reference-room, 96ft. by 27ft., divided by a glazed partition, form a parallel room, top-lighted. These are single-story buildings, the librarian's house being carried up in front. We illustrated this building April 19, 1889. The accommodation for lending library is for 30,000 vols.

An important library is that of Battersea, the architect being Mr. E. W. Mountford, A.R.I.B.A. The exterior, of red brick and stone for dressings, has a rather domesticated look. On the ground floor is a magazine room on left and news-room on right of entrance corridor, which leads to a lending library at the back, with rows of cases and counter, and with a side office for librarian, with windows overlooking news-room and lending library. Over the latter, up-stairs, is a reference library and a ladies' reading-room over office. In front is a large book-store and the house of librarian. An angle bay is formed at the corner of news-room.

As a cleverly planned arrangement for a square site open on three sides, we may incidentally refer to the design of Mr. George Washington Browne for the Edinburgh Public Library, just carried to completion. The plan of each floor partakes of a Greek cross, three arms of which form recesses for book-cases, these recesses opening by arches into the centre lending library, 70ft. square. A domical light is over the centre of cross on the reference library floor, and the recesses have large end windows. Ample light is thereby secured on all sides.

As many corner sites are triangular in



shape, the architect has a problem of some difficulty which is not experienced in square or rectangular forms. Which way can the main departments be placed? The architects of the selected design for the Clerkenwell Free Library, of which we gave a plan and view (May 17, 1889), Messrs. Karslake and Mortimer, have ingeniously placed their news-room (56ft. 6in. by 22ft. 6in.) along one side, with windows facing the road, and have thereby cut off to a triangular shape the space on the other side, devoted to the lending library, 33ft. 6in. by 22ft. 6in. To compensate for the encroachment, the news-room is reduced in width by setting its inner side as far as possible within the news-room area, by which a space for the public is obtained next lending library, and by cutting off an angle of news-room for the entrance lobby. By this stratagem all the room possible is utilised on the lending library side. The reading-room and reference library are on the first floor, and above that the caretaker's rooms, librarian's rooms, &c. The design is of a Renaissance character of red brick and terracotta. The Clapham Library, by Mr. Edwd. B. T'Anson, we have already described. A borrower's lobby leads to the lending library for 27,000 volumes, top-lighted; cases are arranged in centre and along walls. From the same lobby the news-room is entered, at the rear of which is the reference library. The counter has a Cotgreave indicator showing books in use and available. A museum is placed over the front part of building, and Boyle's ventilators are used here, as in many other of the buildings we have described.

From the plans we have described it will be noticed that a free library requires at least three departments—a news-room, a lending library, and a reference library—though in the larger town districts a reading-room, a ladies' and boys' reading-rooms are required in addition. If possible these rooms should be placed on the ground floor, or at least the news-room and lending library ought to be; the readers' and students' and ladies accommodation preferably taking the first floor. In the metropolis and large towns the latter alternative becomes almost an essential condition on the score of economy. Easy access, avoidance of unnecessary steps and corridors, lobby room for borrowers, and above all, ample light in every part, and a comfortable temperature and efficient ventilation, are absolute necessities to a well-designed building for a public library. With regard to plan, we may point out that the most essential condition of success appears to be concentration to insure general supervision of the departments. For this end it is necessary to bring together those in most frequent use, as the news-room, the lending and reference libraries, and to afford easy means of intercommunication between them. The separation may be, in large buildings, by walls pierced by openings here and there, and in smaller ones by light partitions partially glazed. Ladies' and boys' rooms should be provided in distinct parts, the latter being under the eye of the librarian or his assistant, and, of course, lavatories and conveniences are essential, arranged to obtain external ventilation. Another point of manifest importance is the borrower's lobby and counter; these should be arranged to give ample room, and be within tolerable proximity to the entrance. The arrangement of stands, desks, and tables for newspapers and books must not be lost sight of in the plan, and spacing of windows in reference to them. The shelving may be along walls or form screens; but the American alcove system is worth more consideration than it has received. Other details comprise the form of "indicator" by which a borrower is informed if the book he wants is out or not. These are details to which we may again refer. The planning of village libraries is a problem of no less importance. In these

concentration and economical arrangement are the leading requirements. Two departments or ordinary rooms are sufficient, with a spacious hall. In another article we may show a few typical arrangements, and refer to some of the details we have here only incidentally mentioned.

#### RENOVATED STREETS AND COMMERCIAL ARCHITECTURE.

MANY of the older streets are beginning to assume a new dress, either by the rebuilding of the premises or the addition of new shop-fronts. There are many considerations that are worth the thought of owners and their architects, as well as the local authorities. First come the legal obligations. For one man to boldly push his shop-front out a few feet in the front of his side neighbours, and to their manifest inconvenience and injury, is one of those anomalies in the law which we have never been able to understand, though it is done every day. Where are the district surveyors, and who are the authorities that permit these individual erections are the natural questions everybody asks. We see the irregularity in many old streets, the pavements of which are wide, as if it were allowable for everybody to come within a certain distance of the roadway. Because the encroachment has been permitted years ago in some part of the street, it appears to be assumed that the said encroachment forms a new building-line to which every other owner, if he likes, can bring out his front. We see this process just now going on in many of the renovated streets at Fulham, in the Tottenham Court-road, in the London-road, and other streets converging at the Elephant and Castle. Sometimes a number of owners or tenants in a row make the alteration simultaneously. Perhaps a dozen or a score of house-owners who begin all at once to recognise their rights combine to advance their shops a few feet, and before very long we find a row of new fronts, with cornices and flats to match. This is certainly less objectionable than to see one isolated shop, and then another several houses apart stuck forward with blank brick walls at the sides, forming corners of a very objectionable character; though it would be more tolerable if a design for the alteration as a whole were made compulsory, and submitted to the Board or Vestry. The manner in which it is usually done is as follows:—The old shop windows are taken out and the front supported, the side party-walls are brought out to the required extent and height, and upon the ends of these walls a framed girder or breastsummer is placed, which in turn is hidden by a wooden cornice. In front of the breastsummers, and resting on the ends of the party-walls, are large stone consoles which serve to stop the cornice and facias of the shop. Zinc or lead flats are put over the extended story thus brought out, and the shop is complete. The perspective presented is a long line of one-story shops projecting from the old fronts; the old house façades, in fact, look as if they are built on the raised flat. This leads to the architectural question whether a more satisfactory and pleasing method of extension could be devised. We are aware of the difficulty of the problem, as light to the premises so extended must be secured. We should prefer to the flat, often a receptacle for all kinds of rubbish and snow in winter, a gabled roof to each shop; but the obvious difficulty is that a gabled roof would necessitate the blocking of the first-floor windows. A lean-to would be unobjectionable if sufficient height of story could be obtained. The only other alternative is a hipped roof over the extended shop, or a domical-shaped roof. For economical reasons the flat is generally adopted; but even with this form of roof architectural genius could devise a more agreeable treat-

ment than that usually seen, and which spoils as well as contracts the width of street.

Then there is a further subject to which the commercial architect might devote his attention in connection with street renovation—the practicability of using other materials than brick or stone and wood. Light and ample display for goods are the two essential requirements of street buildings devoted to trade. Both these requirements can be met by the use of moulded or cast materials. The terracotta front, though occasionally seen, is not a very usual introduction, probably owing to the supposed cost and the delay in getting the blocks ready; but the latter is an obstacle to its use that can be removed. We have seen in Oxford-street, Piccadilly, and other West-end streets, windows in this material that give all that is necessary. The framework or mullions of the window can be made of small section and in pieces that admit of speedy erection. The top part of the window admits of being filled in with open tracery or panels, the windows can be arched in form, and the most delicate and tasteful decoration in relief be given to the panels, spandrels, and other parts. In the Kennington Park-road a new window of this character has been put up, the upper portion being a flat elliptical arch in buff terracotta. The Ruabon terracotta of J. C. Edwards, for instance, is a material suitably manufactured in shades of red, pink, and buff. With terracotta manufactured with accurate lines, the architect has a material he can well apply for such a purpose, admitting of lightness and more freedom in design, far more durable than wood, which is now generally used where glass and ample light are essential. The natural buff or red colour in which it is burned is pleasing also. The avoidance of sameness in the design of street-fronts is desired above everything, and we should be sorry to see the day when window-fronts will be reproduced wholesale to one design in iron, as is the case in the United States; but alluding to metal, we cannot understand how the shop-front architect has neglected iron—more especially wrought metalwork—from his menu. In restricted glass windows a filling or design in wrought iron would be very appropriate as an outer grille, adding to the protection of the plate-glass and to the architectural appearance of the front. Bars and tracery of metal in the head would not materially obstruct the light, and, what is of much importance, they could not impede the view of the objects displayed in the window. We believe much of the well-founded objection to large plate-glass fronts might be avoided by the use of wrought metal judiciously disposed over the surface. The employment of brass has to some extent been seen, such as twisted brass pillars and arched heads; but the artist in metalwork can do better than in thus imitating rigid structural forms. The filling in of smaller panes in woodwork on the upper part of shop windows is undoubtedly a step in the right direction in giving substance to the window and in reducing the surface of mere glass. The transom has come to the aid of the designer in reducing the height of glass plate, as he justly thinks that all above the level of the eye is so much wasted. When architectural design is studied in reference to the actual requirements of such prosaic matters as shop windows, it may dawn on the minds of architects and their patrons that it is as easy to make a window pleasing and artistic as to make it dull and ugly. The architects of commercial premises have not as yet learned, it would appear, that every shop window should be arranged and designed with a particular reference to the goods displayed in it. Costumes, drapery, and woollen stuffs require a treatment different in the apportionment of the glass panels to that required for the display of jewelry



and small articles, and, in short, every description of goods requires a design that shall appropriately set off the qualities of the wares exhibited.

### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary meeting of the Institute was held on Monday evening, the President, Mr. Alfred Waterhouse, R.A., in the chair.

#### ELECTION OF COUNCIL AND COMMITTEES.

The PRESIDENT read the report of the scrutineers on the voting-papers, who stated that for the Council 526 were received, of which 15 arrived too late, 1 unpaid postage, 2 invalid, and 27 irregular, leaving 491 good votes. The following were the results:—

President: A. Waterhouse. Vice-Presidents (4): Professor George Aitchison\*, J. Macvicar Anderson\*, Arthur Cates\*, and Henry Currey\*. Hon. Secretary: Aston Webb\*. Members of Council (18): T. E. Collicutt\*, 442 votes; John Slater\*, 399; Alexander Graham\*, 391; Ernest George, 388; William Emerson\*, 383; John Belcher\*, 379; R. Phené Spiers\*, 377; Thomas Blashill\*, 376; James Brooks\*, 364; Wyatt Papworth\*, 360; Campbell Douglas\* (Glasgow), 300; J. MacKean Brydon, 298; John Dando Sedding, 297; Octavius Hansard\*, 288; Edward Cookworthy Robins\*, 281; John Holden\* (Manchester), 280; Edward A. Gruning\*, 268; and James Barlow Fraser\* (Leeds), 254. Not elected: Lucy William Ridge, 247; Edwin Thomas Hall, 235; Robert J. Johnson (Newcastle), 234; Edward J. May, 207; John P. Seddon, 206; Joseph Goddard (Leicester), 197; Rowland Plunbe, 179; John Wreghitt Connon (Leeds), 142; H. G. W. Drinkwater (Oxford), 142; Benjamin Ingelow, 120; Edwin Seward (Cardiff), 113; and Hugh Roumieu Gough, 102. Associate-Members of Council (2): Reginald Theodore Blomfield, 292; and Thomas Miller Rickman\*, 241. Not elected: Arthur Edmund Street, 235; George Richards Julian\*, 159; and George Alexander Thomas Middleton, 50. Presidents of Allied Societies (5): H. Crisp\*, Bristol Society of Architects; Thomas Drew, R.H.A., Royal Institute of Architects of Ireland; R. Knill Freeman, Manchester Society of Architects; Thomas Mellard Reade, Liverpool Architectural Society; and Herbert Walker, Nottingham Architectural Society. Representative of the London Architectural Association: Leonard A. S. Stokes, President. Auditors (2): W. Kidner and Wm. Woodward.

The PRESIDENT, whose name had been received with loud applause, thanked the members for electing him for a third term to the chair.

The voting for the four Standing Committees was as follows:—

Art Standing Committee.—Fellows (10): R. Herbert Carpenter\*, 416; Mervyn E. Macartney\*, 407; J. M. Brydon, 400; Ernest Newton, 386; Edward S. Prior, 375; Ralph Nevill\*, 360; E. J. May, 350; William Kidner\*, 332; C. Forster Hayward\*, 328; and T. J. Flockton (Sheffield), 313. Not elected: Maurice B. Adams\*, 293; and Ralph S. Wornum, 279. Associates: E. Ingress Bell\*, 410; G. H. Birch\*, 373; James Neale\*, 366; A. Beresford Pite\*, 334; Gerald C. Horsley, 332; Alfred Aitchison\*, 303. Not elected: Walter L. Spiers, 202; A. Needham Wilson, 185; and Thomas E. Pryce, 158. 463 good voting-papers were received, in addition to 23 that were spoiled.

Literature Standing Committee.—Fellows (10): Wyatt Papworth\*, 430; Hugh Stannus\*, 417; J. Alfred Gofch\* (Kettering), 409; Charles Locke Eastlake\*, 404; B. Ingelow\*, 401; Thos. H. Eagles\*, 398; E. P. Loftus Brock\*, 386; Mervyn E. Macartney, 373; Frank T. Bagdall, 370; Hampden W. Pratt\*, 359. Not elected: Edward S. Prior, 344. Associates (6): R. T. Blomfield\*, 414; Paul Waterhouse\*, 404; Arthur E. Street\*, 397; G. Richards Julian\*, 335; Thomas Garratt\*, 328; H. O. Cresswell, 247. Not elected: Thomas Arnold, 205; R. L. Cox, 194; H. T. Hare, 111. 462 good voting papers were received, besides 21 spoiled.

Practice Standing Committee.—Fellows (10): E. T. Hall\*, 398; S. Flint Clarkson\*, 389; Cole A. Adams\*, 388; Lucy W. Ridge\*, 382; Joseph S. Hansom\*, 379; G. E. Grayson\* (Liverpool), 370; H. C. Boyes\*, 342; Stephen Salter\*, 331; G. R. Crickmay\*, 317; Professor Banister Fletcher\*, 287. Not elected: John Norton, 224; R. M. Roe, 167; C. H. Shoppee, 159; Alfred Williams, 147; J. G. Finch Noyes, 139. Associates (6): T. M. Rickman\*, 420; Thos. Batterbury\*, 355; E. Woodthorpe\*, 352; F. H. A. Hardcastle\*, 330; A. Rowland Barker\*, 311; R. Stark Wilkinson\*, 291. Not elected: Walter L. Spiers, 244; Frederick Wallen, 172; Chas. B. Arding, 153. 467 good votes recorded, 15 rejected as invalid.

Science Standing Committee.—Fellows (10): Professor T. Roger Smith\*, 451; J. Douglass Matthews\*, 432; H. D. Appleton\*, 414; A. J. Gale\*, 411; Lewis Angell\*, 409; B. Tabberer\*, 393; T. H. Watson, 391; Ernest Turner, 382; T. W. Cutler, 376; Henry Dawson\*, 372. Not elected: Alex. Payne, 320; Oswald C. Wilson, 267. Associates (6): Chas. Henman\*, 384; Henry Tanner\*, 377; W. C. Street\*, 374; Herbert A. K. Gribble, 363; Francis Hooper, 326; Henry Lovegrove\*, 316. Not elected: A. C. Bulmer Booth, 299; G. A. Pryce Cuxson, 209. 475 good votes, 7 rejected.

Mr. W. WHITE, F.S.A., thought the names of country members ought to be printed in a list by themselves, but Mr. R. NEVILL, F.S.A., pointed out that they took good care of themselves, three out of eighteen members of Council being provincial men, in addition to those representative of allied societies.

A vote of thanks to the retiring members of

\* Re-elected.

Council—Messrs. H. D. Appleton, R. W. Edis, W. M. Fawcett, T. J. Flockton, C. Fowler, G. T. Hine, E. Kirby, W. A. Royle, and J. Tait—was passed on the motion of Messrs. Carpenter and Hansard.

#### THE ARAB HOUSE IN CAIRO.

A paper by Count d'Hulst, of Cairo, was read for the author by Mr. R. PHENE SPIERS, who had translated it, and also illustrated it with numerous water-colour and pencil drawings, and by photographs. The author explained that it was a general habit in the Orient for a monarch to build a fresh capital on ascending the throne. Cairo was conspicuous among examples of this habit, and, again, Egypt had been the most conquered and exposed to internecine quarrels. These causes, time, and an unreasonable imitation of European architecture, had furthered the destruction of Arab houses. Some beautiful old ones were, however, still left in Cairo, and proved that the richness and elegance displayed in Arab public buildings were also attributes of the private houses. According to Arab writers, private houses in Damascus were built after the fashion of the Late Roman houses; in Persia, especially in Bagdad, the ancient Persian houses served as examples; while in Northern Africa and Spain the Moors evidently copied those of the ancient Roman. The principles of the plan of the Arab house were: (1) Grouping of the rooms around courts and gardens; (2) absolute separation of the rooms for each sex; (3) prevention of passers-by seeing into the courts; (4) windows arranged so that a man on camel-back could not see in, and so that they neither overlooked, nor were overlooked by, others; (5) railing the windows of upper floors so that the women could see into the streets and courts without being observed; (6) arrangement of the entrance to the harem (female apartments) in a special court, or in a place remote from that to the salamluk (male apartments); and (7) the arrangement of rooms, kitchen, bath, stables, &c., with due regard to the ruling breezes, and the construction of ventilators to air the rooms. The Cairo house had generally several floors, and not infrequently, towards the streets, a row of small shops on the ground floor; while in the upper part of the house bay-like constructions protruded about 1½ ft., mostly composed of turned wooden lattice-work; the roof was flat, and surrounded by a pendent fretwork ornament. The foundation walls to the height of the first floor were of quarried stone or cased externally with the soft calcareous stone of Mokattam, while the superstructure was of plastered brick. The house was entered by a narrow and dark vestibule leading to the court, and forming one or two angles to prevent those in the street seeing into it. The horseshoe arch, commonly considered a characteristic of Mohammedan architecture, was not very frequent in Cairo; in all the remains of Arab houses he had examined he had only discovered two instances in which the arcades of the *mahad* (a reception room on the first floor) were horseshoe shaped. In the Cairo Arab house all decoration, exterior and interior, was the work of the architect, and not of the decorator or upholsterer. The exterior was very plain: all ornamentation, if any, being displayed upon the entrance. The house of the French Consulate General showed how well Cairene architecture could be adapted to modern requirements, and what handsome and artistic effects it could produce. Local taste and exigencies were important factors in Egypt; and in the towns of the Lower Delta and along the sea-shore there existed an altogether different style—namely, brick architecture. Here the door and doorways were ornamented with geometrical designs in a kind of mosaic, composed of thin pieces of red and black bricks, whose furrows were filled in with white plaster, and inlaid in the brickwork. Another mode of decoration was the utilisation of the brick itself to constitute the intended design. An anomaly was the employment of wooden chains, the walls being traversed by them, each one intersecting another to give them greater resistance. The knowledge the carpenters displayed in the execution of the joints was remarkable. The brickwork was carried up to the cornice of the first floor; this cornice consisted of a double row of wooden stalactites, which supported the projecting upper floors. It was notable that, notwithstanding such a developed technique, no trace of moulded bricks had yet been discovered. All the towns of the Lower Delta had a number of portals of mosques with pendentives con-

structed entirely of bricks. At Rosetta the ground floors were exclusively devoted to warehouses and offices; a separate door led to the dwelling with a staircase to the first floor; this staircase very often protruded with half of its breadth. In Damietta another arrangement existed: the house formed three sides of a square, the entrance on the open side led into a place partly court, partly hall, having a roof only in that which was built over, and this place served for receptions. Another style of brick architecture which was interesting was to be met with at Assiout. These brick constructions, being mostly in a ruinous state, were disappearing fast, their material being used for new buildings.

A vote of thanks was accorded to the author and reader of the paper, on the motion of Mr. J. D. CRACE, seconded by Mr. WELLBORE and supported by Messrs. R. H. CARPENTER, F. GOODALL, R.A., WILLIAM BRINDLEY, and E. J. TARTER.

#### THE PROPOSED CHANGES AT THE ARCHITECTURAL ASSOCIATION.

AN adjourned special meeting of the Architectural Association was held on Friday evening for the purpose of further considering the scheme propounded in the special report submitted by a committee and summarised in our issue of May 2nd, p. 618. The President, Mr. Leonard Stokes, occupied the chair, and only about a hundred members were present. The meeting lasted nearly three hours, but was characterised by a more conciliatory spirit than the previous one, and the plan of cutting up the scheme into some sixteen sections enabled the members to deal with each subject without loss of time in digressions, and a business-like tone marked the discussion. As will be seen by the subjoined report, the report was adopted in its entirety, the only change carried of the numerous amendments being a verbal alteration of "most" for "some" in the fourth resolution, emphasising the desirability of employing visitors in advanced classes.

The President, in introducing the subject, pointed out that as the report of the special committee had been adopted by the general committee, it was really submitted by the latter body. The committee had carefully considered Mr. Stannus's amendment, which was under consideration by the meeting when it adjourned a fortnight previously, and had decided to adopt the suggestion therein made, and divide their recommendations into sections embodying the principles on which the report was based. These were cast in the form of resolutions, and were as follows:—

1. "That some more methodical system of study is essential in the Architectural Association, and that the need of such a system is emphasised by the recent publication of the Institute programme of progressive examinations."
2. "That the mutual system, which was adopted by the Association at a time when the number of members was small, now presents great disadvantages and difficulties."
3. "That it is advisable to adopt the Institute programme as the basis, (but not the limit) of any systematic course of instruction established by the Association."
4. "That a combination of lectures and classes is preferable to teaching in classes or by lectures taken singly; and also that, as a general rule, instruction in any one subject is likely to be better imparted by a single teacher, but that for advanced students the system of visitors is in some cases preferable."
5. "That in formulating any curriculum of study the work should, as far as possible, be so arranged as not to necessitate, generally speaking, more than twelve hours of evening work in each week."
6. "That it is particularly desirable that an architectural studio be established by the Association."
7. "That it is desirable that a course of day instruction be established on the same basis as the evening instruction."
8. "That it shall be made possible for members to obtain books from the library during the day-time."
9. "That, inasmuch as it would not be possible to carry out the proposed curriculum relying only on voluntary helpers, it is desirable that additional paid teachers be appointed."
10. "That this meeting approves the scale of fees mentioned in the report, subject to such modification as may be found necessary."
11. "That it has become absolutely necessary that a paid assistant secretary be employed."
12. "That this meeting considers that the annual subscription for town members should be raised to one guinea, and that for country members should remain as at present."
13. "That this meeting approves the suggestion of the Committee that a Guarantee Fund and an Endowment Fund be established."
14. "That the best thanks of the Association be expressed to those gentlemen who so kindly, generously, and ably assisted the Special Committee in the preparation of their report."
15. "That the resolutions which have been passed be referred to the General Committee, with instructions to take the necessary steps to carry the same into effect."



The President formally moved the adoption of the first paragraph, which was supported by Mr. C. H. Brodie, Mr. W. J. H. Leverton, and Mr. Cole A. Adams. Mr. A. Needham Wilson complained that the report indulged in vague generalities, and did not show wherein the Association had failed in the past. It would be a mistake to convert the A.A. into a mere cramming shop for the Institute examinations. The motion was then put to the meeting, and unanimously carried.

The second section, averring that the mutual system presents great disadvantages and difficulties, having been proposed for adoption by the President, Mr. Leverton moved its rejection on the ground that the present method of teaching was not mutual, but voluntary, each class being managed by a chairman and a number of visitors, and as some of the best men in the profession were members, their services could be secured as visitors if they were invited so to act. They could not afford to pay adequately the best men as teachers; but under the present system he felt sure their voluntary aid might be secured. It might be said that the young men whom they could secure as paid teachers were equal to the senior men; but they did not and could not carry the same weight of influence. The mutual system, they were told, had been strained to breaking; but he did not believe they had reached the limit of elasticity. The instant abolition of the voluntary system would involve an enormous increase in expenditure and a risk of non-success. They could form some idea of the numbers who would attend an expensive curriculum by Professor Roger Smith's class, where, he understood, about 20 attended. So recently as 1887 Mr. F. R. Farrow gave utterance to views quite opposed to the report which he now supported. Mr. Farrow said he had been led to change his views. The Institute scheme of progressive examinations had necessitated the provision of a systematic course of study, and it would be a scandalous shame if the Association should not provide this education. If Mr. Leverton knew the difficulty there was to get visitors who would only give up a single night per session for classes, he would not speak so lightly of it. The fact was that the foremost men in the profession would gladly help with means, but could not afford the time necessary to practically assist in the classes. He believed that the new departure would be a commercial success, and as the number of students increased they would be able either to reduce the fees of students or pay better lecturers. Mr. Owen Fleming thought all were agreed on the principle of the resolution, although they differed in detail. Messrs. A. O. Collard and Brodie testified to the difficulties experienced in getting unpaid visitors to come forward. Mr. Cole Adams said he should have voted against the resolution if it implied the extinction of the voluntary system; but this was not intended. Mr. Max Clarke moved and Mr. E. Woodthorpe seconded an amendment providing that the voluntary system should not be altogether abolished; but the resolution was adopted by an overwhelming majority.

On No. 3, making the Institute examination the basis but not the limit of the systematic course, considerable discussion arose. Mr. H. Sirr complained that it virtually bound them to adopt the Institute programme. Mr. W. Burrell urged that the Association should be entirely independent of the Institute and its plans of examination, whether the Institute took them up or not. It was a mistake to introduce the name of the Institute into the report and resolution. Mr. Bernard Dicksee thought they ought to get substantial help from the Institute if they showed that the Association was preparing men for its examinations. The resolution was carried by a large majority.

No. 4, declaring a combination of lecturers and classes to be preferable to either system taken singly, was next considered. Mr. Brodie moved and Mr. Leverton seconded that the word "most" be substituted for "some" in the last line. This was agreed to, but a further amendment, proposed by Mr. Max Clarke and seconded by Mr. Roland W. Paul, providing that the system of visitors be adopted throughout, was rejected. Mr. Farrow and Mr. Baggallay stating that experience showed the plan of having visitors did not work equally well in all classes. The resolution as amended was then carried.

No. 5, restricting evening work in classes to 12 hours per week, was agreed to after remarks

from Messrs. Cole Adams, Thomas Pryce, and A. W. Earle.

The next section, establishing an architectural studio, gave rise to more controversy. The President explained that it was proposed to keep the studio open all day, so that a man could work or study there, while at certain hours an instructor or visitor would be in attendance to answer questions and give advice. Mr. Leverton moved as an amendment that the opening of the studio be postponed for the present. Men who wanted such facilities could already obtain them at the Royal Academy, which was free. Mr. Percy Smith remarked that this studio would be a stepping-stone to the Academy School, entrance to which was only gained by examination—by men under 23. The amendment was not seconded, and the resolution was carried *nem. con.*

As to No. 7, arranging for a course of day instruction, Mr. Needham Wilson said he was not in favour of the scheme, as, together with the clause just agreed to, it was too academic in character. He wished to make this protest against the establishment of a studio, except for youths not yet articulated. It should be restricted to men who had not yet entered office. Mr. Cole Adams heartily supported the resolution, feeling that the tide of events rendered its adoption inevitable. The Institute, in their new model form of pupilage, stipulated that the principal should afford reasonable facility for passing examinations. He believed these day classes would be a marked success. In reply to Mr. Sidney Beale, the President explained that the scheme would be begun tentatively, and that at first nothing would be omitted from the evening classes to be taken exclusively in the afternoon. Mr. Beale thought this too indefinite, and moved as an instruction to the committee that arrangements for the formation of day classes be made concurrently with any departure under the new scheme. Mr. Baggallay spoke in opposition to this, and the amendment finding no seconder, the resolution was adopted.

The next resolution, providing for the opening of the library in the daytime, was received with applause, and, after a protest from Mr. Brodie against any proposal to amalgamate with the Institute library, was carried unanimously.

No. 9, providing for the appointment of additional paid teachers, was supported by Mr. M. Garbutt, and after some comments by Messrs. Banister F. Fletcher, jun., S. Perks, and E. Greenop, was agreed to.

No. 10, approving the scale of fees, led to some discussion. Messrs. Burrell, N. Wilson, and other members complaining that the scale was too high for architectural students who were not wealthy, and there was no means of compelling principals to contribute, while parents might justly object to add five or ten guineas to the heavy premiums paid for articling their sons. Mr. O. Fleming said it was hoped to establish scholarships, and contended that if youths or their guardians could not afford £10 for classes they were wrong in entering the profession. Mr. Garbutt said the scale of fees was the very lowest that could be devised with safety, and the President, in reply to Mr. Dicksee, stated that the scale fixed was intended to make each class self-supporting. Messrs. Leverton, Paul, and M. Clarke opposed the resolution, which was supported by Messrs. Cole Adams, Brodie, Woodthorpe, and Pryce, and was carried.

The appointment of a paid assistant secretary was agreed to unanimously; but the next resolution, raising the subscription of town members from half-a-guinea to one guinea, led to a long discussion. The President pointed out that the members had practically committed themselves to it by voting for a studio, day classes and library, paid secretary and teachers, and that commensurate advantages would be given for the extra subscription. Mr. Cole Adams thought a plebiscite of the members should be taken before such a radical change was adopted; but Mr. M. Clarke, while objecting to the measure, thought no one who agreed to be bound by the majority who had passed the preceding resolution could logically oppose this one. Mr. Brodie moved as an amendment that a new class be formed to be called "honorary members," consisting of town members who had been in membership not less than ten years, and who should continue the half-guinea subscription. This was seconded by Mr. W. Henry White, and supported by Mr. N. Wilson, who urged that the conversazione and soiree should be abolished, and the £140 now spent on them devoted to the proper work of the

Association. Mr. H. W. Pratt, as hon. treasurer, supported the amendment, as he feared they would lose senior members if the subscriptions were raised. Mr. H. O. Cresswell said the amendment gave relief to those who least required it. He hoped the senior members would have more *esprit de corps* than to desert the Association because its increased usefulness made extra claims upon them for support. Messrs. Earle, E. W. Mountford, and Woodthorpe opposed the amendment, which on being put only received the support of 17 members, and was consequently lost. Mr. Leverton moved, and Mr. Sirr seconded, the adjournment of the meeting for a fortnight, voting papers to be sent out to all town members as to proposed change. Mr. Pryce pointed out that such answers would only be an expression of opinion and not a vote, and after further discussion this amendment was rejected, only 21 voting for it. The original motion was then carried, but eight hands being held up in opposition.

The three remaining paragraphs having been agreed to, the meeting was formally adjourned till that day fortnight for the amendment of the several rules affected by the resolutions.

### CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS is the thirteenth sheet of portraits given in our pages since the commencement of the present year of living architects.

Mr. Ernest Newton, F.R.I.B.A., who comes first in the arrangement of the plate, was a pupil of Mr. R. Norman Shaw, R.A., to whom he was articulated in 1873 and remained with him three years after his articles had expired, when he began work on his own account in 1879. In 1883, in conjunction with some friends, Mr. Newton founded and presided over the "St. George's Art Society," which eventually became the "Art Workers' Guild," of which he is now a member—he is also a member of the "Arts and Crafts" Society, and Fellow of the R.I.B.A. He was the architect of the House of Retreat, Clerkenwell. The following is a list of his work: houses at Grove Park, Tenby, Beckenham, Chislehurst, Chertsey, Totteridge, Datchet, Bickley, Wimbledon, and Weybridge; besides various alterations and remodelling such as at Norwood, Chislehurst, Bickley, Chichester, Frimley, West Woodhay, Brighton, Folkestone, Croydon, St. Leonard's, Beckenham, Harrow Weald, Barnet, Clandon, St. Margaret's, and at Ware. His business premises, warehouses, &c., in London number some eight works. He has carried out furniture and decorations at East Barnet and at Lower Sloane-street. His ecclesiastical works are church at Lee; mission church at Widmore; mission church at Hither Green (for which plans of permanent church are prepared, and a view being hung in the Royal Academy this year); parish rooms at Bromley and Bickley. Cottages, lodges, &c., at Stratton Park, Godstone, Godden-green, and Chislehurst; also farm buildings at Godden-green. He is now engaged in building a large house at Bullers Wood, Chislehurst. In 1882 he was responsible for a small book of houses and cottages, published by Lascelles. His portrait is by Mr. E. D. Lavender, of Bromley.

Mr. Herbert A. Gribble, A.R.I.B.A., was a pupil of Mr. Alfred Norman, of Plymouth, but during the term of his articles he entered as a pupil the branch schools of the Science and Art Department at that town, and succeeded in obtaining five medals and two national medallions for architecture and for decoration; also one from the Polytechnic, Cornwall; another from the Albert Hall Exhibition; the National Gold Medal (during his minority) for Gothic Architecture, and the Gold Medal for Architecture, from the Commissioners of the Healthier Exhibition in 1884; and many other certificates of honour from the Science and Art Department and the Society of Arts. Mr. Gribble was the successful competitor in the Brompton Oratory competition, illustrations of which have frequently appeared in our pages; but the structure at present remains in a very incomplete condition. He also prepared the designs for the altars of St. Philip, the Magdalen, and the Sacred Heart connected with the same church, the commission for that of St. Philip being given by his Grace the Duke of Norfolk, E.M. The artisans' dwellings at Plymouth



the reconstruction of the West Hoe Pier, Plymouth, previously destroyed by a violent gale; and the remodelling of the plans for laying-out the West Hoe estate at the same town, all for the Naval Banking Co. A block of buildings for the firm of Messrs. Goad and Co., marble merchants, of Plymouth; the recent extensive additions to the Convent at Plymouth and the Catholic Church at Devonport, and the new Church of the Perpetual Adoration, London, N.W.; the National Armada Memorial, Plymouth; the Campanile and the High Altar for the church of the Holy Name, Poona, India; the Catholic Church at Sevenoaks; with various school buildings and other works of a miscellaneous character, most of which have appeared illustrated in our pages, and the originals at the Royal Academy of Arts. His photograph comes from the studio of Mr. C. E. Beach, of Brompton.

Mr. William Leiper, architect, Glasgow, was a pupil of Messrs. Boucher and Cousland, architects, of Glasgow, and he was afterwards in some London offices. Subsequently he entered the office of Messrs. Campbell Douglas and John Stevenson, architects, of Glasgow, and then commenced practice on his own account in partnership with Mr. R. G. Melvin, of Glasgow. He has designed and carried out Downhill U.P. Church, Partick; Burgh Hall, Dumbaron; Burgh Academy and Hall; mansion for Provost Corsar, Arbroath; Cornhill, Lanarkshire; for Mr. Robert Kay; Cobarn, Perthshire; Ruthven Tower, do.; Cairndhu Mansion for Mr. John Ure, late Lord Provost of Glasgow; "Moredun," for Mr. John A. Brown, Paisley; Lanark and Brechin United Presbyterian Churches; Camp-hill Church, Hyndlands Church, Glasgow. He recently built Ruyton Park, Shrewsbury, for the Rev. T. H. Hunt, and Kelly Mansion for Mr. Alexander Stephen. The Catholic Apostolic Church, South-side, Glasgow, and the recent alterations to the Park Church, for the Rev. Dr. Donald Macleod, have just been completed from his designs. He was elected a Fellow of the R.I.B.A. in 1881. The saloons and architectural decoration of the palace portion of the Russian imperial yacht *Livadia*, were executed from his designs and under his direction.

Mr. H. A. Peto, F.R.I.B.A., was born in 1854, and is a son of the late eminent railway contractor, Sir Samuel Morton Peto, Bart. His professional education was of a very practical nature, he having spent about a couple of years in the joiners' shops of Messrs. Lucas Bros. at Lowestoft. His more distinctly practical education has been with Mr. Clements, of Lowestoft, and Messrs. Karslake and Mortimer, of London. He joined Mr. Ernest George in 1876, and in company with him has carried out some important works, amongst which may be mentioned Rousden, in Devonshire, for Sir Henry Peek; Buchan Hill, the house of Mr. P. Saillard; Batsford, Gloucester, the residence of Mr. A. B. Freeman-Mitford, C.B.; Shiplake Court, for Mr. R. Harrison; and Poles, in Herts, for Mr. E. S. Hanbury. Mr. Peto's work in London is perhaps seen to the best advantage in Harrington and Collingham Gardens, S.W., he building ten houses in the one case together, and in the other nineteen. Of later years Mr. Peto has been more especially turning his attention to the decorations and furniture of the interior of houses, for which he has always had a special leaning—No. 3, Ennismore-gardens, for Mr. E. O. Bickford; and 15, Hyde Park-Gardens, for Mr. Peter Brotherhood; and the most important, 6, Carlton House-terrace, for Mr. C. H. Sanford, are among his latest works and his chief. Mr. Peto's photograph was taken in Venice by Fratelli Vianelli.

The work of Mr. Thomas J. Bailey, A.R.I.B.A., the architect to the School Board for London, will be best recognised in the buildings of the Board erected during the past five years. Mr. Bailey acted for many years as assistant architect under Mr. Edward Robert Robson, and can, in conjunction with that gentleman, claim that the public elementary schools built within the last seven years are (to use Mr. Robson's words in a report made by him in 1888) "the best elementary schools in the world, and produced at a cost per cubic foot little over that of cottage-building." Latterly, however, the Education Department have sanctioned a greater expenditure in the schools, so that at the present day a school for 1,200 children would be approved at an additional cost of £2,000 or £3,000. As giving some idea of the magnitude of the work in which Mr. Bailey is engaged, it may be stated

that since he succeeded Mr. Robson in 1885 he has (in addition to his ordinary work) erected some 48 new schools, and has enlarged about 57 existing buildings. He has also built five pupil teachers' schools, 15 cookery schools, and five schools for the instruction of deaf and dumb and blind children, and two groups of divisional offices. We understand that he is at present engaged upon many new schools and enlargements of more or less importance; among others, a large scheme embracing a school for 2,000 children on a site at Clerkenwell, and including a deaf and dumb school, a blind school, a cookery school, and a large store building. In addition, a school at Anerley for the accommodation of 140 truants, with dormitories, dining-hall, bath-rooms, infirmary, committee rooms, and governor's house. Also an extensive enlargement of the Board's head office, comprising a new board-room, library, committee-rooms and offices, and rooms for the general staff. The likeness given of Mr. Bailey is from the camera of Mr. T. Atkins, of Upper Norwood.

Mr. Rowland Plumbe, F.R.I.B.A., was articulated to the late Mr. Frederick Peck (formerly of the firm of Cooper and Peck), who was the architect of the Agricultural Hall, Islington, and many other large buildings. Mr. Plumbe passed the examination under the Metropolitan Buildings Act in 1865, and has held the office of district surveyor for the last 15 years. He studied under Professor Donaldson at University College, and was a Double First Prizeman of his year. He also obtained a National Medal for freehand drawing at the Science and Art Department, South Kensington, in 1857. He has served on the Council of the R.I.B.A., and is architect to the Artisans', Labourers' and General Dwellings Company for their suburban villages, and is now engaged in building a village of between 3,000 and 4,000 houses at Noel Park, Wood Green, having completed the Queen's Park village. Mr. Plumbe has been architect to the committee of the London Hospital in building their new nursing home, parsonage, and medical college, and is now engaged in remodelling and enlarging the hospital. He has built many churches and chapels, mission-halls, schools, &c., not a few of which have been illustrated in this journal; also a number of country mansions and suburban houses, including more particularly one for Mr. Wilberforce Bryant at Surbiton, one for Mr. Frederick Bryant at Leatherhead, for the Rev. A. S. Bennett at Bournemouth, for Mr. J. Jeffreys in the New Forest, and he is now building a large mansion for Mr. W. M. Chinnery at Hatchford Park, Cobham. He has carried out many warehouses and factories, business premises, hotels, &c., both in the City and elsewhere, as, for instance, James Spicer and Sons' Queenhithe warehouses, Bryant and May's buildings at Bow, Greenwood's clock factory, Clerkenwell; Merriman and Pike's premises, Austinfriars; Unwin's printing works, Blackfriars; Burroughes and Watts' premises, Soho-square; Valley of Rocks Hotel, Lynton, North Devon, &c. Mr. Plumbe also laid out many estates, and has been actively engaged for the last 28 years in practice. He is now engaged in advising the South London Polytechnic Institutes Committee, being employed on the designs for their Borough-road Institute. Mr. W. Kent, of Eastbourne, did Mr. Rowland Plumbe's photograph.

Mr. Edward Cookworthy Robins, F.S.A., F.R.I.B.A., is a member of the Council of the R.I.B.A., and of the Society of Arts, and of the Sanitary Institute, vice-president of the Sanitary Protection Society, member of the Institute of Surveyors, and member of the Executive Committee of the City and Guilds of London Institute for the Advancement of Technical Education. He was a pupil of the late Mr. Sancton Wood, F.R.I.B.A., and he commenced practice in the year 1851, since which time he has executed a large number of commissions, among which may be mentioned the church of St. Jude and the church of St. Saviour, Brixton; the churches of St. John and St. Saviour, Wandsworth; the church of Emmanuel, Dulwich; and of Weeley, in Essex; together with parsonages, National and British schools; the Congregational and Baptist churches of Wandsworth, and of Streatham, Shadwell, and Camden Town, and elsewhere; a great variety of public and private buildings in London and the provinces; Springfield House, Staffordshire; and residences in St. Leonard's, Folkestone, Croydon, &c. As architect to the London Missionary Society he rebuilt

the Mission House, in Bloomsbury-street, and designed the four memorial churches for Madagascar, and the Theological College there, and at Kruman, in South Africa. He was architect to the Croydon Burial Board, and laid out their cemetery ground and building, and remodelled the Town-hall. Mr. Robins was also engaged in the ornamentation of many engineering works, such as the Evesham Bridge and the Morayshire Railway Stations for the late James Samuel; the Londonderry Bridge, projected by Sir William Cubitt and Mr. Peter Barlow; the Lambeth Bridge, erected by Mr. Barlow; and though the ornamentation was never carried out, the perspective view of the same was the last of the kind presented to the notice of the late Prince Consort just three weeks before his death. This design was exhibited in the International Exhibition of 1862. For 15 years he acted in the capacity of surveyor to the Worshipful Company of Dyers, until his election in the Court. He served the office of Prime Warden in 1879, and has ever since represented that Company on the Executive Committee of the City and Guilds Technical Institute, his services in connection therewith being acknowledged by the presentation of their silver medal. For the last 18 years he has held the office of architect and surveyor to the Berners Estate, and erected many business premises and artisans' dwellings thereon, as well as the choir schools for St. Andrew's, Wells-street. Mr. Robins has been a successful competitor in public competitions. He won the first premium for Mr. Spurgeon's Tabernacle in 1859, and was one of the four selected to compete for Mr. Newman Hall's church. He lost the Watford Orphan Asylum by the casting vote of the chairman, but gained the second premium. The Deaconesses' Hospital at Tottenham, opened by the Prince and Princess, was one among not a few successful efforts in competitive work. But his chief claim to consideration is his many elementary, secondary, and technical school buildings, from the Board School at Wapping to the Merchant Vintners' School at Bristol, which cost £40,000, and was opened by Sir Frederick Bramwell. We illustrated these buildings in our issue for June 5, 1885. A few similar works may be mentioned which have cost an average of £20,000 each: The North London Collegiate School for Girls, the Camden School, Kentish Town; Milton Mount College, Gravesend; Walthamstow Hall and Mission School, Sevenoaks; the National and Industrial Crippled Boys' Home at Kensington; the South Hampstead High School, the Congregational College at Caterham; the Grammar School at Bedford, now in course of erection, &c. Mr. Robins' literary labours have not been few. He has written 30 papers on professional subjects, and published a quarto volume entitled "Technical School and College Building." His portrait was taken by Messrs. Fradelle and Young.

Mr. Wyatt Papworth, F.R.I.B.A., member (for the third time) of the Council of the Royal Institute of British Architects, was educated for the profession in the office of his father, Mr. John B. Papworth. He was one of the founders of the Institute, and he represents in the third generation the traditions of the profession, as his grandfather, John Papworth, was one of the architects, builders, and decorative plasterers of the end of the last century, whose artistic works, as at Somerset House, the chapel at Greenwich Hospital, and numerous other places for Government and public bodies, exhibit a delightful contrast to the cast plaster work of later times. Taking office for a few years under the Commissioners of Sewers for Westminster and part of Middlesex—one of the almost forgotten predecessors of the late Metropolitan Board of Works—he left it for a short service in the office of Sir John Rennie, and then accepted the appointment of assistant, and later of surveyor, to the Alliance Fire Assurance Company, which positions he held for over forty years, retiring about two years since. The branch office at Ipswich was erected from his designs, and very numerous rebuildings and restorations were carried out under his superintendence during that long period. As showing the uncertainty of competitions, he has stated that although successful in about a dozen of them, only three or four have ever been carried into execution from want of funds or other circumstances. Among his other professional works may be cited the re-arrangement of the large corner building in King-street, St. James's, for the Junior Army and Navy



Club. He has devoted many years to literature, and published several useful works and papers. When the Institute removed to Conduit-street, in 1860, he undertook the arrangement of the books in the library (the cases having been designed and fixed under the direction of his brother, John W. Papworth), with the entire revision of the catalogue, with the formation of it as a classified catalogue, and the printing of it in 1864. This is an early instance of his connection with the usefulness of the Institute, and he is now a constant contributor to the *Journal*, a periodical often contemplated by members in the earliest days of that body. He was the chief promoter of the Architectural Publication Society, and with the kind co-operation of numerous friends, of whom many are deceased, he has carried on the "Dictionary of Architecture" nearly to completion, as the letter V is now entered upon. In 1864 Messrs. Longman and Co. intrusted to Mr. Papworth the editorship of a new edition of Gwilt's "Encyclopædia of Architecture," to comprise the vast amount of information accruing during the lapse of nearly a quarter of a century since that work had been first published. This was issued in 1867, a further enlarged edition was published in 1876, and a third one containing greater expansion and revision in 1889. In July of last year he attained the high distinction of Master of the Worshipful Company of Clothworkers of London, one of the twelve great City companies, and the pioneer of technical education in this country. The photograph reproduced to-day is by Messrs. Elliott and Fry, of Baker-street, W.

#### THE ROYAL CAMBRIAN ACADEMY AT PLAS MAWR, CONWAY.

THE scenery and the antiquities of Wales offer at all times a series of worthy subjects to the painter, and it is to be expected that a large portion of the work done year by year by members of the Royal Cambrian Academy should reflect those scenes which have always made the mountains, the lakes, the coasts, and castles of Cambria famous in the whole art of picture making.

We have already referred to some of the chief works exhibited by members and hon. members of the Academy, notable among which are the "Elijah" of Sir Frederic Leighton, P.R.A., and "The Prodigal," of Mr. G. F. Watts, R.A.

More than a passing comment is due to the quaint old mansion, "Plas Mawr," in which the exhibition is arranged. It is one of the few town houses of the Tudor period now to be met with, having been erected by Robert Wynne, of Gwydir, about 1580. The "crow-steps," and the angular pinnacles attached to the finial stones of the gables, hint very strongly at a Flemish influence in the design, though the grey local stone, and no brick, has been used throughout.

The "place" consists of three chief blocks of building, with a courtyard between each, the one first entered being remarkably picturesque—a parapeted terrace raised on arches, and approached by broad return steps extending across one end. Ascending these steps, the banqueting-hall (in which are held the council meetings of the Academy) is reached. Upstairs is a large drawing-room with oriel windows, and beyond a series of private rooms, which are reached by circular staircases, from the upper portion of which charming views up and down the valley of the Conway to the range of Carnedd Llewellyn on one hand, and the Great Ormes Head on the other, are to be had. Each of the rooms contains an elaborate plaster ceiling of good Tudor design, and massive stone chimney-pieces elaborately carved or decorated with relief work in plaster, much of which has been anciently decorated in colour. The place has been on the verge of ruin, having been sadly neglected or misused during long years; but, from the signs of careful use, and the development of its artistic resources, which are becoming more and more apparent every year, it is evident that the owner, Lord Mostyn, has taken a judicious step in transferring the charge and the use of the building to the Royal Cambrian Academy.

The good appearance of the quaint old rooms is greatly enhanced by the rich or bright colouring of the pictures, the gilding of frames and maroon drapery background giving, in combination with curious window recess or arched ingle nook, many an interior "bit" very tempting to the

sketcher. This quality of quaintness is to be greatly admired, but it has every year presented many difficulties to the hanging committee, for its cross lights and low ceilings give by no means the best conditions for picture viewing.

It is therefore intended by the council to erect a gallery for the annual exhibitions in the grounds adjoining the courtyard, using the present rooms as a museum for the display of Welsh antiquarian relics, furniture, armour, &c.

Still, the charm of the old rooms as they now are should not be too soon or too heedlessly dispelled, for a modern picture gallery might not command the same liking from the public, and the hanging committee, which consisted this year of Messrs. C. Potter, J. C. Salmon, and the two South Wales members of the council, Messrs. Edwin Seward, F.R.I.B.A., and T. Henry Thomas, have much to thank the picturesque old building for as to general effect, even if it must be blamed here and there in respect to detail results. The exhibition is open until the end of October, so that many of our readers will have the opportunity for a visit.

To touch further on the large assemblage of landscape and figure works in oil and water-colour would be travelling outside our limits as to space. Looking, therefore, with more architectural eye, we find a quiet but excellent drawing of Vitre in Brittany, by S. J. Hodson. In the same room is a strong pencil sketch on grey paper of the oak screen at Crewe Hall. This work is from B. S. Marks, a figure and portrait painter of merit; but the catalogue bears a note that it was sketched "for introduction into a large oil painting." Two realistic architectural sketches by Sir Frederic Leighton are interesting—"A Ruined Mosque near Damascus," and "The Villa Malta in Rome." Mr. Geo. Harrison exhibits an "Interior of an Old Church near Canterbury," a shadowy interior, well treated; and Mr. Edwin Seward, F.R.I.B.A., has several fair-sized works in pastel—some architectural, from Belgium and France, others almost entirely landscape.

Of the latter class are "Afternoon Shadows," a white-gabled cottage in a country lane; "A Rugged Nook, Gower," a rocky sea-cliff overhung by trees, under which nestles a village church; and also "Summer Gloom" and "Soft Summer," both moorland subjects. A larger work by this artist is "St. John's and the Castle Tower, Cardiff," in which Mr. Wm. Burges's huge tower and the elegant Perpendicular church tower are seen against an evening sky over the roofs of old buildings which overhang still water.

Mr. Alfred Slocombe has a warm-tinted drawing of "Pennard Castle, Gower"; Mr. Jno. Johnson "Bettws Old Church" and "Old Church, Caer Hun"; Mr. J. C. Salmon a striking drawing of "Conway Castle"; and Mr. Geo. Hayes "A Fair at Conway," in which a street view containing a timbered hostelry in the "overhanging" style is well shown.

The architectural drawings, pure and simple, are fewer this year than usual. They comprise a drawing of St. Silan Church, Llansilan, by Mr. Arthur Baker, F.R.I.B.A., and several designs by Mr. R. Grierson, A.R.I.B.A. One is for a grammar-school at Ruthin, another for Friar's School, Bangor, and a third a picturesque and carefully drawn design for a lych-gate at Llanegfai, Anglesey.

The catalogue of the exhibition contains one or two exterior and interior sketches of Plas Mawr, and moreover in a footnote, anent the new gallery scheme, part of a letter from Sir H. F. Ponsonby is reprinted, which says: "The Queen takes great interest in the development of art, and wishes the movement in the Principality every success." The Cambrian Academy has, like its older sisters—the Scottish and Hibernian Academies—not always enjoyed unalloyed prosperity; but its prospects for useful and long-needed work in Wales are bright at present, and the Plas Mawr exhibitions go far to establish its place among permanent and representative art organisations.

#### EDINBURGH ARCHITECTURAL ASSOCIATION.

THE annual general meeting of this association was held on the 29th May in the Architectural Hall, 42, George-street, Prof. G. Baldwin Brown, president, in the chair. The secretary (Mr. T. Fairbairn) read the report of the council on the past session, which stated that during the session 27 new members had been admitted, the

number on the roll being now 273. Mr. A. Dodds Fairbairn, C.A., next submitted the balance-sheet for the past session, which showed an excess of revenue over expenditure of £28 16s. 6d., the balance in hand being now £192 6s. 2d. Mr. R. M. Cameron read his report on the library. Mr. Hippolyte J. Blanc submitted his reports of the Work-Class and Sketch-Book Committees, by the latter of which an early issue of a new volume of the Sketch-Book was promised. All these reports were adopted by the meeting, and the prizes in the work-class were awarded. The election of office-bearers for the ensuing session was next proceeded with as follows:—President, Mr. John Kinross; past-president, Prof. G. Baldwin Brown; vice-presidents, Mr. Archibald Macpherson and Mr. W. W. Robertson; hon. secretary, Mr. T. Fairbairn; hon. treasurer, Mr. J. Johnston, C.A., hon. librarian, Mr. R. M. Cameron. Members of Council:—Messrs. J. Wallace, H. F. Kerr, D. W. Stevenson, R.S.A., J. McLachlan, D. MacGibbon, and G. S. Aitken. The following are the Conveners of Committees:—Sketch-Book, Mr. Blanc; Publication, Mr. Aitken; Work-class, Mr. John Watson; and Auditors, Mr. J. H. Tod, C.A., and Mr. M. A. Dodds Fairbairn, C.A. The retiring president, Prof. G. Baldwin Brown, then delivered his address, this subject being "The New Town of Edinburgh." Referring to the present position of the architectural profession in Scotland, he said questions of the organisation of architects and of the architectural education of students were under discussion, and it was to be hoped that the outcome would be a closer union among members of the profession for the furtherance of common aims as well as improvements in the methods of art education. He considered the "New Town of Edinburgh" both in itself as presenting standard examples of a particular style of architecture, and also in the relation to the general course of development through which cities had in all ages passed. After reviewing the characteristics of the old and new towns of Edinburgh in the light of historical parallels, the President said that the history of modern improvements in Edinburgh was not one which it was possible to look upon with unmixed satisfaction, for at almost every step there was evidence of narrowness of view or of interested motives influencing bodies or persons engaged in the common work. Parts have been shifted many times; sometimes the Town Council had been the attacking party, while at other times it had stood up to defend the city against individual lawlessness, or the aggressions of private or public corporations. For example, one of the feuars of land in Charlotte-square early in the century had tried to deviate from the plan given by Robert Adam, and was defeated in an action at law brought by the Town Council, while on the other hand this very body had in 1772 been sued by the feuars of the New Town to prevent their building on the land south of Princes-street. The building of the houses at the corner of the North Bridge and Princes-street, unsuccessfully resisted by Lord Cockburn and others, was another case in point, while at the present moment the Town Council was manfully resisting some schemes of a railway company which if carried on would reflect irreparable injury on certain parts of the city. In spite of these drawbacks, however, the New Town of Edinburgh had got itself built, and had remained, considering all things, fairly well preserved. It was well, however, to remember that the negligence of a single generation of citizens might result in the injury, or even destruction, of priceless architectural treasures, and the consequent degradation of the common civil life.

The annual excursion of the Association took place on Saturday, about thirty members leaving the Waverley Station for Dunfermline early in the day, under the leadership of Mr. Russell Walker. The party visited Pitreavie House, which they were shown over by Mr. Henry Beveridge, who described its architectural features and traced its history. The mansion-house, he explained, dated from the earlier decades of the 17th century, and was erected in its original form either by Sir Henry Wardlaw, chamberlain to Anne of Denmark, Queen of James VI., or more probably by his son of the same name, created Baronet by Charles I. in 1631. The house had been considerably altered both in its internal arrangements and in its outward aspect, probably in the early days of the last century, when it passed out of the hands of the Wardlaw family, and became the property of Sir Peter Blackwood,



Lord Provost of Edinburgh. Mr. Beveridge mentioned that the ground immediately surrounding the house was the scene of the battle of Inverkeithing or Pitreavie, fought in 1651 between Cromwell's troopers and the supporters of Charles.

#### BUILDERS' BENEVOLENT INSTITUTION.

AN election of one pensioner on the funds of this institution took place on Thursday, the 29th ult., at the offices, 4, Vernon-place, Bloomsbury-square, Mr. George Plucknett, J.P. (hon. treasurer), presiding. There were six candidates for the one vacancy—viz., one man and five women.

The scrutineers, Messrs. T. Stirling and E. Rider, announced the result of the polling to be as follows:—Charles Sabey, 97, St. Peter's-street, Islington, aged 70, builder (second application), 1,198 votes; Margaret Alice Richardson, North Shields, aged 65, widow of T. B. Richardson, builder (third application), 1,179 votes; Mary Ann Shapland, 132, Stamford-street, Lambeth, aged 70, widow of Wm. Shapland, builder (second application), 690 votes; Emma Bird, 48, Chippenham-road, Paddington, aged 60, widow of Joseph Bird, builder (second application), 3,085 votes; Elizabeth Darby, 2, Sangora-road, Clapham Junction, aged 80, widow of Edward Darby, builder (second application), 728 votes; and Bessy Webb, 314, Old-street, E.C., aged 60, widow of Robert Webb, builder (first application), 1,050 votes. The successful candidate was declared to be Emma Bird.

Among the friends of the institution who took part in the proceedings were Messrs. W. Scrivener, C. Ansell, G. B. New, J. T. Bolding, C. Bussell, and R. Richardson.

The proceedings closed with votes of thanks to the chairman and the scrutineers.

#### CHIPS.

The annual meeting of the Cambrian Archaeological Society will be held at Holywell this year. It will be opened on August 18th, and will be continued over five other days, a visit to Mostyn Hall being arranged for the 22nd.

A stained-glass east window was unveiled at Christ Church, Great Homer-street, on Saturday. The window, the upper part of which represents our Saviour on the Cross, and the lower part the celebration of the Last Supper, was designed and executed by Messrs. Wailes and Strang, of Newcastle. The chancel has been redecorated by Messrs. Morton, of London-road, Liverpool.

The Duke of Clarence will open the completed North Sea Wall and Marine Promenade at Scarborough, on Friday, the 27th inst.

The Town Council of Glasgow adopted on Friday a report by the late Mr. Carrick as to his design for proposed back tenements of workmen's dwellings in Saltmarket, and a recommendation by a committee that the erection of the tenements should be proceeded with.

Memorial stones were laid on Friday at Rhyl in connection with the English Presbyterian Church now being built by Mr. Matthew Rogers, Flint, from designs prepared by Mr. Owen, architect, Liverpool. The church will be of local brick, with Ruabon terracotta dressings, and in Romanesque style, and will accommodate 250 persons.

The Gibbet-road Primitive Methodists, Halifax, have adopted plans prepared by Mr. James Farrar, architect, of that town, for a new chapel and school in Queen's-road. The cost will probably be from £5,000 to £6,000, and the style Gothic.

His Grace the Lord High Commissioner, the Marquis of Tweeddale, visited Musselburgh on Saturday afternoon, and performed the opening ceremony in connection with Inveresk parish church hall. The hall is built in the 14th-century style of Gothic architecture, from plans prepared by Mr. J. McIntyre Henry, architect, Edinburgh, at a cost of about £2,000, and is capable of seating about 750 persons.

At length work has been begun in connection with the proposed church of St. Mark to be erected at Fitzhugh, Southampton, the contractors, Messrs. J. Bull, Sons, and Co. (Limited), having commenced preparation for the foundations. The probable cost of the church is set down at £6,500, and of this sum only £4,200 is subscribed.

The old Carmelite Priory Church at South Queensferry was reopened for public worship on Sunday last after restoration. The services were of special interest, as being the first held within those venerable walls for about 250 years.

#### WAYSIDE NOTES.

I UNDERSTAND that that grand old German masterpiece, the tower of the Cathedral of Ulm, has recently been completed, and that it now soars into the air fully five hundred and thirty feet above the level of the ground, thus topping the Cologne spires by some fifteen feet, and becoming, in fact, the highest cathedral tower or spire in the wide world. It is fitting, too, that Ulm should have the tallest spire in Germany, for I believe that this cathedral is the largest in the empire, and especially noteworthy for its great breadth. Of old-world Ulm, however, I have only dreamed, so have no authority to speak concerning its famed cathedral; but, being so famed, we are all more or less acquainted with it from drawings and descriptions, and we are all interested in learning that the tower, left in the Middle Ages at a height of only about 340ft. (337, to be more exact) has since that time been growing, until now it has reached a breezy elevation indeed.

Because of the iron-tower mania, we need not think less of buildings like Cologne, and because of the Eiffel tower, and the hare-brained schemes afloat in this country and in America, we need not think less of the tower of Ulm. It should be easy for an architect, artist, or any person with educated sense and feeling to comprehend the difference between the merit of building a tower of architectural beauty and enduring materials, such as brick or stone, and one of perishable ironwork. The former is only erected with an infinity of patience and labour, and with vastly more difficulty and pains than the latter, and it lasts for centuries untended by the hand of man. Unless an iron building be continually and regularly kept from the atmospheric agencies by paint or other surface-coatings, it rapidly falls and decays. In days of iron towers, therefore, we should think no less respectfully and admiringly of great height in spires and towers of solid masonry. The height attained by endeavours in engineering iron construction should be regarded as midway in merit between that of a true architectural tower and that of a captive balloon. The reader will, perhaps, rightly consider that this merit is not of a very high order. I would certainly give more credit even to the man who erected a comely brick chimney-stack 400ft. high than to another who builded an iron tower of double this altitude.

The German nation is an example to us in many things; but I doubt if we can be fairly sent to the Teutonic race to learn much about architectural design—as a general rule, that is to say. As regards the management of architectural studies, we can afford to take many hints from many nations, and something, certainly, from the Germans. German students are methodical—even in duelling—and the German architectural student also plods along, believing, above everything, that "order is Heaven's first law," and pursuing his studies in fixed methods. We, perhaps, see the result in the streets of Berlin and other modern business cities in Germany. Academical studies of porticoes, *modulated* to the fraction of an inch in column, capital, architrave, frieze, and cornice, are prominent objects in the foreground. In some respects this is to be commended. On the Continent, where academical studies pertain, we do not have our architectural senses so violently outraged as in go-as-you-please England. In London we are disgusted with façades that daily arise, wherein nothing is so plainly evidenced as crass ignorance of Classic proportions and an utter absence of compensating inborn taste. In Paris, in Brussels, in Vienna, and in Berlin modern street façades are at least inoffensive; they have evidently been designed by men who, in their student days, learned that a base twice the depth of an ancient example is an eyesore, and that exaggerated entasis is neither quaint nor beautiful, but only suggests the belly of an alderman.

My allusion to German architectural students, I should have said, has been prompted by an article in *A.A. Notes* of this month, on "The Berlin Technical Schools," an article contributed by Mr. J. Hartree, who deals from the German capital. Mr. Hartree gives an account of the building in which the embryo architect is fostered, and a description of the methods of study pursued under the management of the Government Minister of Education. In a specimen of a week's study for first-year students,

the thing that strikes one as forming an immediate distinction between the English and German architectural student is the inclusion of the integral and differential calculus in the curriculum of the latter. I don't say that the regeneration of modern English architecture hangs upon integral and differential calculations; but our architects could do with a much more mathematically imbued brain, whatever gentlemen of the ultra-artistic-cum-bottle-glass school may aver. Anyhow, putting aside mathematics, we see from Mr. Hartree's list of subjects that the German architectural student is, in his first year, well grounded in such sciences as geometry, physics, and chemistry, which are all directly useful to the practising architect. This is over and above the instruction in architecture proper and in drawing. In his last year, a student goes in largely for design, in any style he may prefer, and carries on many studies that will be of the greatest service to him in his every-day duties as architect. As distinct from things in this country, it appears that study is not confined to architecture as a fine art, as at our R.A. schools, and, further, that the work is carried on by Government, so it is not a voluntary institution such as the Architectural Association. If anything, it is more like our S.K. system, but vastly more thorough and complete.

The article was very timely, now that all the talk is about the Architectural Association scheme of reform, touching which, I understand that the temper of Friday's meeting at Conduit-street was wholly in favour of the movement, the "Opposition" not appearing or making itself heard, at least to any effect. This being so, I hope that things will be carried boldly forward. My only fear is that the Association may be taking upon itself more than it has the power to accomplish; but since nothing can be positively assured, there is no reason why an endeavour should not be made. It is becoming evident that we want fuller and more complete education for the architect even in these unregistered days, and in lieu of a national concern that might consolidate South Kensington, the R.A. Schools, and the Association classes into one powerful educating body, we must be thankful for the present scheme. In establishing new schools and instituting new methods for educating architectural students, it should be our aim to get all the benefits that we painfully see accrue from the Continental systems, while, at the same time, preserving the freedom of the English school and avoiding the crystallising process that generally accompanies academical teaching.

In view of the failure of the Association's scheme, let us thank Mr. Bidlake, the accomplished sketcher, for a suggestion, in *A.A. Notes*, that may yet save the architect. One would have thought that there would have been a good deal about the education question in this month's issue of the Association's journal; but Mr. Bidlake alone touches on "The A.A. and Architectural Education." The Institute exam., says (in effect) our writer, is very good, and so is sketching, and it might be as well for young architects to write a decent specification; but what is wanted to save such persons from ruin is the study of—well, not Ruskin, Gwilt, Fergusson, Rivington, or Scott or Street, but something of a totally different genus. And when one gets a good tip, there is something in the flesh that prompts us to keep it to ourselves; but I will not be selfish in this instance. It has been written in *A.A. Notes* in an article under the title of "The A.A. and Architectural Education," and I will openly and frankly give it, in my own words, to yet another portion of the world:—"If young architects would be worthy of their calling, and rise to honour and respect in their profession, let them see to it that they study their 'Architects' Compendium.'"

There has been a vast amount of croaking about the new buildings erected on the west side of Westminster Hall, the reason of which I do not quite grasp. The hoarding has lately been taken down, and the buildings are in full view. On Tuesday last I passed by, and had a good look at their exterior prospect. Perhaps there is something objectionable about the fact that the building now appears to be in a hole, and, to all intents and purposes, is in a hole, with an area around. Of the architecture of the new work I really don't see cause to complain. It has been



said that the pinnacles on the buttresses are large and dwarf the Hall; but this effect has not made itself apparent to me. Internally, I have not examined the new apartments, nor have I seen the gruesome beasts about which so much has been said, and I take the adverse criticism to be mainly caused by the success of a scheme which at the outset was opposed by a small section of the community, who now weep and wail unceasingly.

A correspondent writes me about a competition for a brewery at West Hartlepool, the advertisement for which may be fresh in the memory of readers. The result of the competition, according to my correspondent's account, is about as bad as it can be. It appears that seven sets of designs, including detailed estimates, specifications, of plant, &c., and general specifications, were forwarded to the promoter of the competition, only to be returned at the end of a fortnight to their respective owners, with no award made, and the premium withheld. This is pretty cool, even for a brewer! My correspondent gives me other information with respect to the competition which would interest the profession; but for obvious reasons he can scarcely expect me to repeat it here *verbatim*. He should know that you are always willing to print letters from ill-used competitors, and if he will put the whole facts before you, I am sure you will consider the case one that should be known to all, and I shall then be in a position to do what little I can in my own way. GOTH.

#### BOOKS RECEIVED.

*St. Alban's Cathedral and its Restoration.* By EDMUND, LORD GRIMTHORPE, Q.C.—A second edition, revised and enlarged, of this piquant little guide-book has just been published. The author explains in his preface, "I have rearranged [the book] into a history of the church until its cathedralisation, and then a description of it in its present state, and of the recent restorations which happened to begin exactly at that time. It is impossible to explain them properly without the contests which have surrounded them to a degree quite unparalleled. I soon saw that I, and all who agreed with me about every successive piece of restoration, would be overwhelmed, and the public deceived, by a very small number of unscrupulous writers, if I did not, like Nehemiah, hold the trowel in one hand and the (feathered) sword in the other, and use it every now and then. I never threw the first stone, but only laid them; which, in this case, seems to be thought worse." The comparison with Nehemiah, the most egotistical and authoritative of the canonical writers, is good, for does not that prophet say (v. 7): "Then I consulted with myself, and I rebuked the nobles and the ruler"; and does he not pray (xiii. 14): "Wipe not out my good deeds that I have done for the house of my God and for the officers thereof"? Lord Grimthorpe broadly asserts that all the architects and committees who have been concerned with the restoration of St. Alban's, as well as those who have made measured drawings of it, the writers of its history, were guilty of great and ludicrous blunders, and that he only was able to set them right. A new plan of the Abbey, made by the late Mr. Chapple in 1885, and corrected to date, is a useful feature of the book.—A new edition of *Picturesque Wales* has just been published under the auspices of the Cambrian Railways Company. It contains some additional views and descriptions of the Mid-Wales portion of that line.

The old parish church of Jesmond, Newcastle-on-Tyne, has recently been renovated and embellished, and has been reopened. Among the additions are a reredos, costing £450; an oak altar table, £50; and a reading desk, £30. In the centre of the reredos is a carving in lime-wood, being a representation of the Lord's Supper, after the picture by Leonardo da Vinci. It is 6ft. 6in. wide and 3ft. 6in. high. The work was designed by Mr. R. J. Johnson, architect, and the carving is by Mr. Ralph Hedley, and the decorating by Messrs. Atkinson Brothers.

At the request of the National Sunday League, the Council of the Royal Society of British Artists opened their Annual Exhibition in Suffolk-street, Pall-Mall, on Sunday, between the hours of three and six o'clock. The concession was accepted by 1,500 persons. Nominally admission was by ticket, but all who came were freely admitted, as they will also be next Sunday.

#### COMPETITIONS.

**SHEFFIELD MUNICIPAL BUILDINGS.**—On Monday last, the 2nd inst., the drawings prepared by the six selected architects were sent in for the second or final competition. The competitors' names are Mr. James Lindsay, A.R.I.B.A., 246, West George-street, Glasgow; Messrs. W. Harvey, F.R.I.B.A., and Bernard Smith, of Whitehall-place, S.W.; Mr. E. W. Mountford, A.R.I.B.A., 22, Buckingham-street, Strand, W.C.; Messrs. Flockton and Gibbs, St. James-row, Sheffield; Mr. Henry T. Hare, A.R.I.B.A., of 3, Lombard-court, E.C.; and Mr. F. H. Tullock, A.R.I.B.A., 5, Lancaster-place, Strand. Various statements have been made as to the names of the selected competitors, but all of them have been more or less incorrect. None of the competitors have furnished us with the information which we now give for the first time. As some of the names have, however, been made public property, it can serve no good purpose to hold back the correct list any longer, especially now that the designs have gone in.

**HYMER'S COLLEGE, HULL.**—The professional referee in this competition, Mr. E. C. Robins, F.S.A., in his report, says: There were 37 sets of designs, ranging in cost from £30,000 to £10,000 according to the authors' own estimates accompanying the plans, though none of them could be finished fit for occupation for less than £14,000. I selected six for honourable mention, either for excellence of planning or for beauty of design, or both, from which the premiated plans are selected. The price is taken at 5d. a foot cube, which seems to be the customary local standard of price for school buildings generally. I may remark there is but one design which completely satisfies the specific requirements contained in the "Instructions," one only which realises in every essential particular what I understand to be comprehended under the title "hall passage system," which has been adopted by the committee, with my full concurrence, as the latest improvement in school planning. The author of this design has summarised his views thus: Strict attention has been paid to the instructions that "the controlling idea in the arrangement of the plans is that of perfect openness of supervision, and generally to carry out the spirit of the hall-passage system thoroughly"—that is to say, every classroom is entered directly from the floor of the central hall or of the galleries surrounding three sides of it, while the whole hall, with its entrances and exits, and also its principal staircase, is completely commanded from the head master's and the porter's rooms, what corridors there are being employed for secondary entrances to the hall and for access to the lavatories, &c. They are, however, perfectly straight, wide, and as short as possible, their continuation indicating the direction in which future extensions can most fittingly be made. In too many of the plans the "heart of the design," the great hall, is not looked upon as a "hall passage," but is itself surrounded with corridors more or less open to the hall, thereby variously increasing the stipulated area of the hall, stated to be "not less than 4,000sq.ft.," and by inference not more than 10 per cent. in excess thereof. It is obviously advantageous that the central block should, as far as possible, be made to contain the great hall with its 16 classrooms in two stories, and its administrative department in one story. Less than this would scarcely be sufficient, because the temporary use of some of the classrooms for other purposes than they are ultimately intended to serve will be the only means of carrying on the work till the number of pupils enforces enlargement. I have no sort of hesitation in determining which of all the plans should take the first place. Its total cost is under £15,000, and with reference to the portion proposed to be erected for £10,000, the author has so arranged the plan that the moderate-sized hall is inclosed by the 16 classrooms; and the music and drawing schools, the dining-room and porter's residence are added as extensions on the line of the main corridor, and are not, therefore, necessarily included in the main building; consequently, without any variation in the area of the hall, the author is able to provide in the first £10,000 the great hall, 12 out of the 16 classrooms, the administrative block, boys' conveniences, and one staircase exterior to the hall in addition to that within its purview; therefore this plan offers to you the nearest approximation to a complete building for the primary expenditure of any of the plans sent in. This design,

submitted under the motto "Supervision" (No. 31), is a suitable rendering of collegiate architecture, avoiding flashy ornamentation or baldness; the outline is good, and the details all that is required, and not concentrated in the west front only, as is the case in several of the designs; therefore, I have much pleasure in recommending that this design should be accepted as the first and best. The design marked "Balbus" (17) has an excellent plan, with central staircase opposite the administrative department, the head-master and the porter having free supervision of the hall and classrooms. The music-room is well isolated, though the secondary staircase is too distant and is encased in a costly tower. None of the remaining designs equal the foregoing as examples of the "hall-passage system," therefore I have selected "Wilberforce" (No. 21) for the premium of £25, as one of the most original and interesting of the artistic designs, illustrated by charming drawings. The authors of the selected design are Messrs. Botterill Sons and Bilson, of Hull. The second premium was given to Mr. E. T. A. Wigram, B.A., A.R.I.B.A., of London, and the 3rd place to Messrs. Chorley and Connon, of Leeds. The drawings are now on view at Hull.

#### CHIPS.

The ceremony of laying the last stone of the spire of Ulm Cathedral took place at six o'clock on Saturday evening. The official celebration of the event will take place on June 28 and three following days. The cathedral spire is now the highest in the world, having an altitude of 530ft.

Salisbury has, by 984 votes to 853, adopted the Free Libraries Acts.

An adjourned meeting of the Carnarvon County Council was held at Carnarvon on Friday for the election of a county surveyor in succession to Mr. Thomas, who has accepted a similar appointment in Buckinghamshire. Out of seventeen candidates, the committee selected Messrs. W. Lloyd Jones, Bangor; D. T. Davies, Menai Bridge, assistant to the county surveyor of Anglesey; Evan Evans, Llangollen; R. Grierson, Bangor; and M. Williams, Trevor, Llanaelhaearn. The final voting was between Messrs. W. L. Jones and Evan Evans, the latter being elected by 29 votes to 24.

Some interesting Flemish tapestry has been discovered in the stores of the Foreign Office, and is now being hung upon the walls of the large building in Downing-street. The tapestry is well preserved.

The new Roman Catholic Church at Teignmouth, dedicated to Our Lady and St. Oswin, was solemnly opened on Tuesday by the Bishop of Exeter and Newcastle. The church has been built by Mr. William Fogg, of Newcastle, at a cost of £1,200, to accommodate 200 worshippers.

On Tuesday the members of the London and Middlesex Archaeological Society assembled at the Bank of England to view the site of the church and churchyard of St. Christopher-le-Stocks, under the guidance of the president, Dr. E. Freshfield, by whom they were conducted along the course of the Wall Brook. Afterwards, at Brewers' Hall, Addle-street, papers were read by Mr. C. Welch, F.S.A. (City Librarian), the hon. secretary, on "The Early History of the Brewers' Company, as Told by their own Records," and by Mr. E. W. Brabrook, F.S.A., on "Some Eminent Members of the Company."

The new park which has been formed by the Shipley Local Board, at a cost of £2,000, for the use of the inhabitants, was formally opened on Saturday. The inclosure, which will be henceforward known as Crowgill Park, is centrally situated near Shipley Church, and overlooking a considerable stretch of the Aire valley. It is nearly four acres in extent.

The Sunday schools attached to the David Thomas Memorial Church, St. Andrew's, Bristol, are being enlarged. The large lecture-hall, and which was provided with partitions by which it could be divided into classrooms, has been dismantled, and the fittings removed. The old roof has been replaced by a new one, which gives considerably more height, additional light being supplied from a traceried window at each end of the building. A gallery has also been built at one end and another at the side. On each side of the entrance in Effingham-road wings two stories high have been built, which will be used as classrooms. The architect is Mr. Alfred Harford, Broad-street, and the builders are Messrs. R. Wilkins and Sons, Surrey-street, Bristol.

Professor T. McKenny Hughes, F.R.S., has been re-elected president of the Cambridge Antiquarian Society for the ensuing year, with Professor J. Henry Middleton as vice-president.







LOCK PLATE IN COPPER & BRONZE  
BY MISS GEORGIE CAVE FRANCE



E. Chancellor. Del.

BRASS  
FIRE-DOG  
ENGLISH-16-CENTY  
EXHIBITED BY  
MESSRS LONGDEN & CO



1ST PRIZE £10  
HALL LANTERN

IN WROT BRASS & COPPER  
BY MESSRS STRODE & CO

W. AMOR FENN - DESIGNER  
AWARDED EXTRA £10  
HENRY ROSS - CRAFTSMAN  
AWARDED EXTRA £5

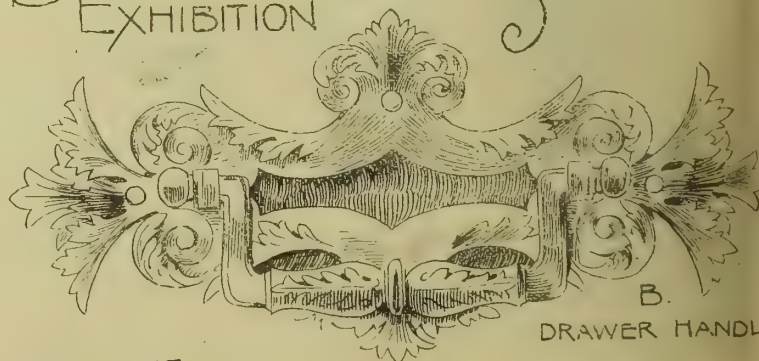


BRASS  
FINGER PLATE  
(REPRESENTING THE USE  
OF ARMOUR)

1ST PRIZE

SAMUEL COPE DESIGNER  
& CRAFTSMAN

SKETCHES FROM THE  
EXHIBITION

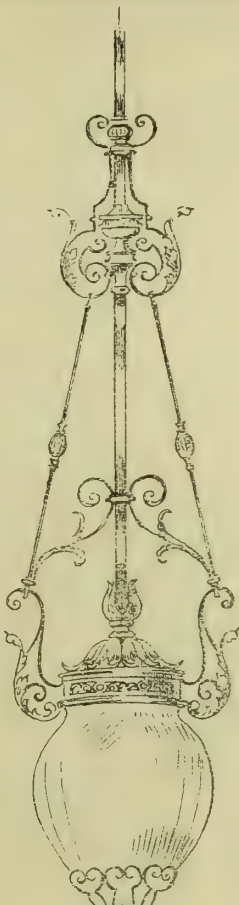
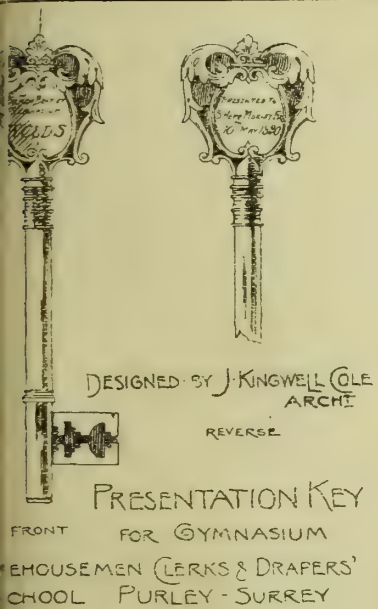


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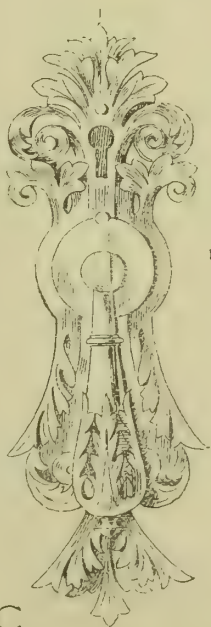
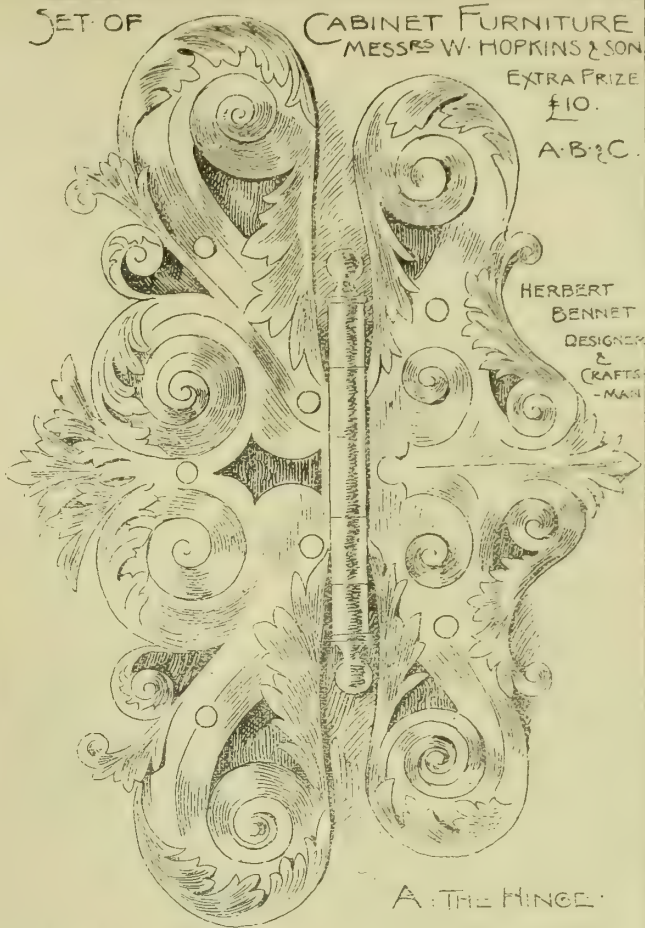
DRAWER HANDLE

OF THE  
ARMOURERS & BRAZIERS' COMPANY

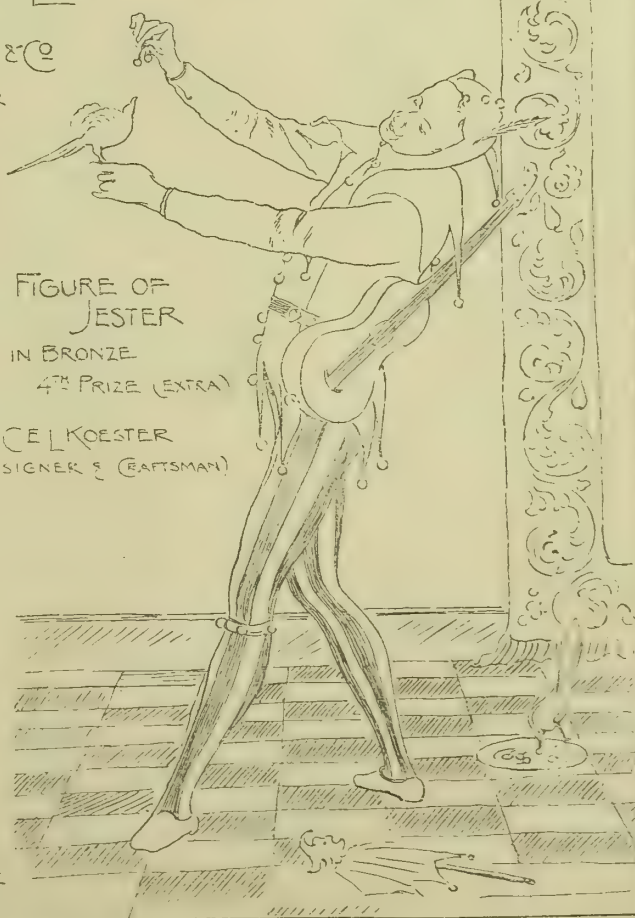




ELECTRIC GLOBE LAMP  
IN NICKEL & BRASS  
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CHAS H. MASON - DESIGNER  
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C  
CUPBOARD HANDLE









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## Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 792.)

## SHELTER HALL AND PROMENADE, BRIGHTON.

THESE new buildings have just been opened to the public use on the Madeira-road at Brighton. The promenade consists of a raised terrace, 1,304ft. in length and 25ft. in width, extending from the steps opposite the Royal Crescent to the steps opposite Paston-place, forming a raised walk between the esplanade on the Marine Parade and the Madeira-road, and protected on the outer edge by a strong fence and hand-rail. This terrace is accessible either from the Marine Parade or the Madeira-road by the Royal Crescent or the Paston-place steps, or by the hydraulic lift which has been placed opposite the centre of Marine-square, and for which a nominal charge is made. By means of this lift, visitors and others are enabled to save the fatigue of climbing the steps or the more prolonged ascent of the Duke's Mound, and invalids in hand chairs may be lowered from the Marine Parade to the raised terrace on the Madeira-road, or *vice versa*. A continuous seat is also provided on this raised terrace next the wall, extending the whole length. In the centre and underneath the raised terrace near the lift is a spacious shelter hall, with well-appointed lavatories on either hand—on one side for ladies and on the other for gentlemen. Adjoining the shelter hall and opening therefrom are two reading-rooms, each 56ft. by 24ft., and beyond these are covered walks, 18ft. in width, extending the remainder of the length. The raised promenade is supported on cast-iron columns and wrought-iron girders, with ornamental spandrels, the roof or ceiling being of concrete, with asphaltic walls on the top. The following materials, &c., have been used in executing these works, viz.:—About 5,000 cubic yards of excavation, 2,000 cubic yards of concrete, 300,000 bricks, and 600 tons of iron. The scheme was designed by Mr. Philip C. Lockwood, C.E., the contractors being Messrs. J. Longley and Co., of Crawley. The contract sum is £13,975. The work was carried out chiefly under the direction of Mr. G. R. Andrews, C.E., who succeeded Mr. Lockwood as borough surveyor to Brighton, but who has since resigned for a more important appointment.

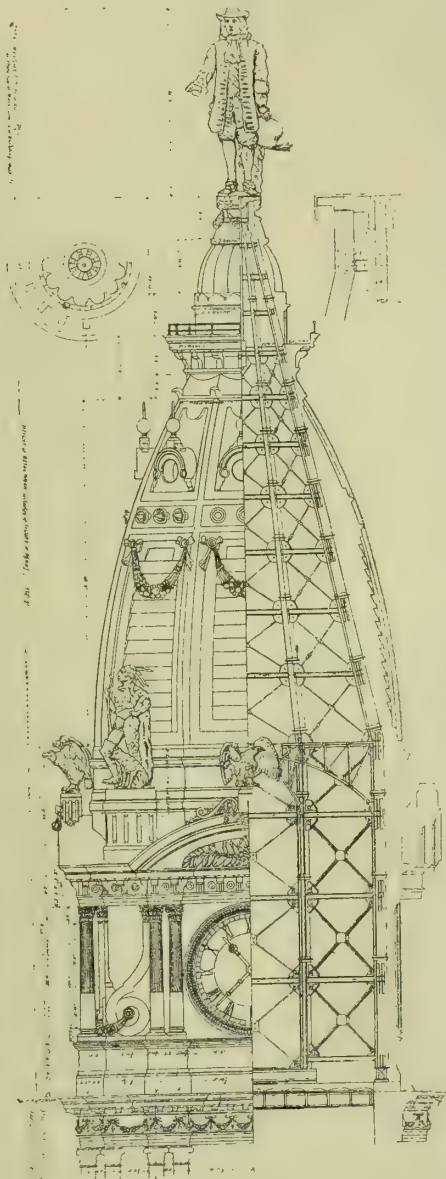
## LIVESEY HALL, LANCA-SHIRE.

LIVESEY is one of the best examples of the smaller stone-built halls of North Lancashire. It stands in a pleasantly sheltered situation about two miles out of Blackburn on the old road to Preston. The hall appears to have been built at three different periods, easily traceable by date-panels built in the walls. The centre part bears the date

1608, the east wing 1666, and the west wing 1689. It was built by members of the Livesey family, from whom it takes its name, and was occupied by their descendants until the middle of the 18th century. At the present time one half of the building is occupied as a farmhouse, the other half being in a neglected condition, and rapidly going to ruin. The view shows the south front and what remains of the characteristic old garden and wall. Mr. Harrington's drawing, herewith given, is now in the Royal Academy Exhibition.

## THE CITY HALL, PHILADELPHIA.

THIS vast structure, only now being completed, was designed by the late John MacArthur, jun., the City architect. Its architecture is essentially modern in its leading features, and presents a rich example of what is known by the



generic term of the Renaissance, modified and adapted to the varied and extensive requirements of a great American municipality. The official description says that it is designed in the spirit of French art, free from servile imitation either in ornamentation or in the ordinance of its details. This immense architectural pile is located on the intersection of Broad and Market streets, in the City of Philadelphia. It covers, exclusive of the courtyard, an area of nearly  $4\frac{1}{2}$  acres, and consists of one building, surrounding an interior courtyard. The north and south fronts measure 470ft., and the east and west fronts 486ft. in their extreme length. The four fronts are similar in design. In the centre of each an entrance pavilion of 90ft. in width rises to the height of 185ft., having receded wings of 128ft. elevation. The fronts terminate at the four corners with towers or pavilions of 51ft. square and 145ft. high. The whole exterior is

bold in outline and costly in detail, being elaborated with highly ornate columns, pilasters, pediments, cornices, enriched windows, and other adornments. Archways of 18ft. in width by 36ft. in height, opening through each of the four central pavilions, constitute the four principal entrances, and at the same time afford passages for pedestrians up and down Broad and Market streets directly through the buildings. The basement story is 18ft. in height, and stands entirely above the line of the pavement. Its exterior is of fine white granite of massive proportions, forming a fitting base for the vast superstructure it supports. The exterior of the building above the basement embraces a principal story of 36ft. and an upper story of 31ft., with an attic over the central pavilions of 30ft., and over the corner pavilions of 12ft., all of white marble from the Lee Quarries, in Berkshire County, Massachusetts. The small rooms opening in the courtyard are each subdivided in height into two stories. In the centre of the group a courtyard of 200ft. square affords light and air to all the adjacent portions of the building. From the north side of this space rises a grand tower, the crowning feature of the city, from whatever point it may be approached, as St. Peter's, Rome, and St. Paul's, London. The foundations of this tower are laid on a bed of concrete, 8ft. thick, at the depth of 20ft. below the surface of the ground, and its walls, which at its base are 22ft. in thickness, are built of dressed dimension stones, weighing from 2 to 5 tons each. This tower, which is so deeply and so strongly founded, is 90ft. square at the base, diminishing at each story, until it becomes, at the spring of the dome, an octagon of 50ft. in diameter. A statue of the founder of Pennsylvania, 20ft. in height, crowns the structure, and completes the altitude of 550ft. making it one of the highest towers in the world. The entire structure contains about 1,000 rooms, giving provision for all the departments of the City Governments, classed under the heads of Legislative, Executive, and Judicial; besides which, a vast amount of room remains for use in the classification and preservation of the archives of the city, for storage, and for increased accommodations, which will undoubtedly be required from time to time by the natural increase of the public business, and the accumulation of the public records. Every room in the building will be well lighted, warmed, and ventilated upon an approved system, and every part of the structure will be absolutely fireproof. The several stories are approached by four large elevators, located at the intersections of the leading corridors, so as to facilitate the intercourse of citizens with the public offices, courts, and other branches of the Government. In addition to these means of approach there are large and convenient stairways in the four corner buildings, and a grand staircase in each of the centre pavilions on the north, south, and east fronts. The following materials have been used in the foundations:—74,000c.ft. of concrete foundations, 636,400c.ft. of foundation stone, 70,000c.ft. of dressed granite, 8,000,000 hard bricks, 23,300 pressed bricks, 36,972 white bricks, 366 tons of wrought-iron floor beams, 63 tons of wrought-iron clamps, 28 tons of cast-iron lintels, askewbacks, drain pipes, iron bricks, &c., 16,700sq.ft. of bond slate. The excavations for the cellars and the foundations required the removal of 141,500 cubic yards of earth. The preparation of the ground for the excavations involved the change of the gas-pipes, and of the two water mains of 20in. in diameter, from their course through the centre of Broad-street to a circuit around the site of the buildings. The tracks of the West Philadelphia Railway were changed from the centre of Market-street and laid round the site; and the freight railroad owned by the city and which ran through Market-street was entirely removed after it had ceased to be of use in the transportation of materials for the buildings. These changes involved a heavy outlay, which was charged to the Commissioners. The contractors engaged on the work are too numerous to mention. The architect's assistants were Messrs. R. W. Peterson, H. M. Wilson, Geo. T. Pearson, and Thomas U. Walter. The chiefs of the staff were Mr. John Ord, the present city architect, and Mr. Frank A. Hays. Mr. William C. McPherson was clerk of works; Mr. Alexander M. Calder was the sculptor. The foundation-stone was laid on July 4, 1874, and the work was finished this year all but the clock-tower, which



is now in progress. The commission was won by Mr. McArthur in a competition in 1869. The following dimensions of building are interesting:—Height of main tower, 517ft. 3½in. above pavement; from north to south, 486ft. 6in.; from east to west, 470ft.; area, 4½ acres; width at base, 90ft.; centre of clock face, 361ft. above pavement; diameter of clock face, 23ft.; height of upper balcony, 296ft. above pavement; total number of rooms in building, nearly 1,000; total amount of floor-room 14½ acres; heights of each centre pavilion, 202ft. 10½in.; each corner pavilion, 161ft.; basement story, 18ft. 3½in.; principal story, 33ft. 6in.; second story, 35ft. 7in.; third story, centre pavilion, 26ft. 6in.; third story, wings, 24ft. 3in.; third story, curtains, 20ft. 5in.; attic of centre pavilions, 15ft.; attic of corner pavilions, 13ft. 6in.; crowning statue, 36ft.; figures on centre dormers, 17ft. 6in.; on corner dormers, 12ft. 10in. The comparative heights of the principal buildings of the world are useful:—Washington Monument, 550ft.; City Hall, Philadelphia, 547ft. 3½in.; Cologne Cathedral, 510ft.; Great Pyramid, 480ft.; Strasburg Cathedral, 468ft.; St. Peter's, Rome, 448ft.; St. Stephen's Cathedral, Vienna, 441ft.; Salisbury Cathedral, 404ft.; Toraccio di Cremona, 396ft.; Freiburg Cathedral, 385ft.; Amiens Cathedral, 383ft.; Church of St. Peter, Hamburg, 380ft.; the Cathedral, Florence, 376ft.; Hotel de Ville, Brussels, 374ft.; Torre Asinelli, Bologna, 370ft.; St. Paul's, London, 360ft.; Church of St. Isaac, St. Petersburg, 336ft.; Cathedral, Frankfort-on-the-Main, 326ft.; Bell Tower, St. Mark's, Venice, 323ft.; Hotel des Invalides, Paris, 310ft.; United States Capitol, Washington, 287ft.; Masonic Temple, Philadelphia, 230ft.

#### CALLIS COURT, BROADSTAIRS.

The external walls of this house are built hollow, having a 2½in. interspace; they are executed in Lawrence's red bricks, with Portland stone dressings up to the first floor, and with Broseley tiling for the other floors. The half-timber work is of oak, the interstices being filled in with rough-cast and some portions with sgraffito work. The roofs are of two tints of Broseley tiling laid in patterns. The interior finishings are of expensive character, being all of hard wood, with parquetry flooring, ornamental ceilings, &c. Messrs. Paramor and Son, of Margate, are the contractors. The parquetry flooring and ornamental woodwork, including the staircase, will be executed by Messrs. Turpin and Co., of Queen's-road, Bayswater. The ornamental ceilings and plaster details will be by Messrs. Jackson, of Rathbone-place, Oxford-street. The sanitary fittings will be supplied by Mr. Geo. Jennings, of Stangate Wharf, Lambeth. Special attention has been paid to the heating, ventilating, and sanitary arrangements, which will be perfect. Attached to the house are a lodge, wrought-iron entrance gates by W. T. Allen and Co., of 132, Queen Victoria-street, and stables of considerable size, the fittings for which will be supplied by the St. Pancras Ironwork Company. The cost of the building, exclusive of laying out the grounds, lighting, &c., will be about £20,000. The residence is for Mr. Harry H. Marks, of the *Financial News*. The joint architects are Messrs. H. H. Collins, and M. E. Collins, of 61, Old Broad street, City.

#### SKETCHES FROM THE EXHIBITION OF THE ARMOURERS AND BRAZIERS' COMPANY.

We give this week a sheet of sketches from the above exhibition of metal-work which took place quite recently at the Armourers' Hall, Coleman-street, City. An account of this exhibition may be found in the *BUILDING NEWS* for May 23 last, p. 745, therefore little further need be said. Most of the subjects shown on our sheet of illustrations obtained well-deserved prizes—notably, the quaint Hall Lantern by Messrs. Strode and Co., of 48, Osnaburgh-street (in which case both the designer and craftsman were awarded extra money prizes), and the Finger-Plate, by Mr. Samuel Cope, representing the use of armour. Mr. Koester, whose excellent figure of a Jester we illustrate, executed the whole of the chasing on the crosier for the late Bishop of Durham, which was published in our pages on Feb. 7th last. The Lock-plate, by Miss Georgie Cave France, is a beautiful piece of decorative work; and there is much merit in the Cabinet Furniture of saw-pierced metal, for which Messrs. Hopkins and Son obtained an extra prize.

## Building Intelligence.

**ABERDEEN.**—The different estimates for the clock of St. Nicholas' Church, Aberdeen, were submitted to Lord Grimthorpe for his approval by the town council of Aberdeen. He recommended the three following firms:—Messrs. J. B. Joyce and Co., Whitechurch, £350; Messrs. Gillett and Johnston, Croydon, £430; and Messrs. Potts, Leeds, £375, with cast-iron wheels. After considerable inquiry by the council, it was decided to have gunmetal wheels, and the work to be intrusted to Messrs. Joyce, who have made many of the cathedral and large clocks in the kingdom. This clock will be the largest in Scotland, the frame, which will be in one solid piece, 7ft. 8in. long by 3ft. wide. All the wheels will be of the best gunmetal, and the teeth to be engine-cut. The wheels of the striking and quarter part will be 24in. diameter. The Doncaster quarters are to be used, and the hours will be struck on a bell of nearly three tons. It will have Lord Grimthorpe's double three-legged gravity escapement, and a compensated pendulum. Messrs. Joyce also erected the one at Glasgow University, of which Professor Grant reports, after a long observation, that the clock was going to within two seconds a fortnight.

**WESTMINSTER ABBEY.**—A preliminary meeting of the Royal Commission on Westminster Abbey was held on Monday in the Jerusalem Chamber, the Right Hon. David Plunket, M.P., in the chair. The reference to the Commission is (1) to inquire into the present state of the Abbey of Westminster as regards the facilities which it offers for providing for the interment and otherwise preserving the memory of the most illustrious Englishmen in the manner which has been customary for many centuries; and (2) to hear evidence and to consider plans for providing, at the Abbey or elsewhere, an additional place for memorials, should such a provision appear necessary. At the next meeting the Dean of Westminster and other officials of the Abbey will give evidence on these points.

#### CHIPS.

The widow of Mr. J. Turtlewood, who materially assisted her husband in his explorations at Ephesus, has been granted a Civil List pension of £75 per annum.

The honorary degree of D.C.L. will be conferred on Mr. W. Q. Orchardson, E.A., by the Convocation of Oxford University on the 25th inst.

A coffee tavern and shop are approaching completion at Castleford, Yorks, from plans by Mr. R. M. McDougall, of that town. Mr. A. S. North, also of Castleford, is the builder, and the outlay will be about £1,800.

The County Council decided, on Tuesday, with reference to the assistance it should give towards the maintenance of certain disused burying grounds which the Public Gardens Association had laid out, to maintain them until October, 1892, at a cost not exceeding £900 per annum.

It is reported that a Mediaeval sacramental wafer dish and wine-cup, composed of a low class of gold and weighing altogether 45oz., have been found near the residence of Mr. Pritchard Morgan, M.P., at Dolgelley, on a site formerly occupied by the monastery of Llanelltyd.

The foundation-stone of All Souls' Church, Invergowrie, near Dundee, was laid on Friday by Sir Reginald H. A. Ogilvy, Bart. The new church is designed by Mr. Hippolyte J. Blanc, Edinburgh.

The memorial stones of a new Wesleyan chapel and school at Stanfield, near Burslem, were laid last week. The building is being erected from plans by Mr. Slater (Messrs. Ford and Slater), and will seat 100 persons; but by the removal of a screen the schoolroom can be added to it, and a hundred more worshippers accommodated. The cost will be about £900, and the contract has been let to Mr. W. Cooke, Burslem.

Lord Clinton has recently caused his Georgian mansion at Trefusis to be pulled down, preparatory to the erection of another one on the site. Mr. James Hicks, of Redruth, the architect, writes that worked into the structure just demolished were numerous remains of the house which preceded it, and which was of the Tudor period. The fifteenth-century mantelpiece and four-centred doorways, and some panels, the oak fittings of the library, and some plaster casts will be replaced in the new building. In this Tudor house, Mr. Hicks adds, "the mortar was little better than wetted earth without cohesive properties."

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**NOTTINGHAM ARCHITECTURAL SOCIETY.**—The annual general meeting was held on Friday evening. It was resolved that the society subscribe the sum of £10 10s. to the guarantee fund for holding the Congress of the National Art Association in Nottingham in 1891, and £5 5s. to be awarded as a prize to architectural students studying at the School of Art or University College, in that town; the special form the prize will take to be decided by the Council of the Society after consulting the authorities of the institutions named. Mr. G. T. Hine, F.R.I.B.A., retired from the presidency after two and a half years of office, and Mr. Herbert Walker, F.R.I.B.A., was elected in his place, with Mr. William Jolley, F.R.I.B.A., vice-president. Messrs. Fred. Jackson, F.S.I., R. Booker, F. Watson, J. Howitt, and A. E. Heazell were chosen members of the Council, and Mr. J. W. J. Barnes, F.S.I., honorary secretary and treasurer.

**THE SURVEYORS' INSTITUTION.**—The annual dinner of the Surveyors' Institution took place on Monday evening at the Holborn Restaurant. Mr. R. C. Driver, the president of the institution occupied the chair. Mr. G. M. Freeman proposed "The Houses of Parliament," to which the Earl of Jersey and Mr. W. J. Beadel, M.P., responded. Mr. E. P. Squarey (past president) proposed the toast of the evening, "Prosperity to the Surveyors' Institution." He said that the total number of members was 1,617, which was an increase of 11 per cent. over the number of last year. The institution also held in cash and securities a sum of £13,300 besides their leasehold property in Great George-street. Although the material prosperity of the institution was a matter for congratulation, it should not be forgotten that its great value lay in the fact that by the following up of an unwritten tradition it had led to a better conception by the profession of its duties, both towards its clients and the general public. Mr. F. Meadows White, Q.C., proposed "The Past Presidents and Council of the Institution." Mr. E. Ryde, in responding, said that the institution was really worth £25,000; but money was not everything, and there would never come a time when a land surveyor in England would prosper unless he brought not only ability, but the greatest industry and the strictest integrity, to bear upon his work. They must keep a tight hand as to those who were introduced into that institution, and must not relax their rules, and then he believed the institution would always flourish. Among the other toasts were those of "The President," "The Provincial Chairmen," and "The Visitors."

An additional part of the new west wing of the Museum of Science and Art, at Edinburgh, of which Dr. Rowand Anderson is the architect, has been opened to the public. The first gallery and adjoining room in which are displayed the Ethnographical and Persian collections, were opened over a year ago, and the present extension, which is filled with models of machines, leaves only the upper floor still closed. That floor is being filled with the rocks and minerals of Scotland, and in the course of a few months will be ready for view, thereby completing the museum as originally designed by Captain Fowkes thirty years ago. In the main entrance hall additional casts illustrative of Mediaeval and Norman architecture are being erected, as well as a second portion of the enamelled brick frieze of the palace of King Darius at Susa, which was unearthed by Mons. Dieulafoy.

At the monthly meeting of Cheltenham town council, held on Monday, a committee brought up a report as to the charges of Mr. Knight as architect in connection with the Colonnade improvement, a work which has been delayed from time to time, and described by one of the members of the council as a disgrace to the town, having extended over a great many years. The charges were against three owners of property with whom the corporation treated, £200 for a detailed survey of site and plan of same, £25 for making several sets of plans, elevations, tracings, and making copies of plans, lithographing, attendances, &c., £250, making a total of £475. The committee recommended the payment to Mr. Knight of 400 guineas in full discharge of all charges and claims against the corporation to the present time, on the understanding that copies of such of the plans produced before the committee as the committee may require shall be supplied free of charge. An amendment was proposed that the account be referred back for the purpose of being taxed, but after a discussion was lost, and the report of the committee was adopted.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

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## SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and SIXPENCE for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIII., LVII., and LVIII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—B. and P.—M. and Co.—J. C.—T. T.

## Correspondence.

## THE ARCHITECTURAL ASSOCIATION.

To the Editor of the BUILDING NEWS.

SIR,—As a member of the Architectural Association of many years' standing, and one who has watched its progress with much interest, I would congratulate the committee on the result of last Friday's voting on the recommendations of the special education committee.

The adoption of the resolutions has initiated an era in its history. By the process of evolution, and not revolution (as has been affirmed in some quarters), the Association has entered upon a career of which it is impossible to foresee the full results; but it may safely be predicted that it will be a career of great honour and influence.

The educational aim of the A.A. will, I take it, remain as heretofore—viz., to supplement our system of pupilage. During last Friday's discussion more than one member suggested that in becoming a College of Architecture it would supplant the pupilage system. Had I thought so, I should not have supported the resolutions. I am convinced that to the English pupilage system is due much of the variety and freshness of our best designing as compared with those countries where the training is begun, continued, and ended in the Polytechnic Colleges. What is wanted is a system of study which from the first will both guide and instruct the arted pupil in his studies, and thus enable him to derive full value from the practical application in his principal's office.

That such supplemental training will pay the principal handsomely is obvious, and he may therefore be counted upon to help to support the College, first, by giving his pupil facilities to attend the classes and lectures; and secondly, by subscribing towards the fees either directly or indirectly by lowering the premium for articles.

At the outset, however, the ways and means are a source of some anxiety. Too much must not

be attempted at first, and economy must be considered.

I am glad to see the report of the Special Committee alludes to the existence of "Institutions in London where knowledge of great importance to the architect may be obtained," and it has occurred to me to suggest the possibility of making use of some of this instruction in connection with the new College of Architecture. I have a letter from Mr. E. C. Robins, in which he says:

"Sir Philip Magnus and myself—to whom the question of an Architectural College was referred by the Examining Committee of the City and Guilds of London Institute for the advancement of Technical Education—were unable to obtain the necessary funds for the establishment of Professorships for Architecture as a Fine Art and Constructive Science. All we have been able to do is to get occasional courses of lectures delivered upon kindred subjects."

And Professor Unwin, F.R.S., Dean of the City and Guilds of London Institute, also writes me that:

"The course of instruction here is much better adapted at present to engineers than to architects. It is just possible that next year we shall have some further architectural instruction."

May not the Architectural Association get a grant towards the maintenance of its teaching staff, on the understanding that a certain proportion of its students attend such of the technical Institute courses as can only be adequately taught in such specially-fitted buildings?

Among other courses, I would suggest the relegation to technical institutes of the following:—

## PURE SCIENCE.

Mathematics.  
Physics.  
Geology.  
Natural Philosophy.

## APPLIED SCIENCE.

Mensuration.  
Modelling.  
Light and Shade.  
Building Construction  
(some departments).  
Hygiene.

## Practical Work in the Laboratories.

The Architectural Association is preparing itself to cope with the necessity in the near future for a thorough examination of all who aspire to practise architecture.

Statutory education must come, because the public have discovered that bad architecture is as costly as bad law and as dangerous as bad medicine, and because the profession is discovering that it must purge itself by this the only means available of those who bring it into disrepute.

I shall be happy to promise £50 per annum for three years towards the guarantee fund (which it has been voted necessary to create).—I am, &c., W. H. SETH-SMITH.

SIR,—Will you kindly allow me, through the medium of your valuable paper, to appeal to all members of the A.A. to make an effort to attend the next meeting, and vote—yea or nay—on the proposed alteration in the rule relating to the subscription?

At the last meeting a suggestion which had been made both by Mr. Cole Adams and Mr. Stannus, that a paper should be sent to every member asking his opinion on the question, was formally moved as an amendment, and although supported by some influential officials who know the risk that is run at the present crisis of losing a large number of members, was lost when put to the vote. The (comparatively speaking) handful present objected to those who were not there having an opportunity of expressing their opinions.

Those members who will not be able to attend might write to the secretaries, stating their views. It is most important that such radical changes as are now proposed in the rules should not be voted on until as many expressions of opinion as possible have been heard.—I am, &c., AN OLD MEMBER.

## UNIVERSAL PROVIDERS' ARCHITECTURE.

SIR,—In your issue of the 16th, under the heading of "Universal Providers' Architecture," a righteous indignation is expressed. At the same time, I don't see why a properly constructed "w.c." should not enter from a lady's sitting-room if she desires it. This enables the greatest privacy to be enjoyed, and 'tis better than being in proximity to sleeping-rooms, a common arrangement in large houses.

As for taking the bread out of the mouths of

competent, but struggling, architects, we do not require to go outside of our profession to find men sordid enough even to undersell the "Universal Provider." An instance has just come to me of one of the leading firms in this city, at present engaged on an important public building, who does work for the miserable payment, not of 5 per cent., but less than a fifth of the remuneration!

O Registration! why were you not here years ago? Too many of us have crowded into the profession!—I am, &c.,  
Edinburgh, May 31. ARCHITECT.

## NOTES ON BUILDING PRICES.

SIR,—I am glad to find a surveyor of Mr. John Leaning's standing, in writing on the above subject, lay stress on the fact that a contractor's profit may be turned into a loss by "foolish and harassing interference by the architect, or his clerk of works." A practical builder of many years, I have experienced this but once. In that case, the "foolish and harassing interference" came from "his clerk of works," whose practical knowledge, conspicuous by its absence, led him into exactions of a most ridiculous character. Not recognising that each kind of material in the hands of the artisan requires a different treatment no less than it does by the architect in his design, added to which the man's naturally hesitating and vacillating temperament, with a monomania for altering things, made him (perhaps unintentionally) a source of continual obstruction to the progress of the works. Men of this kind, as a means of fortifying their position, are ever apt at the expression, "Why don't you get on?" "Foolish and harassing interference" seldom comes from architects, or from clerks of works, who are practical men; but frequently from men who, having failed in the attempt to practise architecture, or some other "business," also fail to become useful clerks of works. A PRACTICAL BUILDER.

## TIVOLI THEATRE.

SIR,—With regard to your notice of this building in your issue of this week, would you allow me to make a correction? The buildings have been erected entirely from my designs, Mr. Phipps having superintended the work only.—I am, &c.,  
WALTER EMDEN.  
105 and 106, Strand, London, W.C., May 30.

## CHIPS.

On Saturday Lady Wolsey laid the foundation-stone of the church of St. Paul on a site in Burgoyne-road, Harringay, a rapidly-growing district of the old parish of Hornsey. The church, which will take the place of an iron building, will accommodate 800 worshippers, and will be built in the Early English style at a cost of £7,000 or £8,000.

A special meeting of the Caledonian Railway Company, in Glasgow, on Friday, approved the construction of new railways from Crieff to Comrie, in Perthshire; another from the Caledonian and North British systems to Milngavie, Kilmearn, and the port of Monteith; another to Ballantrae, and another to Brechin.

The Portsmouth sewage outfall works are seriously threatened by the action of the tide, and the drainage committee of the town council propose an expenditure of between £6,000 and £7,000 for the protection of the massive sewage tank, constructed from the plans of Sir Frederick Bramwell, C.E., on the glaciis of Fort Cumberland, and the outfall pipes from it, which extend in the direction of the Wolseners.

The Board of Agriculture have under consideration several regulation schemes, which will, if passed, have the effect of dedicating about 2,700 acres around London to the public as open spaces for ever. The lands in question comprise Epsom Downs and Common, Mitcham Common, Banstead Downs and Heath, Park Downs, and Burgh Heath, and the Hackney Marshes.

The town council of Leamington have adopted plans by Mr. W. De Normanville, the borough engineer, for the demolition of the Adelaide-road Bridge, a brick structure of 70ft. span, carrying a thoroughfare across the river Leam, and for its replacement by a wrought-iron arched structure.

A bust, on a pedestal 3ft. high, of the late Alderman Jones, who for a quarter of a century was connected with the Corporation of Cardiff, has just been placed in one of the niches in the staircase leading to the assembly room in the Town Hall of Cardiff. The bust is the work of Mr. Johns, sculptor, of the same town.



## Intercommunication.

### QUESTIONS.

[10293].—**Roofs.**—Can anyone kindly give me strengths for a 40ft. span semicircular wood principal made of spruce deals bolted together, and is it advisable to tie at floor level? Also for a roof 28ft. span, with spars and collars only, on the Scotch system.—H. G.

[10294].—**Cantilever—Girder.**—Would some mathematical reader kindly inform me the relative breaking loads of cantilevers and girders of equal section? Say, if a rolled iron I girder, 16ft. bearing, fixed at ends, not merely supported, would break with a distributed load of 20 tons, what would be the distributed breaking load of a cantilever projecting half the length (8ft.) of similar section, and securely pinned in at the wall end?—Zero.

[10295].—**French Tour.**—Can any of your readers give me information relating to architectural tour, making Rouen a centre, returning home by Beauvais, Amiens, and Calais, to be away a fortnight? Also, could they kindly recommend a handbook of French Medieval architecture in French or English, if possible on the same lines as Parker's "Handbook of Gothic Architecture."—RANULPH.

[10296].—**Dry Rot in Timber.**—To Mr. W. STEVENSON.—I have sent you a specimen of a peculiar growth which has just been taken from the timbers in part of a house here. I am much interested in timber, and should be glad if you could answer the following questions:—1. What is the cause of this growth? 2. What is the remedy? The facts are as follows:—The house in question is a detached one, and was built in the year 1884 under my superintendence, and by a very good builder. The growth occurs in the ground floor timbers of the drawing-room, and was first observed about this time last year. There is a fair space under the floor, at one end about 3ft. deep, with air bricks in wall. At that time it was thought that there could not be sufficient air-circulation, and new timbers put in to replace the old. They are now covered with this fungus. When it dries the ground is coated with the dust from it. The situation of the house is on high ground, the side of a hill, with very little in the way of trees or shrubs surrounding. The soil is of a close, firmly compacted marl of considerable depth lying over the chalk. In excavating to a depth of 9ft. or 10ft. not a trace of moisture was found, all surface water is entirely conveyed away from the premises, and the stuff was so stiff that no shoring was required. I address you on the subject from having seen your name in connection with much information relating to timber in the BUILDING NEWS of last year.—A.R.I.B.A.

[10297].—**Worm-Eaten Wooden Figure.**—A fine carved and painted wooden figure, life-size, is found to be very extensively worm-eaten. Is there any certain method by which the insects can be destroyed, and their ravages repaired?—G. B. M.

### REPLIES.

[10289].—**Timber Conversion.**—It is a nice point in the strength of a beam whether it be cut with the annual rings to run lengthwise or crosswise in the section. The strongest and best wood is that immediately below or beneath the sapwood; the more central zones are apt to be coarse, faulty, and brittle from age. In the instance of beams cut as shown in Fig. 1, the central beam would



FIG. 1.



FIG. 2.

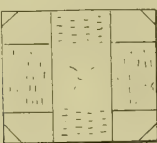


FIG. 3.

have the best wood on its edges; such a beam would be liable to the weakening influence of knots, as they radiate from the centre. This relates especially to beams of fir-wood, in which the knots are relatively larger than in Norway or Canadian spruce. In placing such beams in work, the clearest edges should be placed the lowest, as the wood in this position is in tension. The uppermost edges in compression calls for little or no consideration under this heading. The side beams would be cut from the best and strongest parts of the tree, but the two slab corners are liable to weakness arising from the presence of sapwood, which, after being some time in work, in a damp situation, is liable to destruction from vegetable action, and if in a dry situation to disintegration from the mechanical action of insects. "H. W." presses his question further, and from the consideration of beams turns to that of the flooring boards. In the conversion of timber into flooring boards we have to view the woods from a different standpoint—viz., that of wear. By far the best flooring is that cut with the edges of the annual rings or zones of wood on the surface. For this purpose the centre beam, as shown in the above diagram, could alone be used. This, after cutting out the heart, would make two widths of flooring. If the boards are prepared from the side beams, you would have the grain in layers upon the surface, in which case they would tread up and splinter. Take this instance (Fig. 2):—The annual layers of wood are composed of two parts, the soft (vernal) and the hard (autumnal) layers. When these lie flat upon the surface of the board the cellular tissue of the soft parts give way under the feet, and the hard parts remain as shells

or splinters. Such boards wear hollow upon the surface. If you turn the board over the case is not much improved, for the two edges of the rings or zones coming to the surface shell up or splinter. Anyone curious on this point will find interesting confirmation of this on examining the wooden platforms of our railway stations. During the prevalence of the fashion for clean flooring which obtained in the last century, the boards were all cut the wrong way: the great point was to obtain the pattern of the grain down the centre of each board. This was done by cutting parallel lines through the conical stems of the trees. The following (Fig. 3) was the principle adopted, in which each board bore the same relative position to the heart; the centre and the four corners of the logs were used for other purposes. The introduction of carpets in the present century caused the decadence of clean floors; but wherever they exist the manner of their wear and their splintery character must be condemned. Quartered wood—i.e., wood with the edges of the grain on the surface—the oak excepted, is the best for wear. In the case of oak the extraordinary development of the undulatory plates or silver grain detracts from its wearing qualities, as they shell and tread up like the hard and soft layers on the surface of firwood boards. This may be seen in the oak floors at the British Museum and other public buildings, where the most figured boards are the most worn. Makers of wood-block flooring will do well to take note of the above remarks on the wearing qualities of wood, for, judging from all the examples I have seen in work, they are ignorant of the above facts.—W. STEVENSON, Hull.

[10291].—**Fire-Proof Floors.**—I have gone very closely into this matter, and had much experience. A building constructed with timber properly protected with silicate cotton and plaster, is infinitely more fireproof than one where the flooring consists of a combination of iron and concrete. Iron and concrete, though incombustible articles in themselves, are actually a bad combination, in consequence of the inevitable action that goes on when heat is transmitted by the concrete to the iron. Apart from the superiority of timber over iron, so far as fireproofing is concerned, it is much less expensive.—E. GARDNER.

### CHIPS.

The Bishop of Gloucester and Bristol attended at Cinderford on Thursday, the 29th May, and consecrated the nave of the new church of St. Stephen, which will replace a temporary church built a few years ago. The new church has been erected by Mr. Dowland, of Pontilias, from plans by Mr. Lingen Barker, London and Hereford. Accommodation is provided to seat 550 persons. It is proposed later on to add a chancel tower, spire, bells, and vestry, estimated to cost £2,000. At present about £2,700 has been spent.

The long projected restoration of Haddington Abbey has progressed another stage, the heritors having accepted a proposal to remove the galleries on the north and south sides of the abbey church, and to rearrange the sittings. The accommodation will be reduced from 1,233 to 1,080 seats.

Messrs. Waller and Son, architects, Gloucester, have prepared plans for the erection of a new vestry and organ chamber, and the removal of the gallery at the west end of St. Matthew's Church, Twyworth, near Gloucester, which was built and endowed 50 years ago.

A new post-office has just been opened at Saltburn-by-the-Sea. Structural alterations have been made in an already erected building to adapt it to the purpose. The fittings are entirely new in pitch-pine and mahogany, specially designed, and the whole of the offices are heated by hot water upon the low-pressure system. The whole of the works have been carried out from the designs and under the special superintendence of Mr. William Peachey, architect and engineer, of Saltburn.

The Prince of Wales will lay the foundation-stone of the new building for the Royal South London Ophthalmic Hospital in July next. The new premises—a portion of the sub-structure of which has already been laid—will stand on an extended area covering the site of the old institution at St. George's-circus, Southwark.

The Woodd memorial pulpit was opened on Whit-Sunday in St. Andrew's Church, Calstock, Devon, by Canon Hullah. The pulpit is of Corsham stone, in the Perpendicular style, and elaborately carved. The paterae, of which there are over forty, are all different, the artist having taken models of those in Devon and Cornwall churches. The traceried panels are crocketed and moulded. The pulpit was designed by Mr. J. Piers St. Aubyn, London, and the work has been executed by Mr. John S. Rogers, of Tavistock.

The parish church of Werrington, near Launceston, is about to be restored at a cost of £2,500, from plans by Mr. J. Piers St. Aubyn. The present low flat ceiling will be replaced by a half-timbered roof spanning the nave and its aisles; choir seats of oak will be placed in the chancel, and for the pews in the nave open benches of pitch-pine will be substituted.

The Water Commission of Dundee have decided upon the duplication of the Lintrathen water main between Pitnappie and Clutto, in accordance with the report of Mr. Watson, the water engineer. Mr. Watson has been instructed to prepare the necessary plans, prior to a Bill being presented in the next session of Parliament for the requisite authority to construct the works.

### LEGAL INTELLIGENCE.

IN RE W. JACKSON.—A first sitting was held on Tuesday under the failure of William Jackson, a railway contractor, carrying on business in Bucklers-bury, against whom a receiving order was made on May 2. The debtor had been engaged on a contract for a railway in the Isle of Wight, but in December last the company determined it on the ground that the work had not been completed within the specified time. The statement of affairs showed liabilities £25,172, of which £3,012 only are expected to rank, with a large estimated surplus in assets subject to realisation. On behalf of the debtor a scheme of arrangement was proposed; but a preference being expressed in favour of cash proposal, the meeting was adjourned to admit of such an offer being made.

### WATER SUPPLY AND SANITARY MATTERS.

LONDON WATER SUPPLY.—The inquiry into the water supply of London was resumed on Wednesday at the Guildhall. The City Chamberlain and other civic officials gave evidence of the increase in the ratable value of the Metropolis. The advance in the City had been from £824,539 in 1840, to £3,845,995 in 1890. The City Remembrancer said he believed that when the Metropolitan Valuation Act was passed it was never contemplated that that measure should be taken advantage of largely to increase the water rate. The committee adjourned to Monday.

MEADVALE.—The sanitary committee were called together at Cronk's Hill recently to look at the new automatic flushing tank at work. The borough surveyor (Mr. F. D. Clark), and the contractor (Mr. Faulkner) were also present. The tank is built of 9in. brickwork, surrounded with concrete, and is fitted with one of Adams' Patent Automatic Siphons; it has a capacity of 500 gallons, and can be regulated to discharge at will; at present it is so regulated to discharge 500 gallons of water down each sewer (Cronk's Hill and Somerset-road) once a week. The examination was perfectly satisfactory, the tank when full emptying itself in under one minute, and all expressed themselves perfectly satisfied. This is the first automatic flushing tank erected in the borough, and was designed by the borough surveyor, Mr. F. D. Clark, A.M.I.C.E., and built by Mr. Faulkner, contractor, Lesbourne Lands, Reigate.

TETTENHALL.—The laying of the memorial-stone of the Tettenhall sewerage works was performed on Friday at Trescott, by Major Pritchard, the chairman of the Tettenhall Local Board. Mr. H. J. Marten, the engineer, explained the character of the works. It is proposed to lay about ten or eleven miles of sewers. When the sewage arrives at the works it will enter a tank, and from there will flow through a mixing-house over a small water-wheel. The object of the water-wheel is to mix the sewage with lime or chemicals. From the mixing-tank it will pass through tanks which enable the rougher and coarser sewage to drop to the bottom. From these again it will pass into the precipitating tanks, where the solid matter will remain, and the effluent will be operated upon until it becomes clear. The cost of the works would be about £14,000.

Trinity Sunday was selected for the opening of the new church at the south end of Formby, near Liverpool, which is to be dedicated to the Holy Trinity. The style is Early English, the outer walls being of Penmaenmawr stone, rough hewn, and the inner walls of brick. At present only the nave has been completed; but the entire building is to consist also of transepts the same width as the nave, chancel, vestries, organ-chamber, south aisle, and tower. Lancet windows are being inserted throughout, and the western window already completed, being a triple light, represents in itself and in various emblems the Trinity. The open benches are of pitch-pine, the nave seating 384 persons, and the proposed accommodation being for 750. The roof is entire timbered. About £2,000 will be required to defray the cost of the work already executed.

Mr. Thomas Newson, architect, of 17, Gracechurch-street, E.C., was drowned by the upsetting of a boat in Totland Bay, Isle of Wight, last week. Mr. Newson, who was a little more than sixty years of age, had for upwards of forty years practised in the City as an architect. At first associated in business with Mr. Bell, of Gracechurch-street, he subsequently entered into partnership with the late Mr. Corbett, in conjunction with whom he entered into extensive building speculations, more especially in connection with the erection of large blocks of buildings suitable for offices. Indeed, Mr. Corbett and he led the way in the raising of the huge blocks of offices now so much in vogue. He leaves a widow and eight children.



## Our Office Table.

The Society of Antiquaries having resolved that the complete and systematic investigation of the site of the Roman city at Silchester is desirable, and that the excavations begun by the late Rev. J. G. Joyce for the late Duke of Wellington should be continued, it has been determined to endeavour to carry on the undertaking from year to year. A paper has been published by Messrs. G. E. Fox and W. H. St. John Hope, containing a summary of all that has been done to elucidate the plan of the city, and an outline of the scheme upon which it is proposed to continue the excavations. The council of the Society have granted £50 from their funds, and appointed an executive committee for the purpose of carrying out further investigations on the site. A general committee has also been elected to aid the executive committee by their advice and experience, and to raise additional funds for carrying on the work. The Duke of Wellington, the owner of the soil, has promised every facility to the society.

RIVETED pipes are made of wrought-iron or steel plates in lengths up to 25ft., and from 4 to 72in. in diameter. In the Colonies and in America the riveted pipe seems to be gaining favour for sewage and water supplies. Of course they can be used where great pressure is required to be resisted, as, being put together like a steam-boiler, there is no risk of sudden fracture or bursting under a head of water; while, for sewerage, the great points in their favour over stoneware are that there can be no imperfect pipe with flaws; the unequal settlement of the ground, or the ramming, does not injure the joints or break the pipes, as in the case of stoneware; and the entire length of piping is absolutely reliable throughout. The joints are above suspicion, and the spigot and socket can be made perfectly secure and watertight. For conveying drainage under houses they are preferable, certainly, to either stoneware or cast-iron.

The Cabinet of New South Wales has approved a proposal submitted by the Minister of Works for the complete reorganisation of the Colonial Architect's Department. After thirty years' service, Mr. Barnett will retire, leaving many monuments of his great ability. In future, designs for public buildings estimated to cost over £5,000 will be submitted to public competition, and the successful architect will carry out his design. The position of Colonial Architect is to be abolished, and a general superintendent of works in progress will be appointed.

The Corporation of Liverpool have received a report from the city engineer and the veterinary superintendent as to the proposal to construct in that city a 12-cell destructor. They state they have inspected similar appliances at Hampstead, Ealing, Battersea, and Whitechapel; that they are admirably adapted for the purpose of destroying house refuse, and that no nuisance whatever is caused, although in some cases erected in densely inhabited districts. The engineer reports that the most convenient site would be one adjoining the Chisenhale-street Wharf. The engineer further prepared plans and an estimate for the construction of a destructor upon this site, and laid them before the Health Committee, and they have been approved. The city engineer and the veterinary superintendent also say that the amount of ashpit refuse at present taken to the Chisenhale street and Sandhills depots averages nearly 1,750 tons per week, and the cost of taking it by barge to the Stanley Dock and subsequent removal to sea for the year 1889 was 1s. 11d. per ton. This sum includes depreciation of the canal tank barges and of the hopper barges, but it is exclusive of rent of the depots, wharves, and berths. With reference to the proposed destructor, the cost may be assumed to be £530 per annum, including interest, repairs, and working. A 12-cell destructor would consume 600 tons of refuse per week, leaving a residuum of clinker and ash of 120 tons to be dealt with, either for the making of mortar, or formation of foundation of roads, &c. The estimated cost per ton is about 1s. 8½d. The Health Committee on Thursday last recommended the City Council that the plan submitted by the city engineer for the construction of a 12-cell refuse destructor at Chisenhale-street Wharf, at a cost of not exceeding £6,000, be approved, and that they be authorised to adver-

tise for tenders for carrying out the work. The Aston Local Board have also this week received a report from a Committee recommending the erection of a refuse destructor at a cost of £1,600. In that town the present cost per annum of "tipping" is £110, and 20,000 loads are disposed of yearly.

### MEETINGS FOR THE ENSUING WEEK.

SATURDAY (TO-MORROW).—Architectural Association. Visit to Shiplake Court, near Henley. Ernest George and Peto, architects. Train 1.40 p.m. from Paddington.  
THURSDAY.—Society of Arts. "The Rationale of Indian Railways," by Sir Theodore C. Hope, K.C.S.I., C.I.E. 5 p.m.  
FRIDAY.—Architectural Association. Meeting to consider proposed alteration of rules. 7.30 p.m.

## Trade News.

### WAGES MOVEMENTS.

DUBLIN.—About 700 carpenters struck work on Monday. They demand a reduction in the working hours from 57 to 54 per week, with the existing scale of wages untouched, and this the employers feel themselves unable to yield, owing to the state of trade.

EXETER.—The first strike which has been known in this city for many years commenced on Monday, when the carpenters and joiners went out, owing to the masters having refused to increase wages to 6½d. per hour. The employers allege that the state of trade will not permit of any higher wages than at present, and business is now admittedly slack. Only about fifty men remain at work.

HAWICK.—The Hawick plasterers have granted the demand of their men for an advance of wages of from 6d. to 7d. per hour.

LIVERPOOL.—The operative plumbers of Liverpool, Birkenhead, and district ceased work on Saturday, as the employers did not concede the advance in wages asked for, 1d. per hour, they having had a reduction of that amount ten years ago.

SOUTH SHIELDS.—The operative bricklayers of South Shields, who have been on strike several weeks for an advance of wages to 9½d. per hour, have accepted the award of the arbitrators of 9d., and have returned to work.

WADEBRIDGE.—There is a strike among the stone-cutters at the works of the Eddystone Granite Company, Limited, De Lank. Recently a number of Italians were imported into the quarries as labourers; but having been put to work with masons' tools, an infringement of the society's rules was thus created, and about fifty Englishmen have ceased to work.

WEST HARTLEPOOL.—By an amicable arrangement, the bricklayers' strike at West Hartlepool has been brought to a satisfactory termination.

### CHIPS.

The President and Council of the Royal Academy have commissioned Mr. W. Reynolds Stephens to paint "a wall decoration" in the refreshment-room of the Royal Academy. The sketch for it obtained the prize for a decoration at the Academy Schools in 1887, and was exhibited at the Academy in 1888. The subject is "Summer."

Considerable additions have been made to the West Ham Union, Leytonstone, and special attention has been paid to the ventilation, the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

A brass lectern and oak lectern-stool have been made for Portchester Church by Messrs. Jones and Willis, from the designs of Mr. Graham Awdry, F.R.I.B.A., architect, of Westminster.

Mr. Hugh Symington, the railway contractor, died suddenly at his residence, Stewarton House, Coatbridge, on Tuesday night, in his 58th year. He successfully carried out work for all the Scotch railway companies, the Glasgow and Greenock Corporations, and the Greenock Harbour Board.

The United Presbyterian Church at Kilmacolm, N.B., was reopened for public worship on the 25th ult., after alterations and decoration. Mr. Alexander Gardner, Glasgow, was the architect, and the work of decoration was carried out by Messrs. A. and J. Scott, Glasgow.

On Saturday the large statue to the late Dr. Gregor, of Nairn, by Mr. Hutcheson, R.S.A., of Edinburgh, was unveiled. The day was observed as a half-holiday in Nairn.

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### TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BAYSWATER.—For the erection of new residence, Palace-court, Bayswater, W. Mr. A. Young, architect:—Oldrey, W., and Co. (accepted).  
(No competition.)

Bewcastle.—For new Presbyterian Church, Bewcastle, Cumberland. Mr. W. Marshall, Boothby, Brampton, architect:—

(Accepted tenders.)

Mason:—	
Kyle, G., Newcastleton	£239 0
Joiner:—	
Routledge, J., Dorrifield Brampton	280 0 0
Slater:—	
Murray, J., Newcastleton	36 10 6
Plasterer:—	
Ormerod, W., Carlisle	33 10 0
Plumber:—	
Murray, J., Newcastleton	21 10 0
Painter and glazier:—	
Penfold, J. W.	38 8 3
Total	£648 18s. 8d.

CARSHALTON.—For the erection of a house in Denmark-road, for Mr. E. S. Anstie. Mr. Seckham Witherington, F.R.I.B.A., 79, Mark-lane, E.C., architect:—  
Russell, Sutton (accepted)... £1,655 0 0



CHAIFONT ST. GILES, BUCKS.—For rebuilding the Three Crowns, for Messrs. Salter and Co., Ltd., Rickmanworth Brewery. Mr. C. P. Ayres, Watford, architect:—

Turner, T., Ltd., Watford ...	£372 0 0
Waterman, G. and J., Watford ...	818 0 0
Darlington, G., Amersham ...	810 0 0
Bates, J., Chorley Wood ...	790 0 0
Darvell, G., Chorley Wood ...	770 0 0

\* Accepted.

DUNSTABLE, BEDS.—For sanitary work at Red Lion, for Messrs. Benskin and Co., Cannon Brewery, Watford. Mr. C. P. Ayres, Watford, architect:—

Limbrey, J. H., Dunstable (accepted) ...	£102 18 6
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DUNMOW.—For house and offices, Dunmow, Essex, for Mr. T. Young. Mr. C. Pertwee, Chelmsford, architect:—

Parmenter, S. ...	£1,400 0 0
Letoh, W. ...	1,390 0 0
Brown, A. (accepted) ...	1,375 0 0

All of Braintree.

EDINBURGH.—For constructing compensation works at Threipmuir, for the Water of Leith Commissioners:—

Young and Son (accepted) ...	£7,167 1 10
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(Lowest of eight tenders received.)

EDINBURGH.—For the construction of new West Princes-street Station, for the Caledonian Railway Company:—

Kinnear, Moodie, and Co., Iona-street, Edinburgh. (Accepted.)	
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FOREST GATE.—For the extension of the Forest Gate Sanitary Steam Laundry, in Upton-lane, E., for Mr. B. L. James. Mr. W. C. E. Styche, Harlesden, N.W., architect:—

Gregor ...	£1,721 0 0
Sharp, G. ...	1,390 0 0
Hosking, G. ...	1,339 0 0
Yates, J., and Co. ...	1,190 0 0
Neil, W. ...	1,172 0 0
North Bros. ...	1,108 0 0
Watson, W. ...	1,044 0 0

Boiler setting and chimney stack:—

Noble, W. ...	263 0 0
Howlett ...	249 0 0
Lema Bros. ...	198 0 0
Watson, W. ...	190 0 0
Neil, W. ...	178 0 0
Yates, J., and Co. ...	172 0 0

LEIGHTON BUZZARD.—For a detached residence in Grove-road, Leighton Buzzard, for Mr. T. H. Bishop. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, Kent, architect and surveyor:—

Garside, G., Leighton (accepted) ...	£881 0 0
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(No competition.)

KENSAL GREEN.—For the erection of mission house, dispensary, and boundary walls in Kensal-road, W. Messrs. R. Pite and Son, 5, Bloomsbury-square, W.C., architects:—

Martin and Barkley ...	£1,657 0 0
Treasure ...	1,521 0 0
Sealy ...	1,457 10 0
Yeates ...	1,420 0 0
Barrett and Power ...	1,368 0 0
Gregory and Co. ...	1,357 0 0
Oliver and Richardson ...	1,333 0 0
Smith, J., and Son ...	1,329 0 0
Oldrey and Co. ...	1,292 0 0
Scharien and Co. ...	1,237 0 0
Chinchen ...	1,173 10 0

LONDON, S.W.—For alterations, &c., to the Old Bag O'Nails, Buckingham Palace-road, S.W., for Mr. H. Guest. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Prestage and Co., Fimlico ...	£393 0 0
Godden, S., Bryanston-square* ...	350 0 0

\* Accepted.

LONDON, W.C.—For alterations, &c., to the Fountain, Newcastle-street, Strand, W.C., for Mr. F. A. Rhodes. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Mark, F., Edgware-road ...	£463 0 0
Burman, H., and Sons, Kennington Park ...	460 0 0
Godden, S., Bryanston-square ...	435 0 0

\* Accepted.

LONDON, S.E.—For alterations, &c., to the Garibaldi, Blackfriars-road, S.E., for Mr. W. Gibbs. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Godden, S., Bryanston-square ...	£1,500 0 0
Mark, F., Edgware-road ...	1,450 0 0
Burman, H., and Sons, Kennington-park ...	1,429 0 0
Mills, J., Blackfriars (accepted) ...	1,345 0 0

NANTWICH.—For laying a water main extension in White Horse-lane, for the rural sanitary authority. Mr. Davenport, surveyor:—

Wood, J., and Son (accepted).	
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NEWCASTLE.—For alterations to stable buildings. Messrs. Plummer and Burrell, Newcastle, architects:—

(Accepted tenders.)	
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For paving, drainage, &c.:—

Maucklin, J., Newcastle ...	£125 2 3
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Alterations to yards, stable, &c.:—

Scott, G., and Sons ...	111 10 0
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Stable alterations:—

Scott, G., and Sons ...	31 10 0
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MEVAGISSEY.—For an organ to be placed in the parish church:—

Hele and Co., Plymouth (accepted) ...	£230 0 0
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NEWPORT, MON.—For Phoenix Foundry, for Messrs. Morley and Carney, James-street, Mr. A. Swash, M.S.A., 3, Friar's-chambers, Newport, architect:—

Lock, C. ...	£485 10 0
Moulton and Browncombe ...	479 0 0
Gradwell, W., Exors. of ...	455 0 0
Richards, E. ...	440 0 0
Linton, J. ...	431 0 0
Jonas, W., and Son ...	410 0 0
Morgan and Roberts (accepted) ...	363 4 2

All of Newport.

NEWPORT, MON.—For house, Potter-street, for Mr. E. Simmons. Mr. A. Swash, M.S.A., 3, Friar's-chambers, Newport, architect:—

Prosser, T. ...	£583 7 2
Pice, W. ...	577 7 0
West, C. ...	550 16 0
Moulton and Browncombe ...	515 0 0
Webb, T. ...	510 0 0
Richards, E. ...	500 0 0
William, R., and Son ...	459 0 0
Morgan and Roberts (accepted) ...	458 0 0

All of Newport.

NEWPORT, MON.—For premises, for the Diamond Patent Fuel Co., Ltd., Portland-street. Mr. A. Swash, M.S.A., 3, Friar's-chambers, Newport, architect:—

Morgan and Roberts ...	£343 0 0
Price, W. ...	334 0 0
Matthews, J. ...	325 5 0
Richards, E. ...	275 0 0
Moulton & Browncombe (accepted) ...	259 0 0

All of Newport.

ORPINGTON.—For additions and alterations to private house at Orpington, Kent. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, architect and surveyor:—

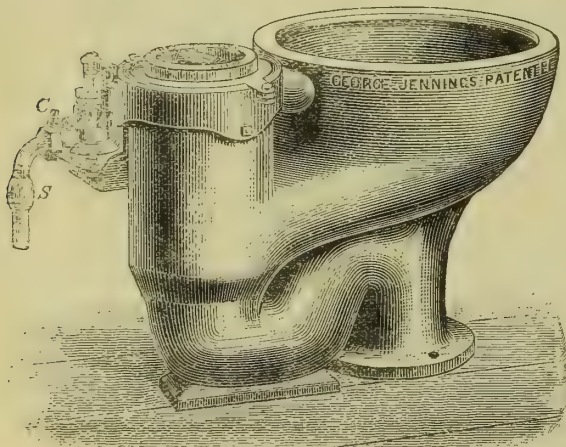
Holt, W., and Son, Croydon ...	£215 0 0
Somerford, H., and Son, Clapham ...	215 0 0
Owen, W., Farnborough (accepted) ...	198 0 0

ORPINGTON.—For additions and repairs at a private residence, Orpington, Kent. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, architect and surveyor:—

Taylor, W. R., Orpington ...	£133 0 0
Somerford, H., and Son, Clapham ...	110 0 0
Holt, W., and Son, Croydon ...	105 10 0
Lowe, R. A., Chislehurst ...	99 18 0
Payne, D., Bromley ...	98 0 0

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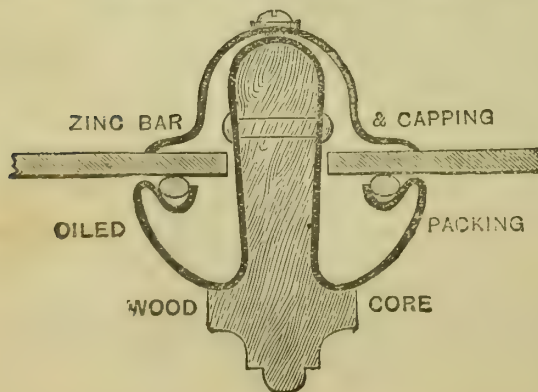
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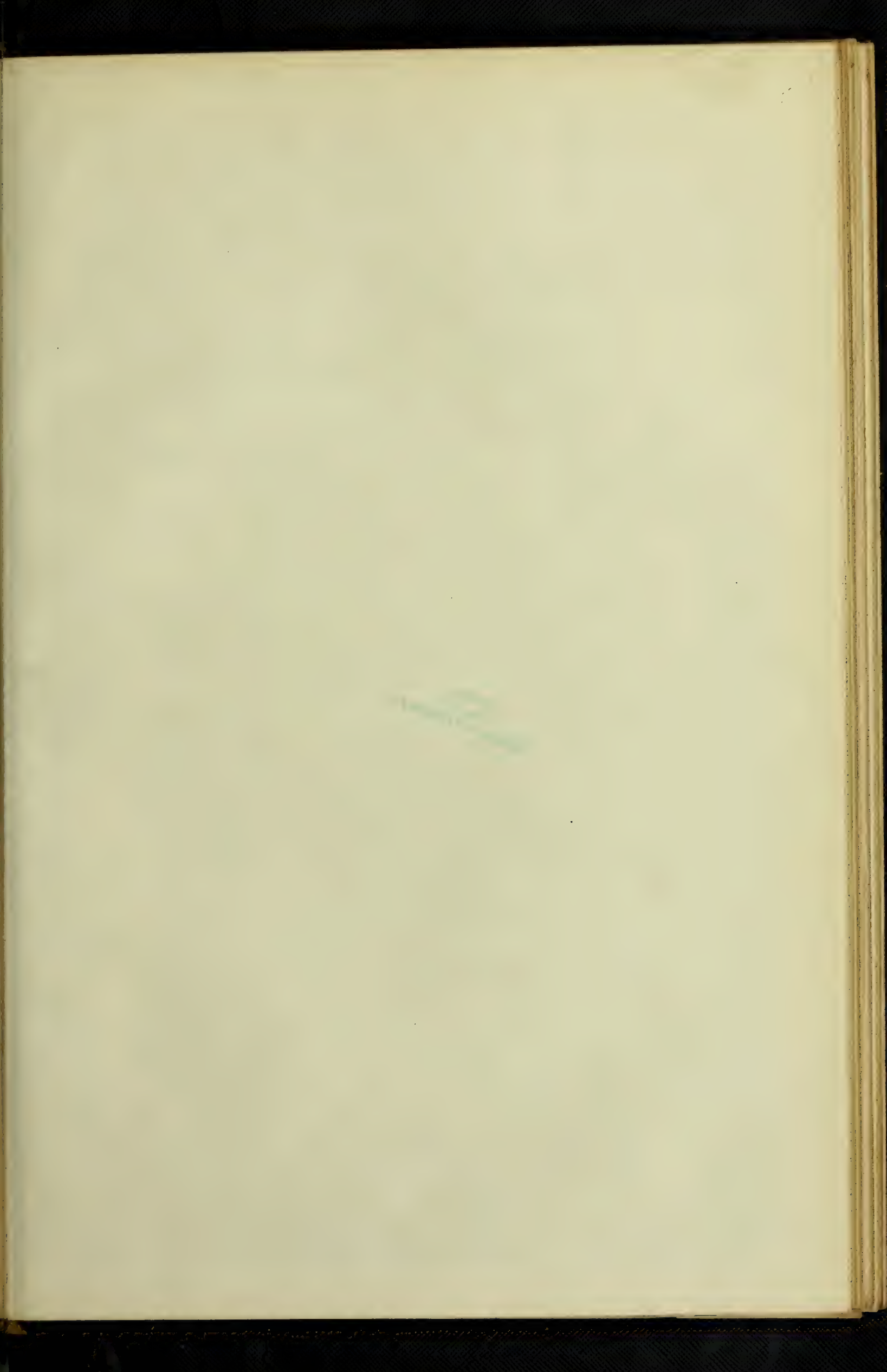
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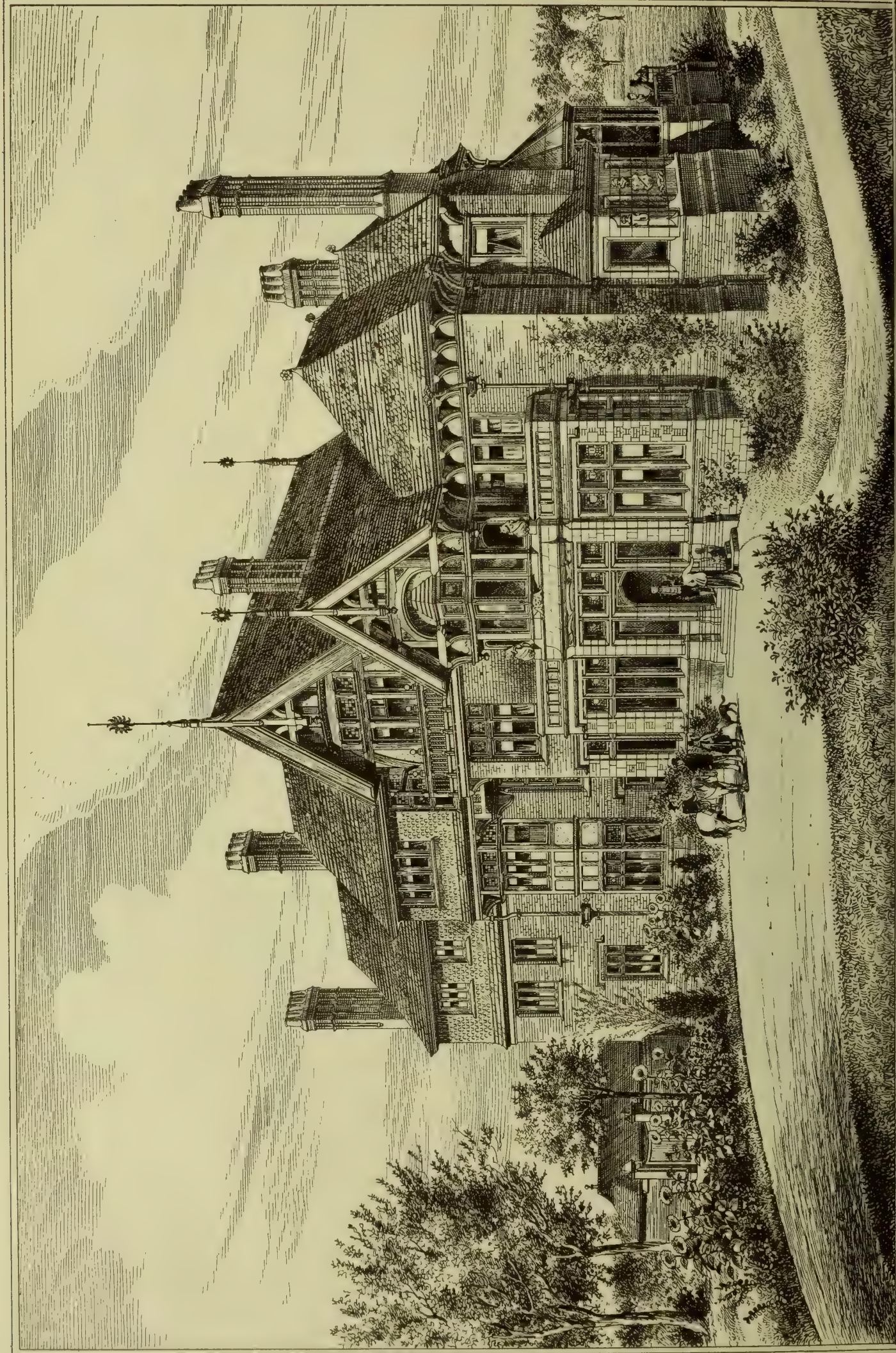
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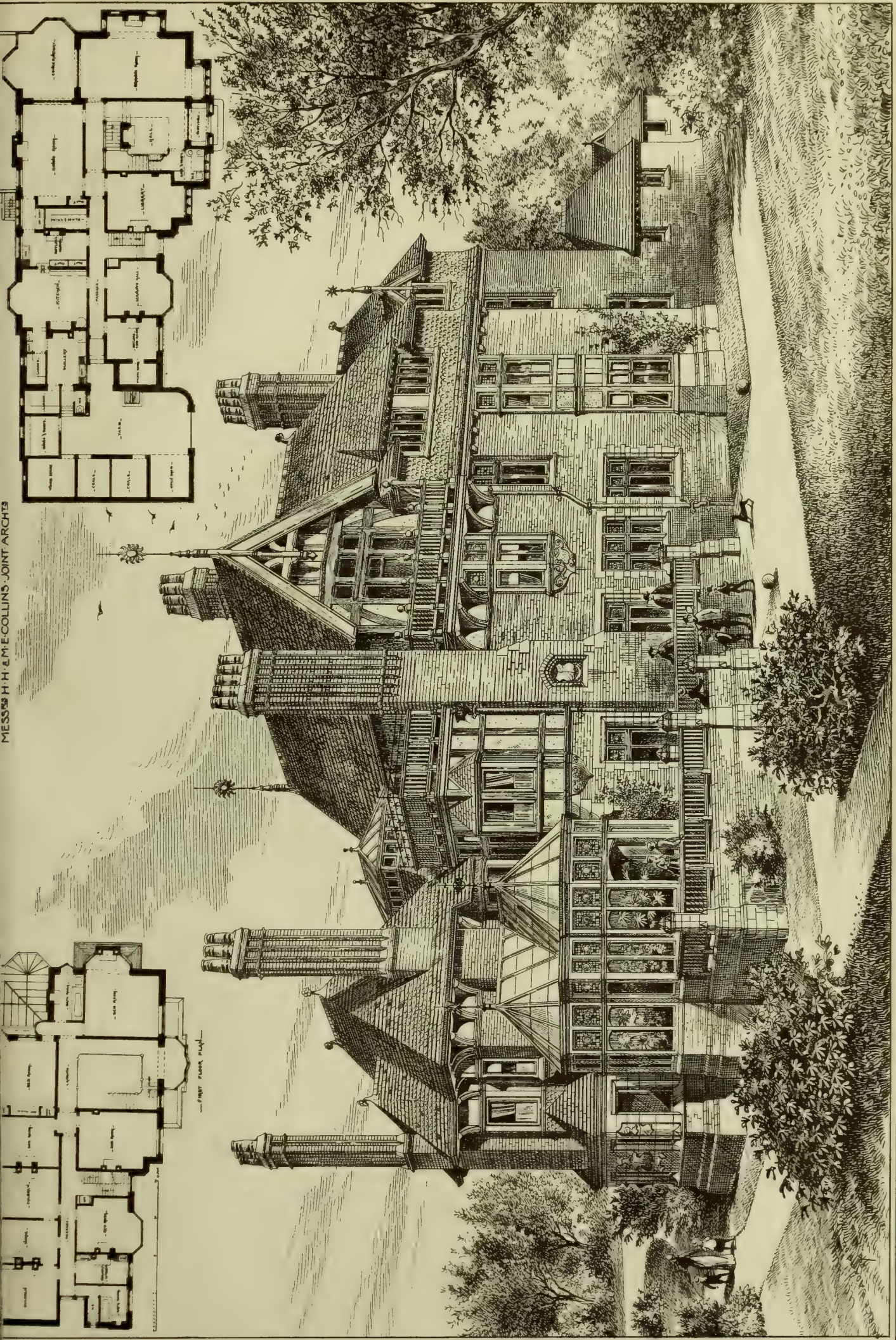




THE BUILDING PEWS, JUNE 6, 1890.









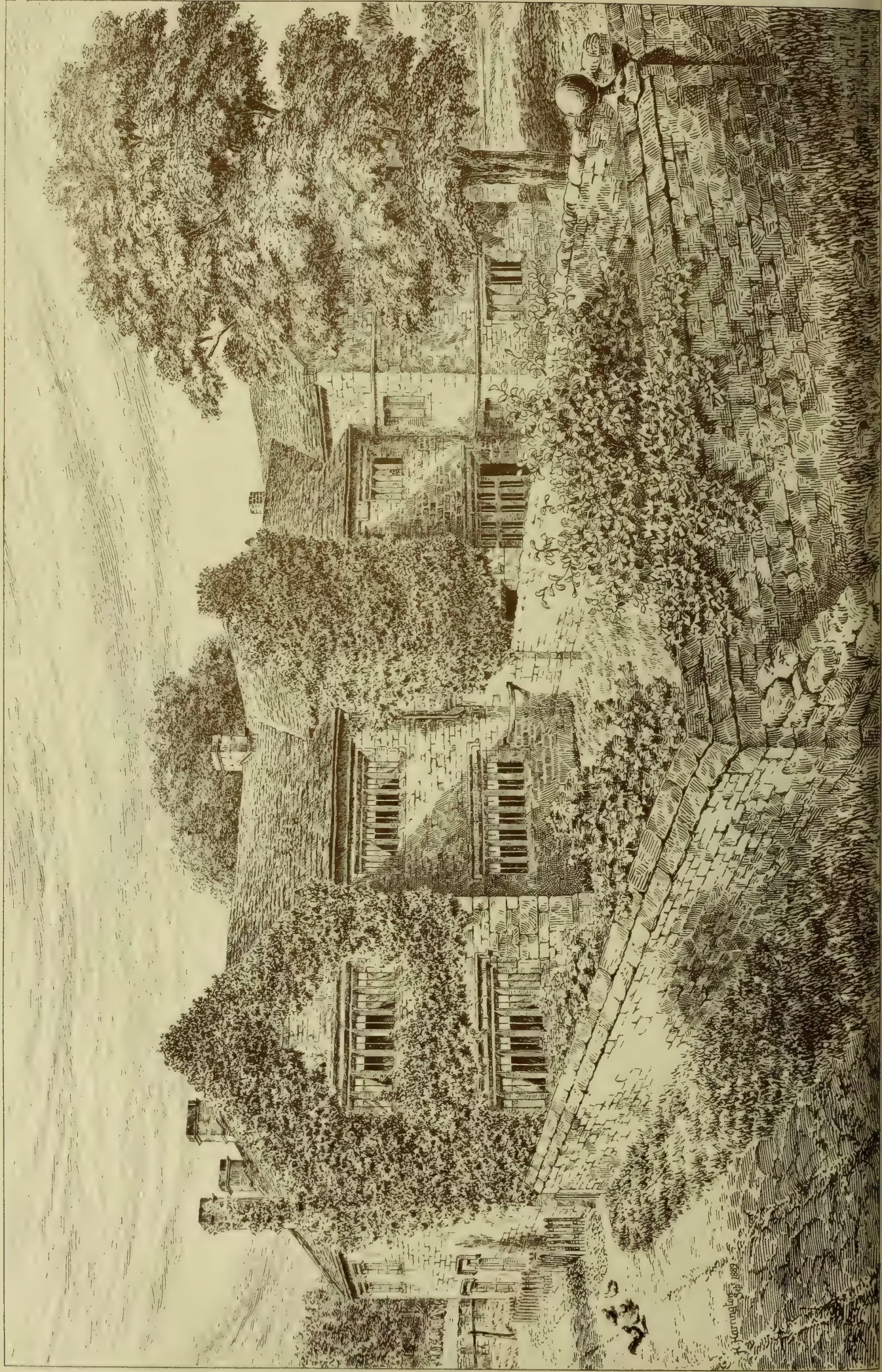








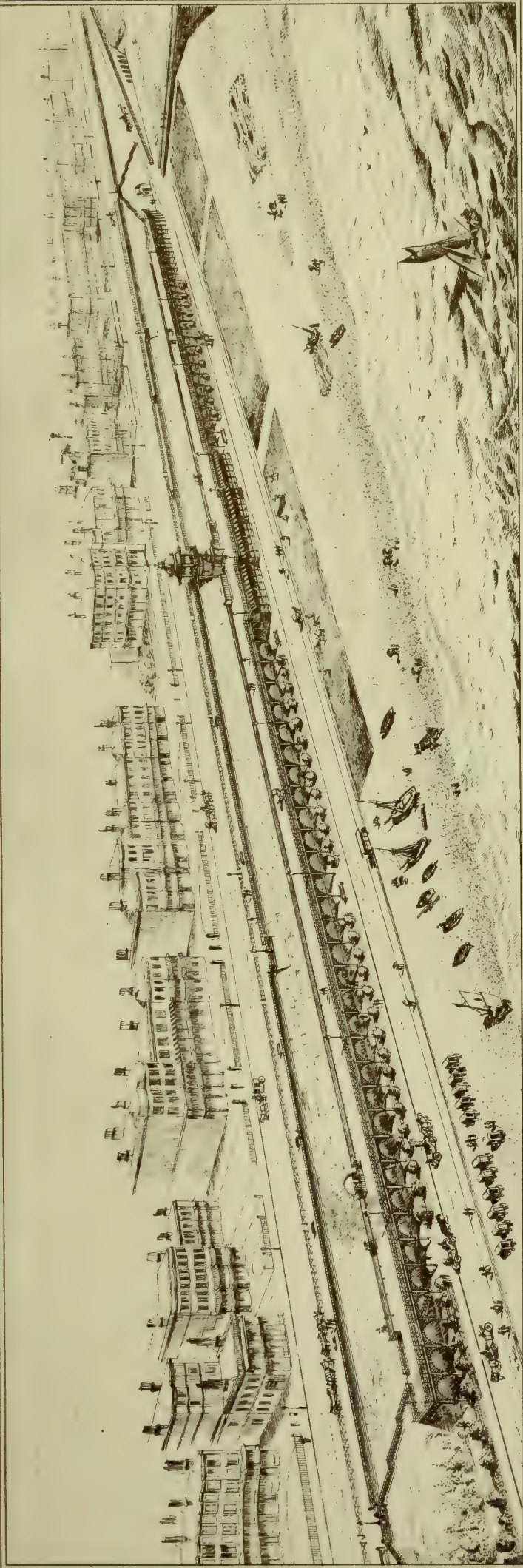
THE BUILDING NEWS, JUNE 6, 1890.



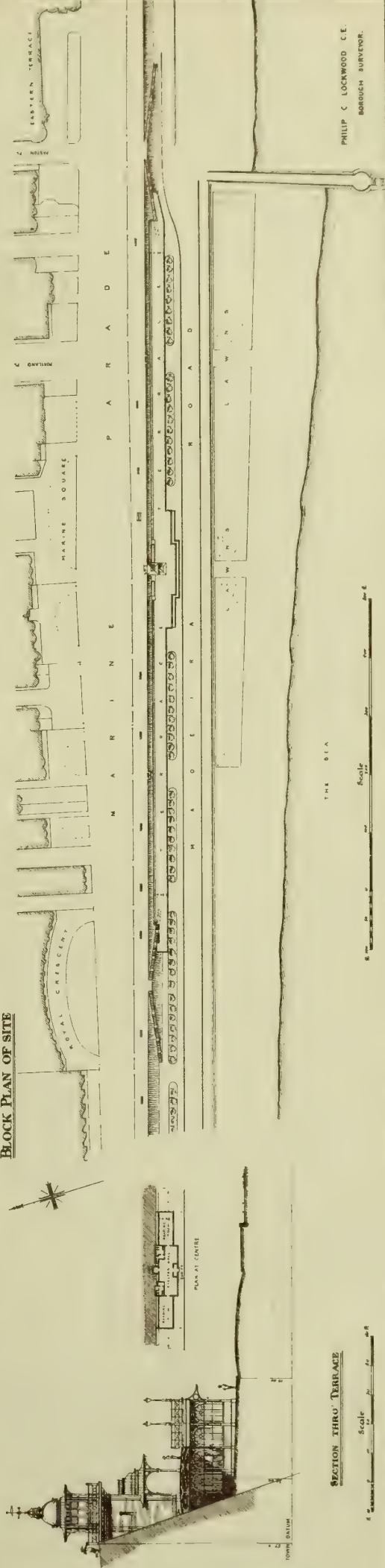
H. Harrington 1889



PROMENADE, TERRACE, COVERED WALK, SHELTER HALL & HYDRAULIC LIFT ON THE MADEIRA ROAD BRIGHTON.



BLOCK PLAN OF SITE



OPENED MAY, 1890.

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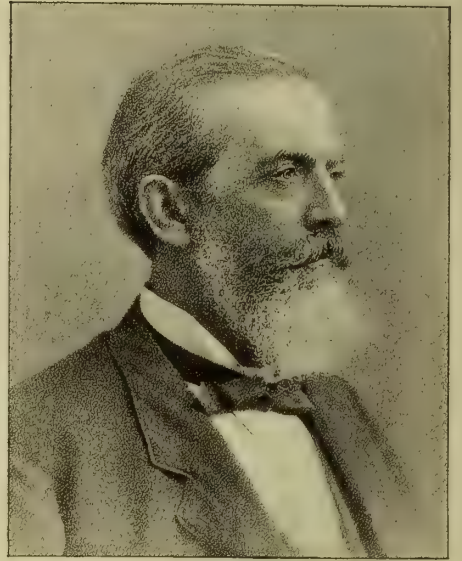
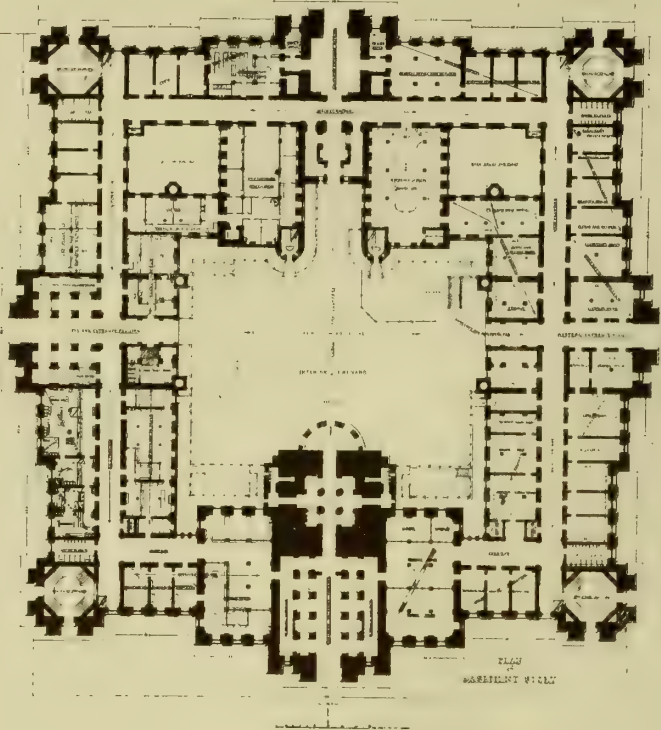












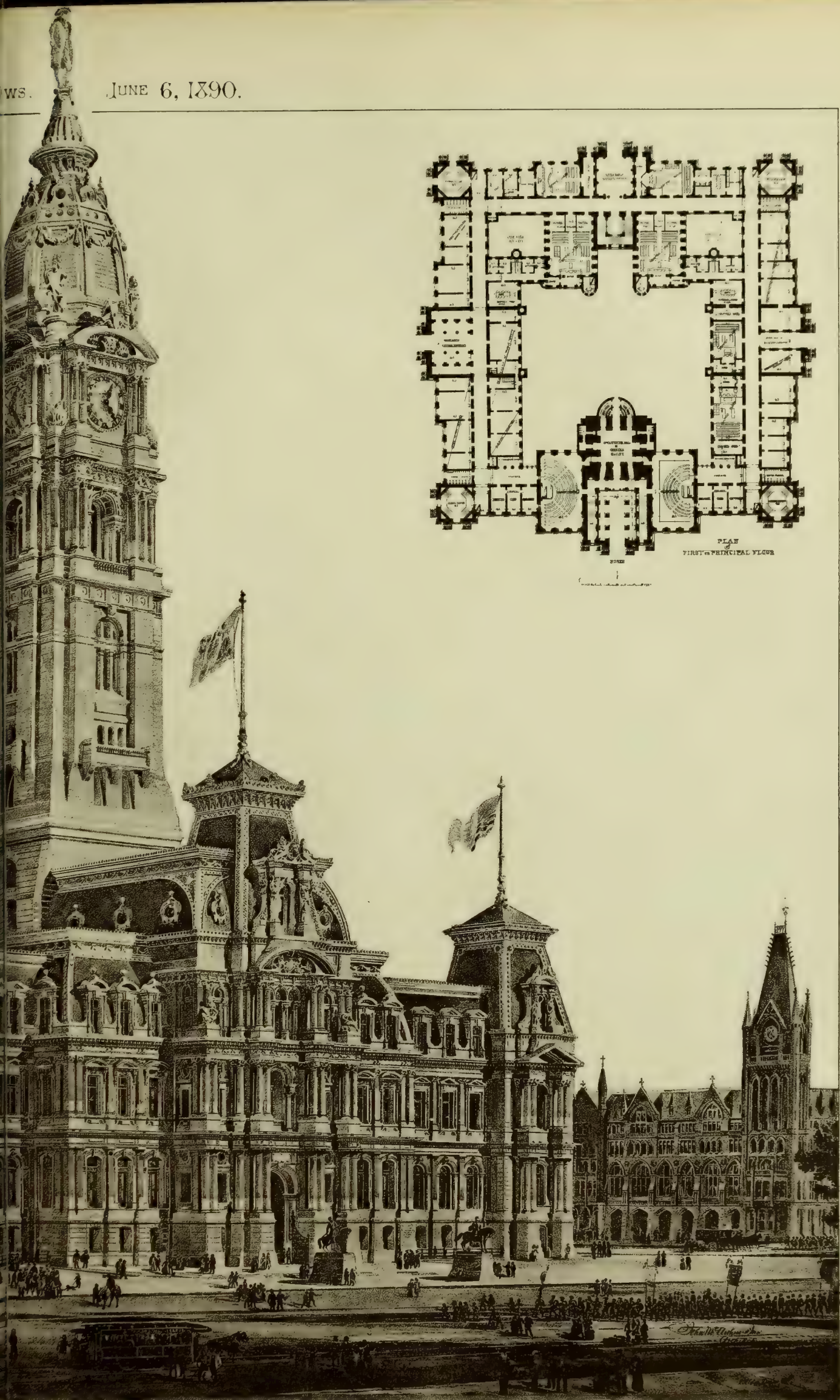
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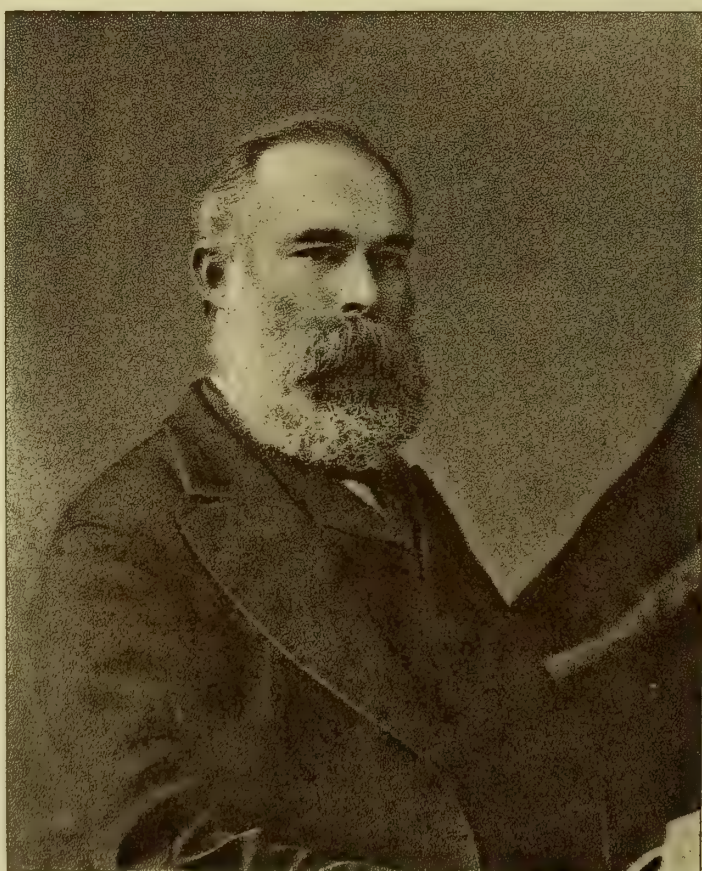


*Henry Wm Bull*

MR HENRY W<sup>M</sup> BULL (MESSRS BULL & SONS SOUTHAMPTON)



MR EDWARD C BULL



*B E Nightingale*

MR B. E. NIGHTINGALE (ALBERT EMBANKMENT)



MR HENRY LOVELL



JUNE 13, 1890.



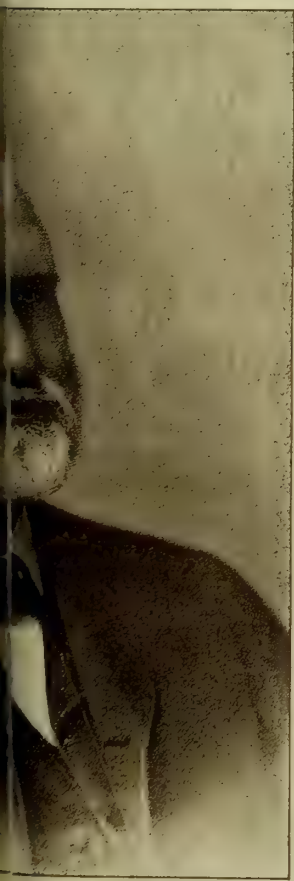
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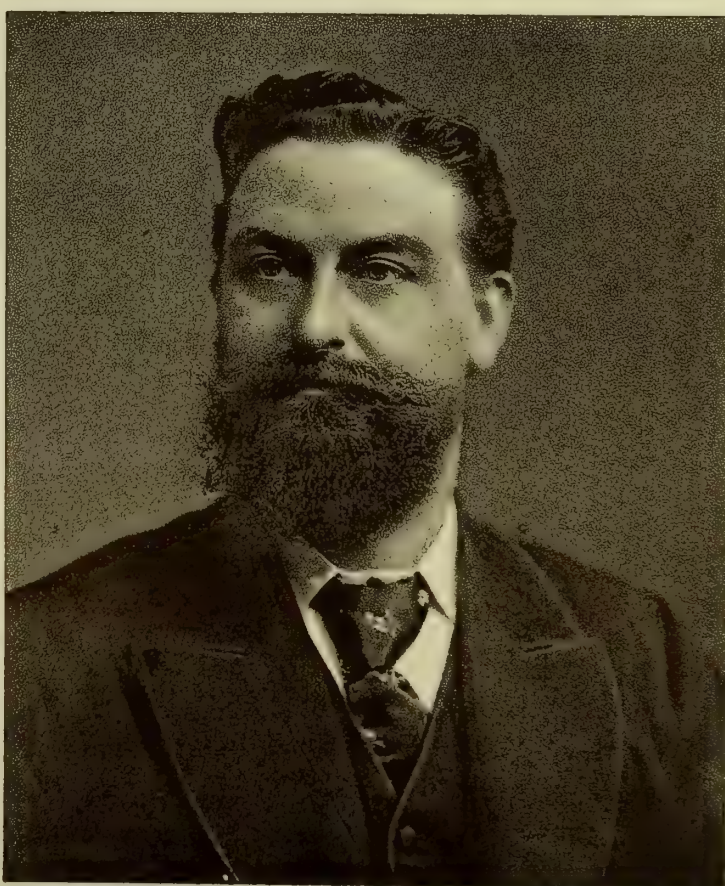


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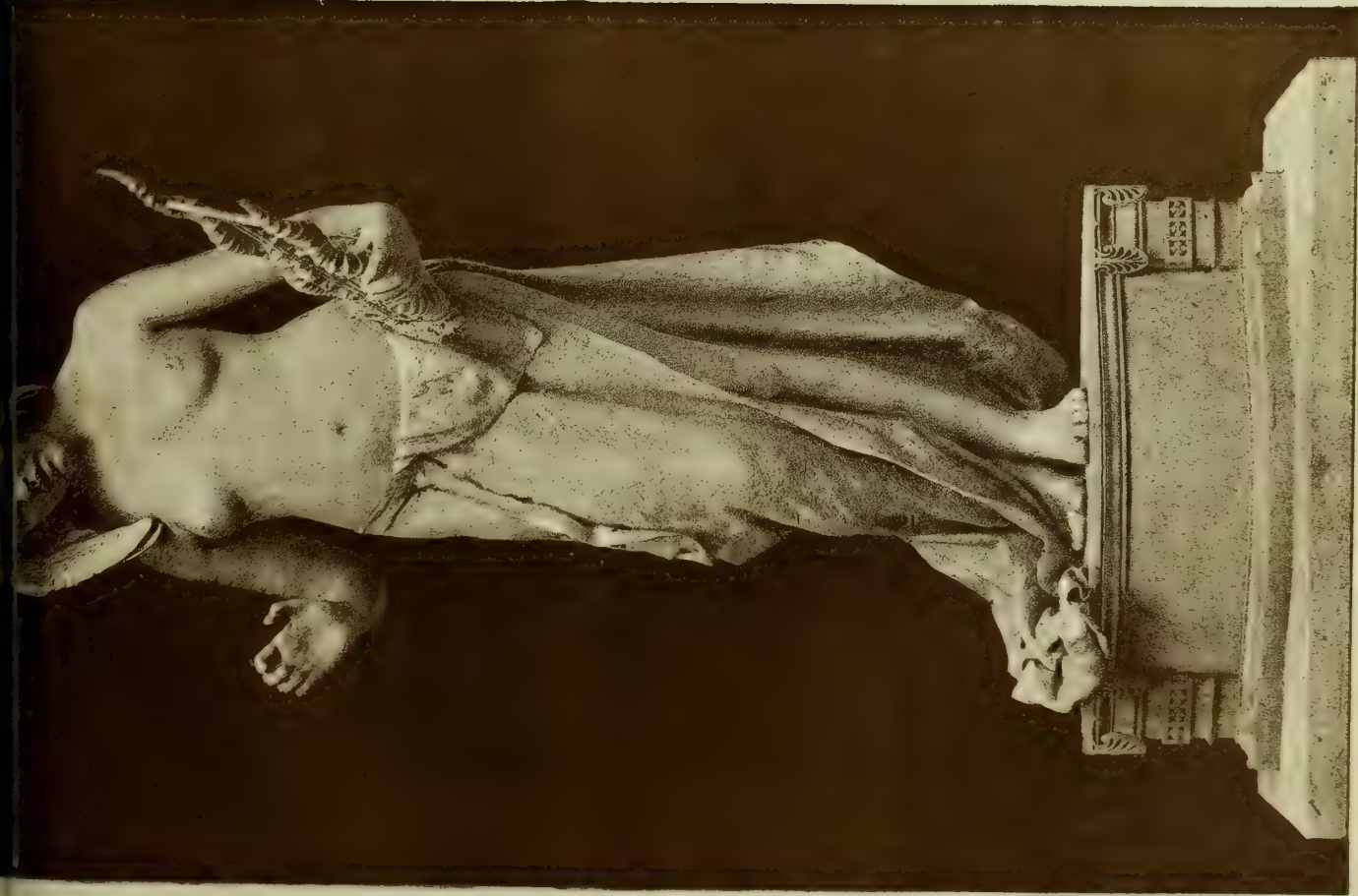


"LIFE AND DEATH" BY FRANK FISHER.



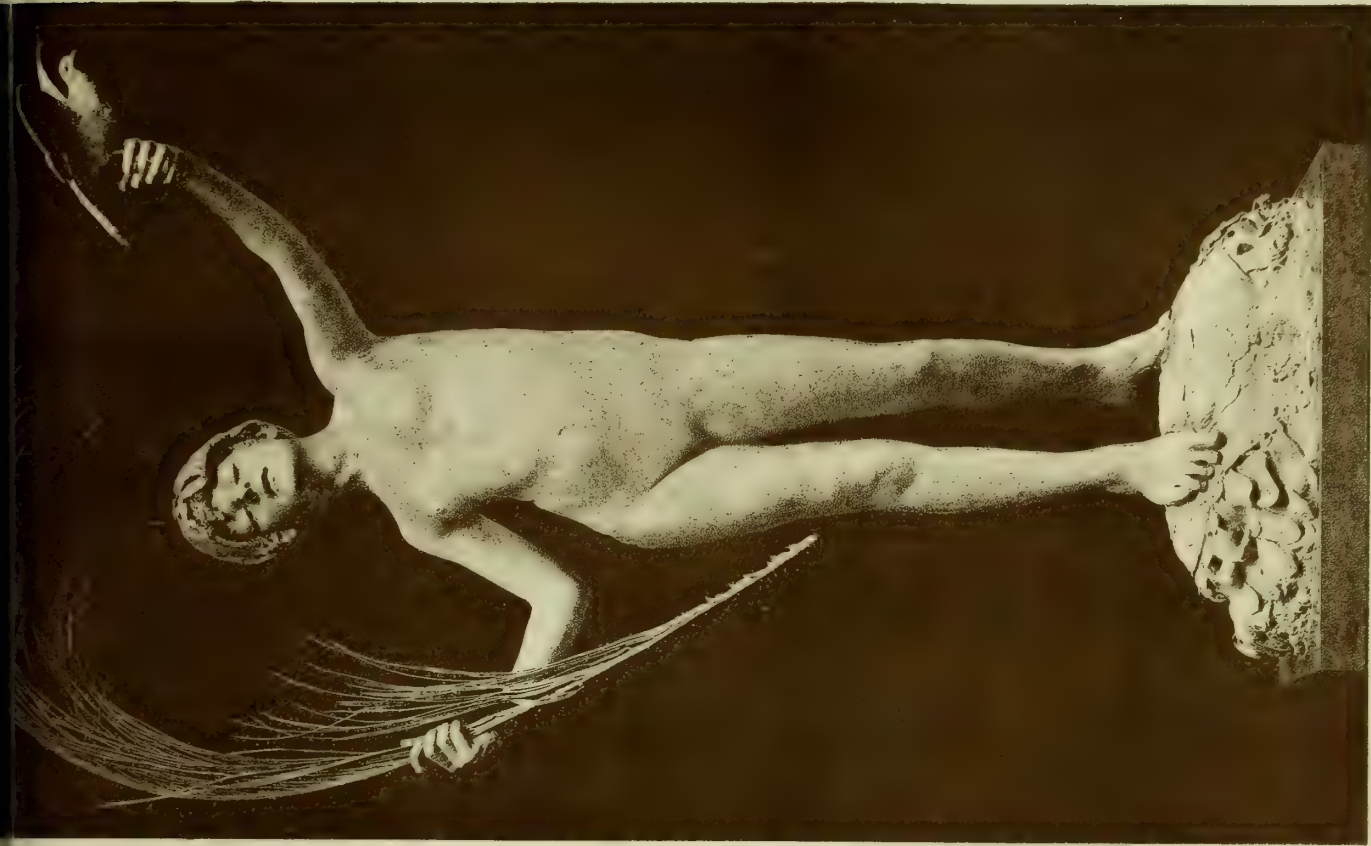
CHARLES GEORGE GORDON BY E. ONSLOW FORD. A.R.A.





"MUSIC" BY E. ONSLOW FORD A.R.A.

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SCULPTURE AT THE ROYAL ACADEMY 1890







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1849.

FRIDAY, JUNE 13, 1890.

## WHAT TO SPECIFY.

A SKILFULLY studied design may be seriously impaired by a slipshod or negligently written specification. Good outline, proportion, well-arranged plan, and masterly details may be shown in a set of drawings; but unless the intentions of the architect are known and expressed, the executed building may fall considerably short of the standard proposed. What is it that people admire and talk about in a new building? Is it not the costliness of the material, the beauty of the design in detail, the handsome fittings? But none of these things are possible if they have not been described and inserted in the contract. It is not what the architect shows in drawings, but what he includes in the contract, that makes the result. In one word, the specification and the quantities are the potent factors in the successful carrying out of every building. Perhaps if the profession looked at the matter in this light they would be less eager to show on paper what they cannot fulfil, and there would be less of that "tall talk" about the superiority of architects over the surveyor's functions—we mean the *infra dig.* character of quantities. After all, it is what is put in the building—not that which is represented—that makes it. The line between design and execution has been so sharply drawn of late years—all that belongs to the one being deemed "high art," all that belongs to the latter mere "trade"—that we are not surprised to find the evil of unrealised expectations. The same line of separation has been drawn between architects and workmen, between designers and manufacturers. Each has no interest in the other, and the consequence is that opposite interests have made genuine art impossible.

To correct this unfortunate tendency as it regards architecture, we must try to bring back the connection between design and workmanship. The specification is the great link which connects the architect to the workman and manufacturer, and as everything that is to appear in a building must be detailed in the quantities, so it must be first described in the specification. Yet this document is far from being a valued branch of the young architect's education. It is a common remark that for a dozen architects who can draw, scarcely one can write a specification. We are glad to see that in the contemplated reconstitution of the classes of the Architectural Association, the subject of specification writing will be made a particular object of study. It may be useful in this part of the question if we remark on the evident connection there should be between this study as a distinct branch of practice and instruction in the building trades. We should certainly make the art of specification writing a distinct study, but it ought to be led up to by a course of instruction intended to prepare each student for specifying each trade, remembering that such instruction should not be general or applicationless, but directed to a definite problem or building. General classes of instruction in building, science, or trades, useful though they are, are of not much value in teaching the student what to specify in a particular trade or a building of a special kind. He wants, for instance, to know how to specify the fittings required for a church or school; what and how to specify for a public library or a museum, a system of heating or of ventilation. General know-

ledge of bricklayers', carpenters', masons', or plasterers' work will not do this. We should recommend a class of instruction in fittings alone, in which the student will be taught to know the requirements and dimensions of church seats and benches, stalls, prayer-desk, and pulpit; or of school benches and desks, technical school joinery, such as demonstration tables, sinks, draught and hot closets, lecture theatres, and other details of laboratory teaching. Library fittings, desks, tables, and bookcases would form another branch; museums, hospitals, laundries, and other classes of buildings of a technical kind a third; each have their special requirements demanding attention in these details. Again, skylights and windows, swing doors, sanitary fittings, plumbers' work, are matters about which instruction is required before a proper specification can be written. Each of these branches of workmanship ought to form special objects, or courses of lectures, on which the students be required to write specifications before passing an examination, showing their knowledge of them. The specifications would necessarily be accompanied by detailed drawings or sketches. A scheme of architectural instruction ought to include all these as well as architectural details and decoration.

Having so far digressed upon what we hold to be an essential branch of the architect's education, we now refer to the system or method of specification writing. Mr. Rickman, in a paper read before the Sheffield Society of Architects some time ago, observed that drawings or specifications required synthesis, or putting together, and quantities analysis, or pulling to pieces; but, in fact, a specification and a bill of quantities require equally the exercise of both functions of the mind, for a man must, in each trade case, grasp the whole of a certain as well as take it to pieces. Attempts have been made to classify specifications; grouping all belonging to a particular structural portion as Walls, Floors, Roof, to describe the work in reference to structure not as to trades; but we fancy the old method of grouping in trades is more convenient and practical. The chief advantage of a scientific classification is that it would be more helpful to the memory in associating one thing with another, as, for example, rafters, boarding, felting, and slating, with the roof. But the old plan of specifying each trade allows the distribution of the written instructions to those who have to do the work or to give a price, and has undoubted practical advantages. The conventional order is known, and little advantage would be derived from any change. What we, however, wish to enforce is the desirability of a system in specifying, the importance of describing correctly and completely, and the evidence of more knowledge of certain descriptions of work. The courses of lectures and classes to which we have referred are the means to this end. Now the architect who has entered into practice and begins for the first time to write a specification hardly knows how to commence, and what to describe. He takes an old specification as a guide. About many things and details he is quite at sea, and he therefore contents himself with the hackneyed formula which covers his ignorance, "Provide and properly fix somebody's range or bath at so many pounds prime cost"; or "Fit up in a complete manner as per drawings the church benches of 1½ in. wrought rounded seats, with proper bearers, &c.," the whole of the detail being thrown on the drawings, which may be very inadequate for the purpose of estimating from, certainly insufficient to work from. Very much is left to the builder or the joiner in framing, especially if there are no detail drawings supplied. The descriptive powers of some architects are certainly very defective and often amusingly curt. What can be made out of the ordinary phraseology for a door or a cup-

board? The description merely gives the thickness, number of panels, and kind of mouldings or framing intended; but not the slightest idea can be formed of the proportion of the panels, their division, or the design. A marginal sketch would give all these particulars, if supplied; but as a rule the joiner has to form his own conception. The specification should, at least, describe what it does not show by sketch, or refer to in drawings. Thus the dimensions of the door should be given, the number of panels, and the heights of panels, and widths of rails, so that the intended division of the panels may be understood. A church bench or seat should be sketched, if not referred to a drawing, the thickness of framing and bench ends and seats should be stated, the height and width of seat, whether the back is vertical or sloped, the width between the backs, the top rail. It would be far more sensible to describe what is really wanted in plain English terms, stating, for example, that the seats are to be 14 in. wide, fixed on bearers so many feet apart, the backs to be inclined (if they are high) to a slope of 1 in 8, a clear width of 3 ft. being obtained between the backs, which are to be of a stated height, every additional inch in height making it necessary to increase by so much the width between, than in a formal sentence, which describes very imperfectly a thickness or two, and throws the whole matter upon the drawings. What we say is that the specification should describe in general as well as in particular terms, unless a detail is supplied. The material, the thicknesses, and the general dimensions of all fittings ought to be made clear.

If these remarks are considered just in respect of ordinary specification provisions, they are still more applicable to the specification of special fittings and trades such as those we have named. All essential points in their design or construction should be made clear. Thus the section of meeting stiles and rails for a French casement to enable it to keep weather-tight, the kind of weather-bar and bolt for closing the casement, are points that should be particularly described, if not shown by a sketch. A special fitting, such as a laboratory table or a draught closet, ought, of course, to be drawn to a large scale, so that its general form and arrangement can be understood. Its details should be specified. For these purposes the architect should obtain information from those best able to give it—the professors who have to teach chemistry, physiology, or engineering; they alone can say what is required and describe the sort of fitting necessary. The draught closet of a chemical laboratory requires a particular description of materials, such as the slate slabs or lead-lined top, to resist chemical agents or heat, the requirements for carrying away liquids, the material of roof of the closet, such as galvanised iron; the draught flues for carrying away the fumes, assisted by Bunsen burners, as used at Owens College, and fresh-air inlet to the bottom of closet. Then the dimensions of length, height, and width of closets should be given, also the fastenings, ironmongery, porcelain fittings. Two or three lines of specification devoted to a special fitting of this kind are useless, and it would be far wiser to let a specialist of respectability describe his own work. Engineers, smiths, and ironmongers' goods are particularly open to imperfect description. The ordinary clauses inserted describing horticultural buildings, conservatories, heating-apparatus, and ventilation schemes contain very little, if any, useful information of the requirements, and therefore the employer obtains just what the builder supplies. Each of these things require a technical knowledge and a number of specified particulars. A valuable mode of arranging information of this kind is to keep a commonplace book, such as described by Mr. John Leaning in



his useful articles on "Building Prices"; but not merely for prices, but for actual details. The information so gained can be classified—materials, construction, dimensions, and details. The specification writer should supplement, not necessarily repeat, what has been furnished in the drawings and details. Thus in the decorative trades such as parquetry, mosaic paving, stained glass, or decorating to walls and ceilings, clauses ought to give instructions as to the foundation for laying, thickness of parquet or mosaic, describe the woods or marbles, and how they are to be laid, the special kind of decoration in every case, naming the firm and the trade price if it is a certain pattern. The ordinary clause merely gives the work required, and leaves both surveyor and builder in uncertainty as to what is intended—a favourable opportunity for speculation and trade profits. Therefore, it is in the best interests of the profession and the trades that the specification should have more attention bestowed upon it, that architects should endeavour to realise the points of a good specification. In the main these are (1) materials, including all knowledge of quarries and timber brands; (2) dimensions, involving a technical knowledge of various fittings; (3) thickness and details; (4) specialities and patented improvements; (5) the names of reputed firms of manufacturers; (6) prices; all of which are required to enable a proper specification to be prepared.

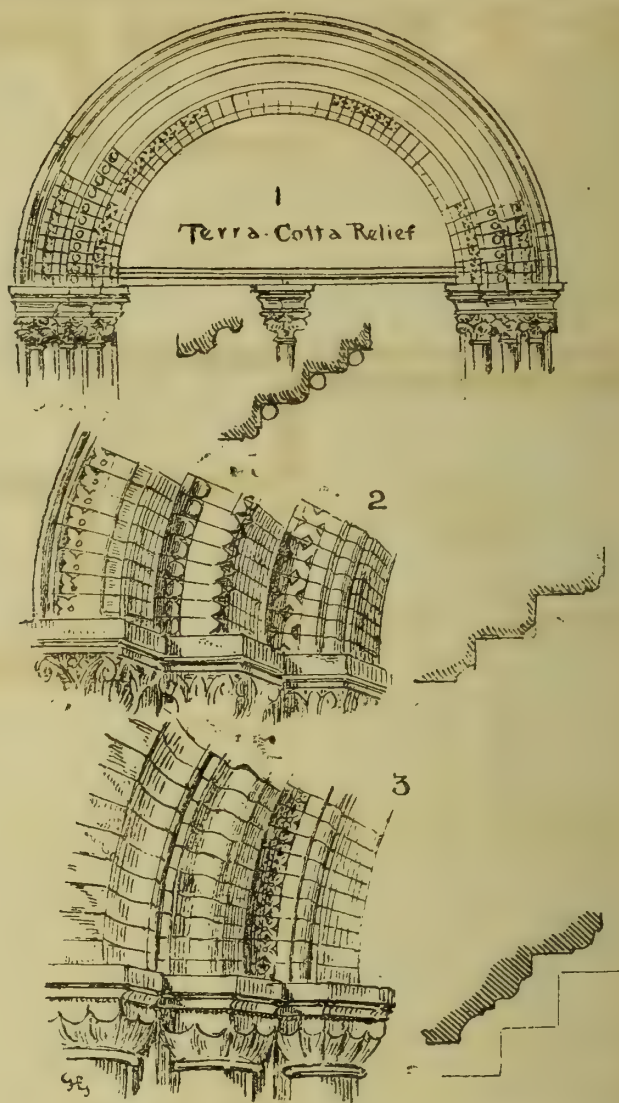
#### ARCHITECTURAL BRICKWORK.— XXXV.

##### ORNAMENTAL ARCHES.

IN our last article we gave a few examples of the proper treatment of ornamental brick voussoirs, and we said that the ornament or diapers impressed on them should not cover the face or be close to the edge, but form a band of ornament in the arch with a plain margin on each side. In sketch 1 we give a further example of this treatment from an actual building—a Romanesque doorway. There are three members recessed one within another; the upper or outer ring has a trefoil leaf beneath the label moulding. The second ring has a band of circles, and the inner, or third, ring a four-petalled flower in relief. All three ornaments have a plain margin of brick on each side. A detailed sketch of a portion of arch is shown in Fig. 2, with the section of arch-members; also the section of jamb, with shafts in the angles. Each member, or ring, consists of alternate headers and stretchers. In specifying arches, which are to have ornamental voussoirs, it is necessary to select the pattern or to make a drawing full size, specifying the diameter and radius of the arch, and give a detail drawing of each brick. Sketch 3 is a design for a moulded arch with a band of diaper ornament on the lower member. Such an arch would be suitable for a church arcade. The outer members are bold mouldings, which, by contrast, set off the inner enrichment.

##### MODERN EXAMPLES.

Good modern examples of ornamental red brick arches and terracotta are those over the windows of the Economic Assurance Company, New Bridge-street, Blackfriars, designed by Mr. Ewan Christian. The ground-story windows are very effective; the principal arch rings, semicircular in form, are composed of brick voussoirs, the joints of which are broken by small squares of blue terracotta set diamond-wise. A bold edge moulding runs round the under edge of this arch, the soffit of which is enriched by a series of small coffers and pateras in bold relief. The upper windows have three recessed arch rings, each ornamented by foliage in bold relief both on the face of arch and on soffit.



Arches of this description have a high decorative value in the facades of brick buildings. The effect of the panelled soffit is to give lightness and richness to the arch, and this kind of enrichment can be increased to almost any degree by two or three members similarly treated. We can name many recent works of this description on mansions and other buildings. The arches to the ground floor of the Green Park Residential Chambers, Piccadilly, those to the large block of residences near the Albert Hall, designed by Mr. Norman Shaw, and the entrance and loggia over of a house in Upper Grosvenor-street, are examples of moulded arches with panelled soffits. The large red-brick block of insurance offices at the corner of Pall Mall and St. James-street, by Mr. Norman Shaw, R.A., comprises some very effective moulded brick arches on the ground story, in which some excellent cutting is seen in the intersection of the arch members on the piers or jambs. These and other modern examples are worth the study of the young architect and brick-cutter. A very piquant and beautiful example of brick-cutting is the dying away of each member of a moulded arch against a splayed jamb, or into an octagon pillar. Of course, considerable skill and nicety is required in executing the intersection—each round, ovolo, and hollow or fillet, has to die out on the plane.

##### FOREIGN EXAMPLES.

It would be exceeding the limits of the present articles to describe the many notable instances of brick arches of the kind we are describing. The Low Countries, North Germany and North Italy, are the principal countries in which brick architecture has

been developed, in any of which the student will find the art of arch cutting and moulding has been carried to a perfection. Take, for example, the arch-work found in such a city as Ypres in Belgium, and applied not only to archways, but to window-heads and tracery, one or two instances of which we have already given.

The courtyards or cortiles of many Italian palaces, such as that of the Palazzo Bevilacqua at Bologna, have arcades round them often of two stories, the arches of which are of red terracotta voussoirs, with an ornament on the face and in panelled soffits. Very beautiful examples of Gothic brick arches inclosing three lights of trefoiled arches occur in many of the Venetian and Sienese palaces;—at Siena the brick arches of windows in the Palazzo Buon-signori. Bands of red and white brick-work are common in the wall surfaces, and we might name the cathedrals of Orvieto and Como, the latter of marble, each having three fine circular-headed and enriched doorways, suggestive of the decorative work of this material. Sta Maria of Strada affords another instance of a highly embellished exterior in brick and terracotta, sketches from which we may give, if space permits.

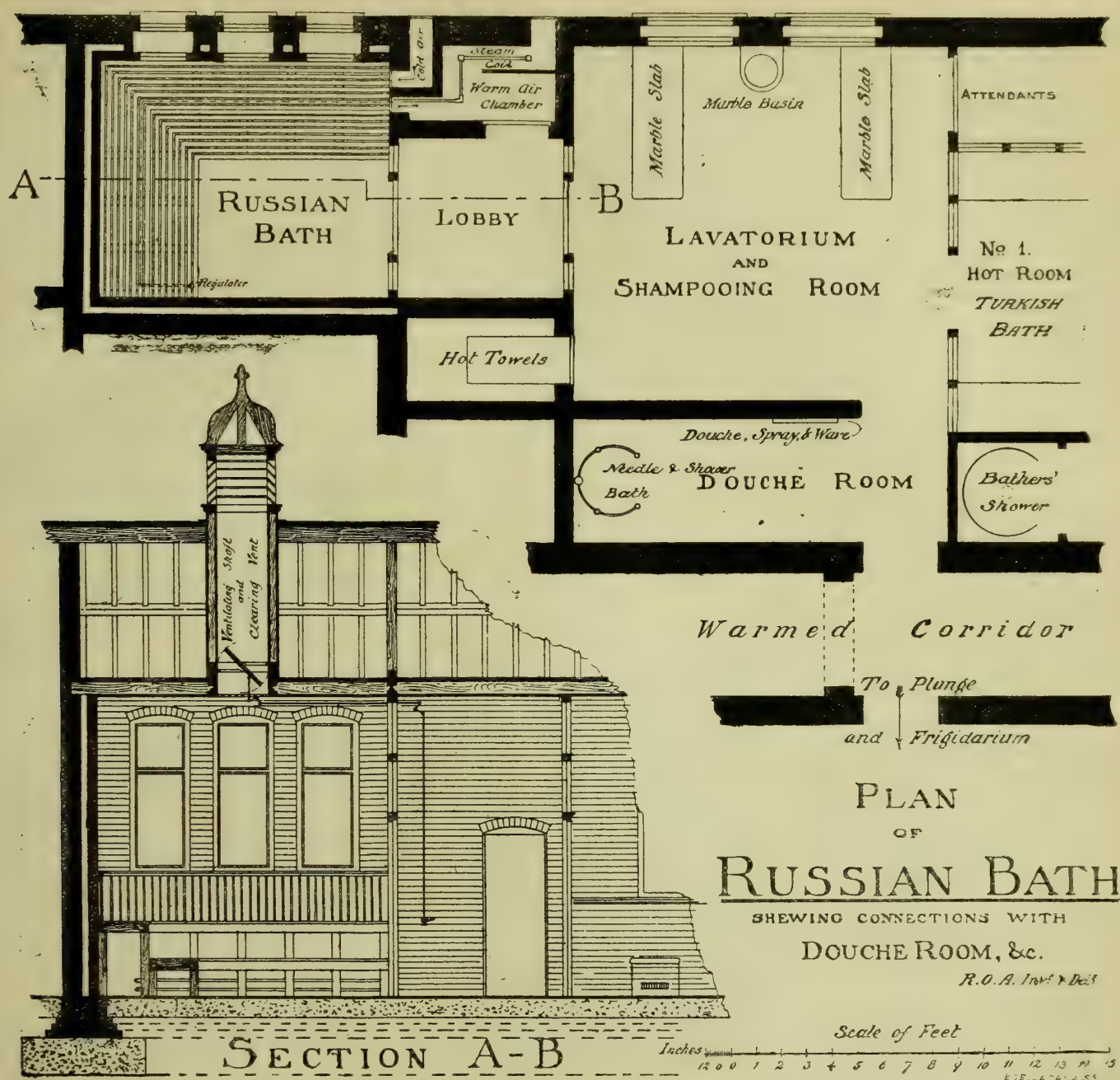
#### THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—VIII.

By R. OWEN ALLSOP, Architect.

(Author of "The Turkish Bath: Its Design and Construction.")

VAPOUR baths have, in the past, been for the most part administered by means of boxes of such shape and size as to





allow the head of the bather to be free. Vapour boxes, of this description, are always of service, because in certain cases physicians may consider it desirable that their patients should not breathe a vaporous atmosphere. Of late years, however, the Russian bath has been increasingly employed. This appliance I shall therefore proceed first to describe, and subsequently deal with minor varieties of vapour baths.

#### THE RUSSIAN BATH

consists of a chamber, heated partly by hot-air and partly by steam, in which the bather remains a longer or shorter time, until perspiration is induced and he is ready for the operation of shampooing and washing, such as follows the sweating in the hot rooms of the Turkish bath. If the Russian bath be included in a bathing establishment without a Turkish bath, it must comprise, in addition to the sudorific chamber with vaporous atmosphere, a lavatorium and shampooing room, a douche room, and a cooling room. Where, however, the Russian bath is provided in addition to the Turkish bath, it is most conveniently placed as an appendage to the shampooing room of the latter. It may be connected by a lobby or heated corridor; but it would be undesirable for it to communicate

directly with the shampooing room, since, when the door is opened, steam will escape into the atmosphere of the Turkish bath, which, at all costs, must be kept perfectly dry.

In some elaborate bath-houses—such, for example, as the Friedrichsbad at Baden-Baden—the sudorific chambers of the Russian bath are two in number. They are then known as the “warm” and “hot” rooms respectively. Increase of temperature, however, is usually gained in the Russian bath by ascending to a higher level in the chamber or room. Following the custom in the original bath as arranged in Russia, wooden benches are provided round the walls, and these are stepped one above the other, there being at times as many as half-a-dozen tiers. The benches are constructed of open wood-work—much as the benches or shelves in a conservatory—so that the steam may freely circulate round the persons in the bath. The vapour-laden air being hotter and denser towards the ceiling of the bath, the bather can choose a comfortable temperature by selecting a higher or lower position.

The indicated temperature of the Russian bath is slight compared with that of the Turkish bath, varying only from 100° to 112°. It must be remembered that, whilst it is

possible to stay for some length of time in a temperature varying from 200° to nearly 300° in the dry atmosphere of the Turkish bath; if the thermometer register 120° Fah. in a vapour bath of ordinary density, the bather will be scalded.

The maintenance and regulation of the temperature of vapour baths is therefore of the greatest moment. The Russian bath is prepared by the aid of steam pipes which raise the temperature of the air at the same time that they supply the requisite steam. Ordinarily the lengths of pipes in the bath-room are relied upon to heat the air; but in the accompanying illustration I have shown an improvement, in the shape of an additional air-heating chamber with a small steam coil. This chamber would communicate with the bath by means of a hit-and-miss grating placed about 5ft. about the floor level, and side by side with another grating controlling the supply of cool air. A steam-pipe runs under the benches and returns, the return pipe being perforated with a number of holes to let out the steam; and a screw-down regulating valve is placed in a convenient position for the attendant to reach. 1in. wrought-iron pipes will do for this purpose. There should be a large number of holes in the length of the supply-



pipes, so that the steam may escape as noiselessly as possible, and not distress nervous invalids.\*

A great desideratum in this bath is some means of rapidly clearing the chamber of "steam," and letting it into a convenient channel. Ordinarily the window or windows are opened, but this may be slow, and it may also be undesirable to turn a lot of vapour into the air at such and such a point. A large clearing vent would be a great improvement, and in the illustration I have shown one with a sectional area of 4ft. This clearing vent also serves as a ventilating shaft. In clearing the bath-room, the valve is opened full, and adjusted as required for purposes of ventilation by the rack and screw adjustment shown on the section. In the example given, the shaft is only of sufficient height to clear the roof, but it could evidently be carried to any desired height or position.

Theoretically, there should be some ventilation of the bath at the floor level; but, for practical purposes, waste steam and air should be taken out at the top of the Russian bath.

The bath shown in the accompanying illustration is connected by a lobby with the lavatorium and shampooing room of the Turkish bath. The whole shows a portion of a design for a public bath-house comprising various kinds of baths. Hollow walls and double windows are provided to the Russian bath for the sake of maintaining equal temperature and preventing loss of heat by absorption and radiation. The walls are lined with white glazed bricks, and plenty of light is given—important in the obscured atmosphere—by means of windows and glazed partitions and doors to the lobby and shampooing room. The benches are of wood-work with wood dado. Thin tiles are screwed to the ceiling joists to form a ceiling, and slag-wool should be placed over to keep in the heat. The regulator to ventilating shaft is intended to be of well-seasoned wood, in suitable frame, and swinging on its centre.

#### CONTEMPORARY BRITISH BUILDERS.

THIS double-page is the third sheet which we have given of representative contractors and builders. It begins with the portraits of Messrs. Henry William and Edward C. Bull, the builders of the Palace of Justice in the Strand, from the designs of Mr. G. E. Street, R.A. Mr. Edward C. Bull, whose portrait appears first in our group of this week, commenced life by serving his articles to the architectural profession, at the expiration of which he was engaged with his father, Mr. Joseph Bull, contractor, who died in 1867. Some time previous to this the three sons—Henry Wm., Frederick, and Edward C.—became partners, and the firm was then styled Joseph Bull and Sons, and is now Joseph Bull, Sons, and Co., Limited, of Belvedere Works, Southampton, and 1, Clement's Inn, Strand. They built the New Law Courts, and have carried out many other works for the Government, amongst which may be mentioned:—Barracks at Portsmouth, Winchester, Dorchester, and other centres; military hospital at Eastney; post-offices at Chester, Shrewsbury, and at Portsmouth; probate registry at York and Patent Office, London, &c. They also built for the Colonial Government the New Houses of Parliament at Cape Town, South Africa. They erected the joint station of the London and South-Western and London, Brighton, and South Coast Railways at Portsmouth, and were for many years contractors to the first-mentioned company, for whom they have carried out a large amount of work in all parts of their system. Among other buildings by them are:—West London District Schools; Gas Works at Portslade, Brighton, and Southampton; Corn Exchange, churches and chapels, Philharmonic

Hall, Capital and Counties Bank, National Provincial Bank, Ordnance Survey buildings, &c., at Southampton; Town Hall, Romsey; Corn Exchange, &c., Ringwood; Town Hall, schools, &c., at Winchester, and several other important works. The portrait of Mr. Edward C. Bull is from a photograph by Walery, of Regent-street; and that of Mr. Henry William Bull is by Mr. T. Illingworth, of Halifax.

Mr. Tom Frank Rider was born in 1843, and became a partner with his father in 1865, in the business established by his grandfather about 1804, and carried on at present address since 1866. Mr. T. F. Rider was educated at Dr. Pinche's, Clarendon House, Lambeth. The following is a list of works he has carried out:—The British and Foreign Bible Society, Queen Victoria-street, Mr. P'Anson, architect; the Freemasons' Hall and Tavern, Gt. Queen-street, Mr. F. P. Cockrell, architect; Messrs. Peek, Frean, and Co.'s biscuit factory, Drummond-road, Messrs. Snook and Stock, architects; Messrs. Tarn and Co.'s premises, Newington Causeway and New Kent-road, Mr. Knowles, architect; additions to head office London and County Bank in Abchurch-lane, Mr. Z. King, architect; branches at St. Alban's Mr. F. Chancellor, architect; Kingston, Mr. Pannell, architect; Kensington, Mr. Williams, architect; mansion, Hastings, for Captain Hankey, Mr. Pilkington, architect; Rockingham Arms, Newington Causeway; and Argentine Hotel, Charlton, Mr. F. J. Eedle, architect; and restoration of All Saints, Witley, Mr. Aston Webb, architect; Holy Trinity, Latimer-road, and house for Miss Kate Greenaway, Hampstead, Mr. Norman Shaw, R.A., architect. He is past president of the Builders' Clerks' Benevolent Institution, having served for two years as president, the only instance on record. He is also a member of the Builders' Benevolent Society, and is now president of the Builders' Institute, and vice-president of the Central Association of Master Builders. Mr. Rider is a director of the Builders' Accident Association, and representative of London Association of Master Builders at the National Association of Builders of England. He is a member of St. Saviour's District Board of Works, and for the last three years of the Metropolitan Board of Works acted as the representative of that division. He lost the election as London County Councillor by 500 votes, and was the highest unsuccessful candidate. He was a warden of great account for St. Saviour's parish for two years, during which time the church-rate, imposed in reign of Charles II., was abolished, and the patronage of the living vested in the Bishop, who promised to undertake the restoration of the great ancient church, which is now about to be commenced. Mr. Rider is a Fellow of the Royal Geographical Society. His portrait was produced by Messrs. Maull and Fox, of Piccadilly, W.

Mr. Benjamin Ebenezer Nightingale, of "Albert Works," Albert Embankment, has extensive workshops, &c., at the Vauxhall end of the Albert Embankment, S.E., and close to Vauxhall Station (L. & S.W. Railway). In addition to building contracts executed in Westminster, the City, and South London, he carries on a large business of painting, decorating, and repairs. Some of the principal works carried out during the past fifteen years are the following: St. Giles-in-the-Fields and St. George's Workhouse, Bloomsbury, the Birkbeck Literary Institution, Fetter Lane, and Messrs. Burt and Son's printing offices adjoining; a number of schools for the London School Board, the Guildhall new council chamber, and Leadenhall Market, for the City of London Corporation; the "Butchers' Hall," Bartholomew Close; additions, and new board room, &c., Stationers' Hall, Paternoster Row; Messrs. Evans, Lescher, and Webb's chemical works, Bartholomew Close; new centenary hall and new wing Royal Masonic Institution for Girls, Battersea Rise; the General Steam Navigation Company's offices, Tower-street; Charing Cross Hospital, new top story; Messrs. Ward, Lock, and Tyler's new book warehouse, Dorset-street, E.C.; the Homerton Infirmary, for the Hackney Guardians; new clock factory, Ray-street, Farringdon-road; new pianoforte warehouses for Messrs. Moore and Moore, Bishopsgate-street; new pumping station, Hampton, for the Southwark and Vauxhall Waterworks Company; blocks of shops and residences, Mount-street, Berkeley-square; Cleveland-street additions to the Sick Asylum, new additions Leavesden Asylum, for the Metro-

politan Asylums Board; new bank, Peterborough; sundry blocks of warehouses, Houndsditch, London Wall, and Fenchurch-street and Cornhill; new Colonial warehouses, Wapping; new block of offices, residences, &c., St. Helen's-place, Bishopsgate; the Tate Free Library, South Lambeth-road; Messrs. Francis and Co.'s revolving shutter factory, Gray's Inn-road; London and South Western Bank, Regent-street branch, W.; additions to the London and Westminster Bank, St. James's-street branch; Church of St. George, Catford; St. Barnabas' Church, Kentish Town; Emmanuel Church, Harrow-road; St. Andrew's Church, Streatham Common; Presbyterian Church, Wandsworth Common; St. Peter's Church, Limehouse; All Souls' Church, Harlesden; Baptist Chapel, Hendon; Bloomsbury Dispensary; Wilson's Grammar School, Church-street, Camberwell; fittings and decorations, No. 213, Oxford-street; police stations, West Hampstead and Staines; &c. This photograph herewith reproduced was by Messrs. West and Son, of Bournemouth.

Mr. Henry Lovatt, of Wolverhampton and Great George-street, Westminster, commenced his career in 1851 as an architect, in conjunction with Mr. George Bidlake, and they designed and carried out together several public buildings, chapels, churches, and private houses in various parts of the country. In 1858 he took over the builder's and contractor's business in Darlington-street, Wolverhampton, previously carried on by Mr. John Elliott, and quickly developed a large trade. In the past thirty years Mr. Lovatt has been engaged on undertakings of great extent—both Government works, railways, and railway works, reservoirs and other engineering works, churches, banks, &c. From 1864 to 1878 he did the principal portion of the Great Western Railway Company's new constructions and alterations, including the widening of the first portion of the line out of Paddington, the widening at Corsham, the Pontypool and Talywain Railway, and the Netherton and Halesowen Railway and stations, and he is now carrying out the Abertillery deviation and a relief line at Bristol for that company. Mr. Lovatt has also completed large contracts for many of the other leading railway companies. For the Great Northern, the Copenhagen Tunnel, the Leen Valley Railway, Notts, and several other lines in the same district; for the Great Eastern Company, the Farnett and Wymondham, and Cambridge and Mildenhall Railways; for the Midland Company, the Walsall Wood Railway, the Poplar Sidings, and (in conjunction with Mr. William Mousley) the Skipton and Ilkley Railway; for the London and South Western, the Corfe Mullen and Bailey Gate Extension, and the Netley and Fareham Railway. He was the contractor for the construction of the section of the Banbury and Cheltenham Railway from Cheltenham to Bourton-on-the-Water, and (jointly with Mr. W. E. Shaw), for the third section of the Barry Dock Railway. Mr. Lovatt has also worked for many of the leading architects who have been his contemporaries. Under Mr. R. Griffiths, county surveyor of Stafford, he did important works at Stafford Gaol, Chester Prison, and at Macclesfield Asylum; at Worcester Asylum, under Mr. Rowe, county surveyor of Worcester; under Mr. Alfred Waterhouse, R.A., the Central Technical Institute, South Kensington, and a mansion at Stevenston, Hants; under Messrs. Giles and Gough, the Grammar School, Wolverhampton, and county asylums at Gloucester and Bridgend; for the late Mr. G. E. Street, R.A., church restorations and the new American church in the Avenue de l'Alma, Paris. Commencing in 1883, he built all the mansions on the Kensington Court Estate under Mr. J. J. Stevenson. For the Government Mr. Lovatt carried out the Lichfield Brigade Depot, a contract of over £200,000, besides having done additions to forts on the south coast, and works at Portsmouth Dockyard. He put in the foundations of the National Liberal Club (Mr. A. Waterhouse, R.A., being the architect); and the new Middlesex Asylum at Woodford, under Mr. G. T. Hine, F.R.I.B.A., architect, Nottingham, now in course of erection. Amongst engineering works may be mentioned a large gas tank at Salford (Birmingham Corporation), reservoirs at Papplewick (Nottingham Water Works Co.), and at Shobnal, Burton-on-Trent (South Staffordshire Water Co.), besides the important works in 1877 for the South Staffordshire Mines Drainage Commissioners. In addition to the work now in hand for the Great Western Co., already alluded

\*The original design included a basement under the bath-rooms shown on this plan, but by an oversight they have been delineated without the basement. The boilers for supplying steam were arranged in this basement, and pipes to the various bath-rooms, and heating-coils conducted along passages under the warmed corridors.



to, Mr. Lovatt has secured the contract for a new tunnel for the Great Northern Company at King's Cross, is erecting very large works at Bushbury for the Electric Construction Corporation, and at Bishopstoke, for the London and South Western Railway Co. (to which place that company are about to remove their carriage and waggon shops). He has works in hand at Middlesbrough, Portsmouth, Birmingham, Wolverhampton, and in Worcestershire. His workshops, timber yards, machinery, and stores at Wolverhampton are very extensive. The portrait published was taken specially for our series by Mr. Thos. Fall, of 10, Baker-street, W.

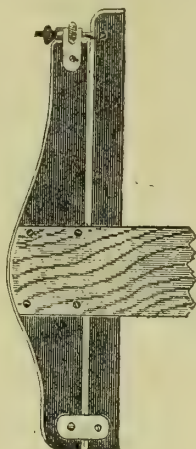
Mr. William Higgs, the head of the firm of Higgs and Hill, is the eldest son of the late Mr. William Higgs, the founder of the business carried on at Crown Works, South Lambeth. He entered his father's firm at the beginning of the year 1868, and continued with him till his retirement in 1874, when he was joined by his present partner, Mr. Joseph Hill, whose portrait appeared in our issue of April 4 last, with an account of some of the principal works carried out by the firm. His father, having served his apprenticeship to the late Mr. Joshua Higgs, of Davies-street, Berkeley-square, commenced business in the year 1845 at Bishop's-road, Bayswater, an undertaking which proved to be a success. In 1847 he moved to larger premises in Euston-road, and again in 1852 to Palace Wharf, Stangate (now occupied by Messrs. Jennings); from thence in 1867 the business was removed to the premises in the occupation of the present firm. An annual social gathering of his workmen and their wives, instituted by Mr. Higgs, is still continued by his successors. Messrs. Byrne and Co., of Richmond, produced the photograph herewith copied to-day.

#### NEW BATTERSEA BRIDGE.

THE new bridge which replaces the old Battersea bridge has so far progressed that it is contemplated to open the new structure in July. The old timber bridge was found unsafe for vehicular traffic some years ago, and the then Metropolitan Board of Works resolved to erect a new bridge. The demolition of the old structure was completed in the early part of 1886, and the work has been carried out uninterruptedly. The contract for the new structure was undertaken by Messrs. Williams, Son, and Wallington in May of the same year, for the sum of £143,000, and the bridge is being erected from the design of Sir Joseph Bazalgette, and has been carried out under the supervision of Mr. Edward Bazalgette. We paid a visit this week to the bridge, and, although the scaffolding and temporary bridge and staging obscure the view of the new structure from the river, a fairly good idea can be obtained of the design and proportions. The river is spanned by five segmental arches or cast-iron ribs, which spring from granite piers. The centre span is 165ft., and has a rise of 18ft.; those on either side have a span of 140ft., with a rise of 13ft., and the abutment arches are 113ft. span, with a rise of 8ft. 6in. The headway above high water of these will be 10ft. 6in., and the centre arch will have a headway of 20ft. From these figures it will be seen that the bridge assumes a bold curve, or a gradient of 1 in 30 rising from the approaches to the centre. The width between parapets (supported by seven cast ribs) is 40ft., the footways of 8ft., leaving a carriage-way of 24ft. wide, and these footways are being paved with Claridge's patent asphalt, a material which has won favour amongst all engineers for the purpose of bridge flooring. Nothing can be cleaner, better suited to give to the slight vibrations of iron structures, or more durable. We may state that these footways project on cantilevers, which are covered below by a cast-iron coving with ribs, forming a bold and pleasing feature in the view of the bridge as it is seen from the steamboat. The parapet now being fixed is of cast iron, and in design consists of an arcading of circular-headed arches. The approaches have granite parapets, and the levels from Chelsea Embankment and Cheyne-walk are raised. The arches forming these are covered also by Claridge's patent asphalt, a very important provision, as we have before pointed out, in the protection of brick arches and iron structures from damp and sudden changes of temperature. The iron arches externally are relieved by ornamental cast-iron spandrels with a circular opening.

#### ADJUSTABLE T-SQUARES.

THE illustration herewith represents a new patent adjustable T-square, manufactured by E. L. Deane at Holyoke, Mass. Some of the leading points which make these squares specially useful are that they can be instantly adjusted to conform with existing lines or drawings, which are frequently disturbed by atmospheric changes. This makes them invaluable for tracing. The adjustment is accomplished by loosening the jam or outer nut on the regulating-screw, and bringing the blade to the desired position with



the vernier or inner nut. It is then locked with the jam nut, making the head as rigid as if made of one piece. The inner, or bearing head, being in no place confined, will, if affected by the weather, shrink or expand equally its whole length and remain straight, which the heads of common squares, under like conditions, cannot do. The position of the blade is such that when necessary to work near the lower edge of the drawing board, a bearing of at least one-half the length of the head is retained. The heads can be used on old blades when desired.

#### ARTISANS' DWELLINGS AMENDMENT ACT.

A BILL has been introduced by Mr. Ritchie, Mr. Matthews, and Mr. Long to amend the Acts relating to artisans' and labourers' dwellings and the housing of the working classes. It imposes upon every local authority the duty to cause inspection of their district to be made from time to time with a view to ascertain whether any premises therein are in a state so injurious to health as to be unfit for human habitation, and, if any premises are found to be in such state, they are required to forthwith take proceedings before a Court of summary jurisdiction against the owner or occupier for closing the same. The Court is empowered to make a closing order, and to impose a penalty, and the tenants of the premises will be liable to a penalty if they fail to leave them within the time prescribed in the order. Power is then given to the local authority to order the demolition of the premises if not rendered fit for human habitation. Where an order for the demolition of a building has been made, and it appears to the local authority that it would be beneficial to the health of the inhabitants of the neighbouring dwelling-houses if the area were used for all or any of the following purposes—(1) Dedicated as a highway or open space; or (2) appropriated, sold, or let for the erection of dwellings for the working classes; or (3) exchanged with other neighbouring land which is more suitable for the erection of such dwellings, and on exchange will be appropriated, sold, or let for such erection; or where it appears to the local authority that the closeness, narrowness, and bad arrangement or bad condition of any buildings are prejudicial to the health of the inhabitants, the local authority may direct a scheme to be prepared for the improvement of the said area. If no opposition is offered to the order within two months, the Local Government Board may confirm the order, and the area must be acquired within three years from the date of the confirmation of the order. There is a special clause prohibiting persons interested from voting

as members of any local authority. The Bill contains, it will be seen, many useful changes, some of which are of pressing necessity; but it has, we fear, no chance of being passed this session. A separate Bill, backed by the same members of the Government, proposes to consolidate the Acts relating to artisans' and labourers' dwellings and the housing of the working classes.

#### NOTES ON BUILDING PRICES.—II.

By JOHN LEANING.

##### CANALS.

THE condition of the waterways of the kingdom has been a subject of regret for some years. The neglect and gradual decadence of canal traffic has proceeded in proportion to the development of the railways. The public mind, intoxicated with that marvellous phenomenon, has allowed itself to lose sight in a great measure of the canal and river system which, at an outlay comparatively small, would prove an admirable adjunct to the railways and an immense advantage to the trade of the country. Of this, some of the northern and midland sections of the existing canals afford convincing proof. The facilities which this method of transit offers for inexpensive loading or unloading at any part of the course, the comparative cheapness of the means of carriage, traction, and maintenance will commend them to any observer. France and Belgium offer us striking examples of the benefit of a good canal system judiciously fostered. In England the acquirement by the railway companies of sections of canal forming parts of the great through routes, which they have closed or upon which they levy prohibitive tolls, is a striking contrast which has repeatedly provoked public opposition and agitation in Parliament. Some of these difficulties the Railway and Canals Traffic Act will ameliorate, but will not remove. Some of the conditions which the country requires to put its internal trade on the most prosperous footing are as follows:—The acquirement by the State of the interests of both railway and canal companies throughout the kingdom, and the consequent removal of the conflict of their interests. A general revision of rates. The widening of the waterways in parts and the enlargement and reconstruction of locks so that barges of 90 or 100 tons may pass through the whole system without breaking bulk. At present a barge of 80 tons starting from Brentford on the Midland Canal would, before reaching Birmingham or Liverpool, require reduction to a little over 30 tons. The route from London to the Derbyshire coal-fields would involve a reduction to 24 tons, as some parts of the canal on this line are only 7ft. wide. These conditions have produced the long, narrow barges known as fly-boats. The *Grand Junction Canal*, commencing at Paddington Basin, runs through Paddington, Southall (with a branch to Brentford), Wendover, Aylesbury, Buckingham, Northampton, Bucks, Bramston, &c., a length of about 135 miles. By it sand and stocks from the immediate neighbourhood and Staffordshire bricks, tiles, &c., are brought into London in large quantities. Barges of 80 tons can get as far as Cowley. The larger part of its traffic comes to Paddington Basin or Brentford. There is no printed schedule of dues: some of the incidental charges are as follows:—

	Paddington.	Thames	Above
		below Kew.	Kew.
Bricks, per ton.....	11d.	4d.	6d.
		Thames below Kew and London Bridge.	
Sand, per ton.....	10½d.	10½d.	
Canal Dues, Lighterage, and Towing:—			
Sand, from Hayes and its neighbourhood,			
per ton.....	1s. 6d.	—	
Bricks, per thousand	4s.	4s. 9d.	
Lighterage and Towing:—			
Bricks, per ton.....	1s. 8d.	—	

A common rate for the discharge of cargo at a Metropolitan canal wharf is 10s. per day. Demurrage is not generally considered, as, if proper arrangements are made, it is quite easy to discharge 40,000 bricks or a cargo of sand in a day. The *Regent's Canal* is connected with the Thames by a dock at Limehouse, runs through Stepney,



Mile End, Bethnal Green, Hackney, Shoreditch, St. Luke's, Islington, St. Pancras, Marylebone, and Paddington, where it joins the Grand Junction Canal. It has basins at Limehouse, City-road, and King's Cross. It communicates with the River Lea (at Bromley) by the "Limehouse cut." Its total length is about 8½ miles. There are wharves at intervals, either exclusively draw wharves or such as may be arranged for at the 10s. rate before mentioned. The Great Eastern, Great Northern, Midland, and London and North Western Railway Companies have goods stations on the banks of this canal, and the Great Western at Paddington Basin. The following are some of the rates:—

REGENT'S CANAL.—The locks admit barges 78ft. long and 14ft. wide.

Rates on cement, lime, slates, tiles, and timber (in barges)		Per ton.
To or from Thames, and points short of Great Eastern Railway	s. d.	0 8
To or from Thames or River Lea, and points short of Old Ford Lock (except to railways)	s. d.	1 0
" " " and points between Old Ford Lock and City Road Lock	s. d.	1 3
" " " City-road Lock and Stop Lock, Regent's Canal	s. d.	1 4
On all other articles except explosives, gas liquors, and ice (in barges)		If towed by the Owners.
And on all articles except " " " (in boats)		If towed by the Company.
To or from the Thames and Old Ford Lock, and 1st Lock, Hertford Union Canal (and points between)		Per ton. s. d.
" " " and points between Old Ford Lock and Kingsland-road Bridge, and beyond 1st Lock, Hertford Union Canal		0 7½
" " " Kingsland-road Bridge and St. Pancras Lock		0 9
" " " St. Pancras Lock and the Grand Junction Canal		0 9½
To or from Grand Junction Canal and Hampstead-road Lock (and points between)		0 10
" " " and points between Hampstead-road Lock and Islington Tunnel		0 7
" " " Islington Tunnel and Old Ford Lock		0 8
" " " beyond Old Ford Lock, to the Thames and Hertford Union Canal		0 9½
To or from the River Lea (via Hertford Union Canal) and Old Ford Lock and Mile End Lock (and points between)		0 10
" " " and any point beyond Mile End Lock to Thames		0 7
" " " between Old Ford Lock and City-road Lock		0 9
" " " City-road Lock and the Grand Junction Canal		0 8
" " " (North of Enfield Lock) and any point between Mile End Lock and the Grand Junction Canal		0 9
To or from the Great Western Railway, London and North-Western Railway, Midland Railway, Great Northern Railway, and Great Eastern Railway.		35s. per barge.
Coals to any point		0 6
All other articles to any point		0 8
" " from Great Eastern Railway to Thames or any intermediate point		0 7

\* All articles passing to or from the Grand Junction Canal will be charged 1d. per ton less (except as back carriage). Barges to be charged for not less than 30 tons (except as back carriages). Boats to be charged for not less than 20 tons each (except as back carriage). Boats to be towed by the owners. Articles loaded or unloaded in the waterway to pay an additional 3d. per ton.

Bow Creek connects the Thames with the Lea and Stort Navigation, terminating at Bishop Stortford, 33 miles. Dues on the Lea are lower than those on the Regent's Canal. The *Grand Surrey Canal* commences at the Surrey Commercial Docks between Rotherhithe and Deptford, runs through Hatcham, Bermondsey, Peckham, and Camberwell, terminating with a basin in Camberwell-road, a length of about 4½ miles. This canal largely contributes to supply South London with timber and deals, besides the usual traffic. There are draw wharves at Old Kent-road Bridge, Plough Bridge, and Camberwell Basin. The usual charge for permission to discharge a cargo is 5s. The charge for towing a barge to any wharf is 10s. The schedule of dues, so far as it concerns the estimator, is as follows:—

#### SURREY CANAL RATES.

To or from the River Entrance and the following Places:—	Plough Bridge (1 mile) and Windmill-lane.	Between Windmill-lane and Brighton Railway.	Beyond the Brighton Railway.
	Per Ton. s. d.	Per Ton. s. d.	Per Ton. s. d.
Chalk, Empties, and Pipe Clay	0 4	0 5	0 6
Asphalte, Blue and Black Bricks, Fire Bricks, and all kinds of Ornamental Bricks, Cement, Drainpipes, Fireclay, Lime, Plaster of Paris, Slates, Stone (including Paving Cubes), Tar Paving, and Whiting	0 4	0 5	0 8
Building Materials, Iron, Lead, Paint, Paper, and Wood	0 6	0 7½	0 10
Articles unenumerated, and of higher value than those above	1 0	1 3	1 6
Bricks (ordinary) and Tiles	Per 1,000.	Per 1,000.	Per 1,000.
Ballast, Batts, Flints and Broken Stone for Roads, Gravel, Hard Core, and Sand	0 6	0 7½	0 9
	Per Barge.	Per Barge.	Per Barge.
	12 0	14 0	16 0

The Undermentioned Goods are Charged by Measurement:—

Deals, Battens, Rough Boards, and Ends. A Petersburg Standard is taken as (Prepared Flooring Boards one-eighth less.)	2½ Tons.
Lathwood, a fathom of 216 cubic feet, taken as	3 "
Firewood	2½ "
Pitch Pine, Fir, and Soft Timber, a load of 50ft. is taken as	1 "
Hard Wood, a load of 40ft. is taken as	1 "
Cement, 100 bags is taken as	9 "
Fire Bricks, Red Bricks, and all Ornamental Bricks, 1,000 is taken as	3 "

REGULATIONS.—Back Dues.—Barges going up the canal laden and returning light are not charged back dues. If the upward freight does

not exceed 15 tons, a lockage rate of 2s. 6d. for each passage through the lock is charged in addition to the dues on the upward freight. Barges going up the canal laden with a freight of not less than half the barge's carrying capacity, and returning with a freight for the same firm, are charged half dues on the back freight when such freight exceeds 20 tons. Barges which have discharged their upward freights and reloaded downwards ashes, breeze, manure, or rubbish, are charged 10s. for such back freights from any part of the canal. Barges going up the canal light and returning laden are charged full dues on the back freight. If the back freight does not exceed 15 tons, a lockage rate of 2s. 6d.

exceeding £5. Stage-boards may be hired from the canal ranger at 2s. per freight. Barges remaining in the canal more than twenty-four hours after completion of discharge will be subject to a charge of 2s. 6d. for each day or part of a day. Barges found adrift in the canal will be moored by the Company's servants, and a charge of 2s. 6d. will be made in each case. Barges navigating the canal must not exceed 17ft. 9in. in width, nor 4ft. 9in. in draught.

A complete map of all the canals and inland navigations is attached to the Report of the Select Committee on Canals, May, 1883, Vol. 13, Parliamentary papers.

#### DOCKS.

The Surrey Commercial Docks are the principal place of entry for the timber and deals, prepared flooring and matched-boardings, pine, oak, and pitch-pine from Northern Europe and North America; the West India Docks and Millwall—principally the former—for cedar, mahogany, teak, American oak and walnut, sequoia, whitewood, kauri pine, &c. Much of the material thus landed is conveyed by barge up the Surrey canal for the supply of South London, enters the Regent's canal at Limehouse dock or Bow creek for the supply of North or Central London, or goes by that route into the Grand Junction canal for the supply of the home counties. Large quantities are carried by barge to the Upper Thames, and still larger quantities carted either by the sawmill proprietors (who saw and deliver), or directly by the purchasers. The dock dues are published in printed schedules; but they only slightly concern the student of prices. The wood supplied to London is usually purchased at the sales held frequently by the merchants, the greater part at the Baltic Sale-rooms, Threadneedle-street. When a large quantity of wood is required the builder buys at these sales, when smaller quantities of a retail timber-merchant. At most of the large seaports of the kingdom there are periodical timber sales. Landing rates and sawmill regulations will be dealt with in the section Carpenter.

#### RAILWAY RATES.

A familiarity with railway rates will be useful to the student in the adjustment of claims for carriage, the valuation of materials which are in some cases delivered into trucks at the railway-station adjacent to the manufactory, in others at that nearest to the proposed building. In the valuation of country work, as in the conduct of a building distant from London, much of the material must be worked at the contractors' shops in town and conveyed somehow to the building. Except for small parcels sent by passenger train and for return of empties, there is no published scale of charges. As a rule, the rates of the various companies for similar quantities conveyed similar distances in a similar way are very much alike; the exceptions are mainly referable to the acquirement by a large company of a smaller one, whose original Act contained (for some reason now possibly extinct) specially high rates, which are still maintained. The avowed object of the Railway and Canals Traffic Act, the details of which are now under consideration by the Board of Trade, is the assimilation and classification of the rates as far as practicable, and provides for their publication and sale in a book at a cheap rate, so as to be accessible to all. It seems probable that the Government will under this Act exercise an increased power over the charges of the companies, but to a far less extent than might be desired, because of the enormous vested interests with which nothing short of purchase can satisfactorily deal. Any sanguine expectation of a material reduction of rates will certainly be disappointed. The arrangements contingent upon the investigation above referred to will not operate for some time to come, and until they do, the rates for conveyance must be obtained by inquiry at the goods department of the railway company concerned. Through rates between the stations of one company and another may be best obtained by inquiry of the station-master of the station from which the goods are despatched, or at the chief office of its company, or the rate per ton for carriage may be obtained from the manufacturers if the question is asked at the time of making inquiry about prices. As a general rule, the cost of railway carriage does not increase in a regular ratio; the cost of conveyance for 100 miles is much less than twice that for 50 miles. Railway companies



convey at two rates: one under which they are liable for damage, called company's risk; the other (a lower one), under which they are not so liable, called owner's risk. It is obviously to the interest of the sender to adopt the latter when the goods are not easily to be damaged. Goods rates are modified as follows:—A certain set of charges is applied to all consignments not exceeding 500lb. in weight, regulated by a table used by all companies alike. Under this table nothing less than 28lb. is charged, and the charges for weights above 28lb. increase by multiples of 14lb. This scale applies uniformly according to its rate to all carriage between stations in England south of Newcastle and Carlisle and in Wales. A second set of rates is applied to material exceeding 500lb. and under two tons, called class rates, which include collection and delivery within the usual limits (three or four miles) in towns; a third set of rates, for two tons and over, called special class rates, which do not include collection and delivery. It is often cheaper to pay for a consignment of two tons, although it may weigh but little over one. At small country stations nothing is delivered except very small parcels in the immediate neighbourhood. In London such agencies as the London Parcels Delivery Company, Messrs. Carter Paterson, and the Metropolitan Railway convey and deliver small parcels at cheap rates, and similar facilities exist in most of the large towns of the kingdom. Small articles, designated by number in a trade list, may consequently be ordered by letter and conveyed in this manner. This may be remembered when a claim is made in a day account for labourer's time for half a day to fetch such a thing as a tap or other small article. When goods are ordered from the manufacturer by the truck load, in stating the position of the work, inquiry should be made as to the station to which he proposes to consign it, and it is advisable to test this information by an independent inquiry of the stationmaster of the nearest railway station to the proposed building, as he can frequently suggest a more convenient station for its delivery. As the Acts of Parliament under which particular lines of railway have been established only enumerate the rates of charges of quite a small variety of articles, there has gradually developed a classification of rates agreed on by the various companies called the Clearing House classification, in many respects unsatisfactory. Some of the railways carry timber at the *measured* ton. One principle of measurement is prevalent in some parts of the country called string measurement, another tape measurement, another caliper measurement; these differ materially one from the other, and all differ from the machine weight. It is probable that the revised classification will deal with the actual weight. When considering railway charges, the surveyor should insist upon the production of the original railway delivery note, which simplifies the matter when settling the accounts for a building erected or in progress; but in estimating the cost of a prospective work, the surveyor must be familiar with rates and the method of their charge. A map for the measurement of distances will prove useful in the calculation of all kinds of carriage. In view of the present uncertainty as to the new classification and the consequent incompleteness of the foregoing information, it may be necessary at a later stage to return to the question of railway rates.

## DELIVERY BY MANUFACTURERS AND MERCHANTS.

The makers of small articles do not usually deliver anything less than a cart-load, but when as much as a load is ordered, they may generally be induced to deliver without extra charge. In ordering a truck or barge load of material, it will generally be advisable to obtain a price, including carriage and delivery, as the merchant will often, for the sake of obtaining a good order, forego a part at least of the dues involved. The provincial manufacturer's price is generally stated to include delivery into trucks or barges at the nearest available point to their works; but they will quote a price, including delivery, at a station, canal, or river wharf adjacent to the proposed works. The makers of drain-pipes and similar goods, when a load is ordered, deliver free in London and its suburbs; or, if for the country, at a London railway station; smaller quantities must be sent for and carted by the purchaser, but it does not follow that every single article is separately sent for, as the zealous advocate will sometimes contend. The majority of the country machinery manufacturers limit their free de-

livery in London to articles over £5 in value, and many of them will deliver free at any railway station or shipping port in England. Country manufacturers of cast-iron pipes deliver free in London or any other town where the rate of carriage is equivalent. The saw mills, in the cases in which wood has involved a fair quantity of sawing, will collect timber and deals at the docks, and deliver to the builder free of charge. For saw-mill regulations see section Carpenter. The delivery of stone is almost always done by the merchants, who will, however, if desired, quote a price exclusive of carriage; but the builder can rarely cart it so cheaply as the stone merchant.

## CARTAGE.

Although convenience appears to dictate the separation in this inquiry of the various trades, it is difficult in dealing with cartage to entirely avoid allusion to Excavation, to which a trade or separate section will be afterwards devoted. The question of cartage is almost certain to arise in the adjustment of a day account, or a measurement on a schedule on prices; unless it is stipulated that the prices of items shall include it in the case of a schedule, it is generally understood that the prices include delivery; it is, however, safest to settle the question by a stipulation in its preamble. Cartage in a city like London will cost more than in its suburbs or the country, because of the congested traffic; it should also be remembered that in a hilly neighbourhood the cartage of fewer loads in a day, and consequent greater cost must be allowed for. A rough engineering axiom is "one shilling a load a mile." Assuming that a horse, cart, and man can in a day cart ten loads each a mile at 1s. per load, we thus have a result of 10s. per day. A common valuation of a load on a return journey from an original delivery is one half the price of the latter. There are a considerable number of men in London who are willing to contract to dig and cart away, and find a shoot at a price per cubic yard, measuring the digging in position before it is dug, as the surveyor does ("hole measured"). The method of measurement should be clearly defined in the agreement. General usage would be a strong argument for this construction, but should not be depended upon. When carting alone is agreed for, the builder arranges with the sub-contractor that his carter shall help to fill the cart. When the material removed is hard brick or stone rubbish, the carter may sometimes obtain more per load by its sale than the cost of the cartage. Sometimes brick or stone rubbish for which removal is provided in the contract is allowed to be used as one of the ingredients of concrete, and in such case the quantity of carting saved may be pleaded as an element of reduction, modified by the cost of breaking. Either in town or country, when the earth is good vegetable soil, it may often be sold for the purpose of making mounds or filling up depressions. In a well-known case in the country an arrangement was made with the freeholder of a field on the opposite side of the road to the contemplated building for the deposit of the earth thereon. A temporary wooden bridge was built across the road, the earth carted over it, and a large saving in cartage thus effected. A little trouble in examining a neighbourhood, especially in the country, will often discover a place where the earth will be welcome for filling. In London it will sometimes be cheaper to shoot the earth or rubbish direct into a barge at the nearest draw wharf, paying the wharfinger's charge for the convenience (usually 2s. per load), than to cart it to a land shoot, often in a distant suburb. In the latter case the cost may be reduced by arranging for the cartage of bricks, ballast, or sand on the return journey instead of coming back empty.

## CURRENT RATES FOR CARTAGE, &amp;c.

Horse, cart, and man per day, 10s. (10 hours at 1s. per hour); ditto in the country, sometimes as low as 7s. 6d.; two horses, cart, and man per day, 19s.; chain horse per day, 9s. Van (to carry 2 tons), horse, and man per day, 10s.; timber-carriage, horse, and man, 10s.; ditto two horses, 19s. Stone truck, one horse, and man per day, 10s.; ditto two horses 19s.; ditto three horses, 25s. Furniture-van, horse, and man per hour, 1s. 6d.; ditto two horses, 2s. 6d. In the City of London, rubbish is carted, including finding a shoot, at 3s. per load. Soft material, not easy to consolidate,

3s. 6d. per load. In the suburbs, rubbish is carted, including finding a shoot, at 2s. 6d. per load. Permission to shoot rubbish into barge at a river wharf per load, 2s. In a suburb like Brixton or Camberwell carmen may be found who will dig, cart, and shoot at 3s. 6d. per yard (hole measured). When sand is delivered in a London suburb by barge, a local contractor will unload, cart, and shoot within two miles for 2s. per yard—sometimes as low as 1s. 9d. Will unload bricks and deliver into carts for 1s. 6d. per thousand; will pay canal dues, unload bricks, load into carts, deliver, and stack within two miles at 4s. 9d. per thousand. An approximation to the usual charge of stone merchants for cartage is 5s. per load of  $1\frac{1}{2}$  tons within four miles. The charge for delivery of Bath stone (Bath Stone Firms) is 2d. per foot cube within four miles; the minimum charge is  $1\frac{1}{4}$ d., increasing at the rate of about  $\frac{1}{4}$ d. for each half mile. Cartages of deals from the Surrey Commercial Docks to St. Paul's or equal distances, 8s. per standard; ditto timber, 3s. Some of the distinctions made as to cartage in a schedule of the War Office may usefully illustrate the subject:

100. Carting rubbish arising from every description of trades from the premises of the War Department, including filling the carts, or loading, finding a deposit, a. d. and unloading, per yard cube, or load .. 2 0
101. Carting materials, water, rubbish, &c., one furlong or under, including loading and unloading, do. .... 0 9
102. Ditto for the first load when not more than two loads are ordered to be removed on the same day, do. .... 1 3
103. Add to items 101 and 102 for every additional furlong ..... 0 14

Mr. Hurst says in the "Architectural Surveyor's Handbook":—"The maximum distance to which earth can be wheeled in barrows economically is 100 yards, in Dobbin carts (three-wheel carts) 300 yards, in ordinary one-horse cart half-a-mile; when the distance is over half-a-mile it will be more economical to use waggons on rails." He has here in his mind very large excavations, like railways, whose design usually involves such a balancing of cutting and embankment as makes it convenient to run the earth in waggons on rails from the former to construct the latter (a process which has enriched the vernacular with the phrase "straight tip"). In the average operations of the builder carting in tumbrils is necessary.

## THE USUAL LOAD FOR VARIOUS VEHICLES.

A tumbrel carries ordinary earth  $1\frac{1}{2}$  yards, equal to 1 yard before digging; sand,  $1\frac{1}{2}$  yards. A builder's cart carries  $1\frac{1}{2}$  to 2 tons; do. carries ordinary bricks, 500; do. glazed or Staffordshire blues, 400; do. plain tiles, 1,000; do. Countess slates, 1,000; do. flooring, about 12 squares; do. timber or deals, 50c.ft.; do. lime, 1c.yd. (usually conveyed by the merchant in a one-horse van carrying 2 yards); do. light bulky materials, 80c.ft. A stone truck, 3 to 10 tons; railway vans, two-horse, about  $2\frac{1}{2}$  tons; railway trucks, 8 to 10 tons; a Thames lighter, 90 to 120 tons; a van and one horse will carry about 35 scaffold poles, each 25ft. long; a navvy's wheelbarrow about 50 bricks, or 4 hods of mortar; do. earth, about 1-10th of a yard cube; the average earth wagon, about 50 barrow-loads (Rankine); a large do., heaped, 3c.yd.; a small do. do.,  $2\frac{1}{2}$ c.yd.

## RINGS.

Merchants and manufacturers of various articles used in building have combined to keep the prices up to a certain rate in each case, and issue a tariff to which the majority adhere. The astute builder will nevertheless contrive to get large orders executed at a lower rate by special agreement. This applies to drain pipes, stock bricks, glazed bricks, Bath stone, Portland stone, plate glass, and iron. The combination in the case of bricks is likely to keep the price at a higher level than that of recent years.

The Lords of the Committee of Council on Education have decided, with the sanction of the Lords of the Treasury, to allocate a fixed sum each year in the vote for the Science and Art Department for grants in aid of technical instruction given under the Technical Instruction Act, 1889, or under the Technical Schools (Scotland) Act, 1887. The sum so allocated for the financial year 1891-92 will be £5,000. The grant in aid will not necessarily be equal to, and in no case will it exceed, the amount contributed by the local authority out of the rates.



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## Our Illustrations.

## SCULPTURE AT THE ROYAL ACADEMY.

THESE four groups of sculpture, now on view at Burlington House, are among the most important works shown in the present Exhibition of the Royal Academy. The statue of Gordon on the Camel, in bronze, erected a week or two since at Chatham, in front of the Royal Engineers' Institute, and unveiled by the Prince of Wales, is in its way a masterpiece. At the Academy a duplicate (in composition) is exhibited standing in the middle of the central hall facing the vestibule. "Music" and "Peace," two statues by the same hand, Mr. E. Onslow Ford, A.R.A., occupy prominent positions deservedly in the adjoining Lecture Theatre. The former is a companion statue to "The Dance," both being commissioned by the Maharajah of Durbungah for niches in the ball-room of his palace. "Peace" was exhibited last year in plaster; this year it has been realised in bronze. "Life and Death," a marble group by Mr. Frank Fisher, stands in the central hall. The man is startled by the messenger of death as his wife is divided from him by the unrelenting arm which separates the living from the dead. This artist is to be congratulated on his work.

## CONTEMPORARY BRITISH BUILDERS.

(See description on p. 826.)

"BUILDING NEWS" DESIGNING CLUB: A VILLAGE BANK.

(A DESCRIPTION of this design appears on p. 850.)

## NORMAN DOORWAY, GLASTONBURY ABBEY.

THIS doorway is on the north side of the very beautiful edifice, known as St. Joseph's Chapel, the most perfect of the ecclesiastical ruins of Glastonbury Abbey, and is most interesting as occupying the site of the earliest Christian church in Britain—the venerated Vetusta Ecclesia or wicker church. It was dedicated A.D. 1186—that is, two years after the great fire. It is in the Late Transitional Norman style of architecture, and remains to this day an admirable specimen of Medieval masonry, fully bearing out the description, that it was "built of squared stones, and no possible ornament omitted," and so excellently were these squared stones cemented, that scarcely a mortar point is perceptible. The Transitional chapel, built upon the site of the Vetusta Ecclesia, was—until the middle of the 13th century, when the Early English part of it was built to connect it with the great church—of rectangular form, with a turret at each corner; two of these turrets at present remain. It consists of four bays or divisions. Two richly-carved doorways (one of which we give in our illustration) occupy the second bays north and

south. The sculptures decorating these beautiful doorways are, unfortunately, in too dilapidated a state for the subjects they represent to be given with any certainty, though a few of them may be distinguished. The south doors opened into the monks' churchyard, the spot where Joseph of Arimathea, with his son Josephus, and King Arthur, were said to be buried. Four round-headed, richly-moulded windows on each side, and a beautiful triple window at the west end, light the chapel. An elegant interlacing arcade, with Purbeck marble shafts, decorated the space beneath the windows. The flat buttresses, ornamented with shafts at the angles, terminate with a corbel—"Glastonbury Abbey: its History, Antiquity, and Ruins."—A. B. BAMFORD.

## THE GUESTS' HOUSE, ST. MARGARET'S CONVENT, EAST GRINSTEAD.

THE Guests' House, nearly completed, occupies a position on the south side of the chapel, and is connected therewith by a cloister. It forms one of the final additions to this extensive establishment. It is partly built of the beautiful local stone, the remainder being of half-timber oak-work; the ground floor is laid with Gregory's wood blocks on concrete. The contractors are Messrs. Wall and Hook, of Brimscombe, Stroud, Gloucestershire, their contract amounting to £2,922 17s.

## INFANT SCHOOLS, ST. JAMES-THE-LESS CHURCH, WESTMINSTER.

THESE new Infant Schools, together with a Vestry and Parish Room, are being built at the west end of the church. Owing to the site being limited, all available space has been utilised; this has necessitated the underpinning of the N.W. angle of the church. The school is to accommodate 150 infants, and this has been obtained on the ground floor. The external walls are of red brick, with Portland stone dressings, and the walls internally, for a height of 4ft. 6in., are lined with white glazed bricks. The floors are of Messrs. Dennett and Ingle's fireproof construction laid with Gregory's wood blocks. The contractors are Messrs. J. W. Bunning and Son, of 3, Talfourd-place, Cambridge, and their contract amounts to £3,093.

## THE THRING MEMORIAL CHAPEL, UPPINGHAM COLLEGE.

THIS addition to the chapel forms part of a memorial to the late Head Master, the Rev. Edward Thring, a seated figure of whom, by Mr. Thomas Brock, A.R.A., will occupy a position in the centre of the west end. Messrs. J. Parnell and Son, of Rugby, are the contractors, the amount of the contract being £846.

## SKETCHES IN GLOUCESTERSHIRE AND WORCESTERSHIRE.

CHIPPING CAMPDEN, in the northern part of Gloucestershire, will well repay the architect a visit. At one time a considerable business was done in clothing, but that has long since died out. Little alteration appears to have been made of late years in its buildings, most of them having been erected prior to the 18th century. There are, therefore, a goodly number of subjects for study, and Campden House takes a prominent position in the list. Built by Sir Baptist Hicks (Viscount Campden), who died in 1629, all that now remain are its entrance-gateway, terrace, pavilions, and a few ruins of the house itself, it having been burnt by Lord Noel, grandson of the above, to prevent its being turned into a Roundhead garrison. The Market House, standing prominently in the High-street and arcaded, also the almshouses, town hall, and not the least the church, are well worthy of more than a passing glance. A short distance from Evesham, on the road to Pershore, is the village of Cropthorne, where we have in the subject of our sketch a good example of half-timber work, a common construction for the domestic buildings of the neighbourhood. The timbers are usually blackened, forming a strong contrast to the plaster panels. Situated on the banks of the Severn, near Tewkesbury, is the village of Deerhurst, remarkable for possessing two ecclesiastical buildings of Saxon origin. The Saxon chapel adjoining the Priory or Manor House was discovered in 1885, and has since been carefully renovated. The parish church close by contains many features of interest, one of which is the 17th-century seating in chancel continued along the north, south, and east walls.—FRANCIS E. L. HARRIS.

## COMPETITIONS.

MANCHESTER.—Messrs. Royle and Bennett's designs for the new schools to be built for the School Board in Debster-street, Hulme, have been chosen for erection, and these architects have been now appointed for the work. There were six firms, all practising in Manchester, who competed by invitation.

WHITECHAPEL, E.—A few weeks ago we gave a reference to the limited competition held among twelve architects for the Free Library at Whitechapel. Mr. Elijah Hoole, F.R.I.B.A., who acted as professional referee, has awarded the prize to Mr. Arthur Hennings, of the firm of Messrs. Potts, Sulman, and Hennings, and he has been appointed architect for the new buildings by the commissioners. In a short time we shall probably give an illustration of the work.

## CHIPS.

The rural sanitary authority of Chard received, at their last meeting, a report from Mr. Charles Hawkesley, C.E., of London, as to the sewage of Crewkerne, together with an estimate of £15,000 as the probable cost of the scheme. The report was referred to a committee.

Several admirers of the late Richard Jefferies have exerted themselves successfully to secure a monument in Salisbury Cathedral to the man who has rightly been designated the "Gilbert White" of our time. The commission has been given to Miss Thomas, the Australian artist.

St. Edmund's Church, Exeter, has been reopened after restoration, including the construction of a new internal wagon-vaulted roof over the nave, and the erection of altar and pulpit, constructed from old carved woodwork belonging to the church. Mr. W. Cummins, of Exeter, was the architect, and Messrs. Tree and Bolley, of the same city, carried out the works.

The restoration of Linkinhorne Church is to be undertaken this summer under the direction of Messrs. Hine and Odgers, of Plymouth, at an outlay estimated at about £1,100. The church, which has suffered much from bad treatment at various times, possesses many features of interest, and when the west gallery, high deal pews, and the large central "three-decker" are removed, it will be of handsome proportions.

The partnership heretofore subsisting between Messrs. Cockcroft and Shoesmith, of Halifax, architects, surveyors, and estate agents, has been dissolved.

The Birkenhead town council have raised the salary of Mr. T. O. Paterson, the gas engineer, from £450 to £500 per annum; that of Mr. W. A. Richardson, the water engineer, from £400 to £450; and that of Mr. Birnie, the manager of the gas and water department, from £240 to £280 per annum.

A disastrous fire occurred on Wednesday on the extensive premises owned and occupied by Messrs. Peto Brothers, builders, in Gillingham-street, Pimlico, resulting in several of their workshops being burned out, while considerable damage was done to at least thirty other buildings. The official report states that "a range of buildings of one and two floors, covering an area of about 150ft. by 90ft., used as workshops, store, engine and boiler houses, and the contents, were nearly burnt out and partly fallen down; and a building of one floor, about 60ft. by 20ft., and stock in yard damaged by fire and water." Messrs. Peto Brothers are insured.

One thousand carpenters have resumed work in New York, thereby averting a general strike in the building trades.

At a meeting of the Bournemouth Improvement Commissioners, held on the 3rd inst., it was unanimously resolved to increase the salary of Mr. F. W. Lacey, the surveyor, to £500 a year, to commence from the half quarter. Mr. Lacey has held this appointment since March of last year.

A new Wesleyan church, dedicated to St. John, was opened by the Bishops of St. David's and of St. Asaph at Carmarthen on Tuesday. The building is Late Perpendicular, and consists of a clerestoried nave and chancel of the same height, with a turret for two bells over the chancel arch. Messrs. Middleton, Protheroe, and Phillott, of Cheltenham, were the architects, and Mr. T. Collins, of Tewkesbury, the contractor. The cost was £2,300, and seats are provided for 300 persons.

A supper took place last week in the large room of the hotel building erected near Fryston Colliery, near Leeds, which is to take the place of the old Milnes Arms Inn, on the Aire side. The new hotel is built of red brick, with stone dressings. Mr. J. H. Greaves, Leeds and Pontefract, is the architect; Mr. T. Heseltine, Pontefract, did the brickwork and masonry; and Mr. Hilton, Pontefract, the joiner's work.



## WAYSIDE NOTES.

EVERYONE knows that if an artist wants to produce a work that will attract the public he must paint some representation of stirring incident in history, or simple occurrence in daily life. In thus letting himself down from the high level of pure art, he enables all to appreciate his work. Somewhat on this principle, it comes about that, if we would restore a building of antiquity, we must endeavour to raise funds, not by appealing to the public's appreciative powers of beauty in architecture, but to their reverence for historical associations. Folk-lore attracts above everything, and the influences of association are all-powerful. Many a grand old work of architecture perishes by slow degrees because it has no stirring or interesting associations to appeal to public sentiment—many an ancient building containing gems of architectural design lies neglected because nobody in particular was born, married, or died within the shadow of its walls. Often we shall not regret this, seeing the import of the dread word "restoration"; but it is a little curious to reflect that the intrinsically beautiful starves, while the historically interesting feeds, so to speak, on the fat of the land.

I don't wish to insinuate by this that the old church of Burnham Thorpe is wanting in architectural merit, or that Horatio Nelson is worthy of one iota less glory than has been heaped upon him in days past, or of one particle less honour than will be paid to his memory in days to come. My capacity for true hero-worship is too large to allow any suspicion of the latter, and my reverence for all things East Anglian, and old Norfolk churches in particular, should reassure on the former point. Reading of the meeting, held early in the week, of the committee for the restoration of Burnham Thorpe, of which the Prince of Wales is chairman, reminded me of what I have before thought—that more often direct appeals might be made to the public on the score of the architectural beauty of a certain building, rather than because some obscure personage once in the dim past crossed the threshold; but in this case it is, of course, only right that architectural questions should be ignored, and the appeal made solely because the hero of Trafalgar spent many of his youthful days at Burnham, his father being then rector of the parish church. All will hope that the funds required will be rapidly subscribed, and the necessary works commenced. Sir Arthur Blomfield has been intrusted with the restoration, and having put the plans before the committee on Monday last, it is to be expected that the work will not be delayed. The restoration committee is so influentially composed that the money should be forthcoming with much less difficulty than in the majority of undertakings of this nature, and the historical associations are here worthy of honour and respect by every Englishman, and are not of that type, to which I have alluded, where the fact that somebody or another of whom the world knows little and cares less was associated with the building is employed as a lever to open the public purse.

I cannot for the moment call to mind exactly what sort of pulpit exists at Canterbury Cathedral; but, whatever it is, a proposal has been made to have another. The Rev. Thomas Field, of the King's School, Canterbury, suggests the new pulpit, which doesn't meet with general approval, so the letter-writer promptly appears upon the scene, with opposition or amendments to the original proposal. Among the latter class may be placed a letter to the *Times* from Mr. Cavendish-Bentinck, who appears to have a mild attack of architect-phobia, judging from his allusion to "any so-called 'church' architect." We need not be very indignant at this innuendo against architects who devote a large portion of their time to ecclesiastical work, for the term "church architect" has not been produced by ourselves. It is the creation of the general public, who are often pleased to talk of "church architects" as individuals quite distinct from the ordinary run of professional men. If the designation is objectionable, they should not employ it—no one wants them to. We say of such a one that he does much church work or ecclesiastical work, or that he designs many churches, but it is the public themselves who coined the compound word "church-architect." I can call to mind how, in the time immediately following my first passing beneath the portals of the profession, people often asked me, "Are you

articled to a 'church-architect'?" It used to impress me amazingly. Many a time I regretted that I hadn't been articled to a "church-architect." I believe I used to think of Spring-gardens, and sigh deeply; and when it happened that I had a protracted hour for dinner, and was late getting upon the stool and resuming tracing, ten-to-one it was because I had forgotten the swift flight of time in the dreary contemplation of the brass plates of one or another of the great "church" architects.

The scaffolding that has so long hidden the north transept of Westminster Abbey has lately disappeared, at least as far as regards the upper portion. I say *so long*, but in reality, considering the nature of the work done, the necessary restorations have been executed with great despatch. Now that the beautiful gable appears in freshly-picked and renovated stonework, one scarcely recognises it as the same as that with which we were formerly familiar, "old and brown" as the belfry at Bruges, and somewhat more soot-laden. The work appears to have been thoroughly done, in one sense only *too* thoroughly. It was evidently, however, either a matter of letting alone, or thorough renovation, half-measures such as are often best in restorations being out of the question. Critics will have something to say over the great rose window, as I believe that feature has been altered as we had reason to expect it would be. When the whole of the scaffolding and hoarding has been removed, the transept will appear new and prim for some time; but there is to be noticed an absence of that sleek hardness that some restorers manage to get into the work they do. By this I mean such an effect as that at Worcester, of which I complained, shortly after visiting the city last autumn. It is, doubtless, caused by too fine a finish to the walling, or possibly by the nature of some stone employed. If the former, it is the fault of the architect, certainly. This harshness of ultimate effect is bad enough in new buildings, but it is irritating in restorations. A man may spoil the effect of his own design by injudicious finish, but he has not the same moral right to injure old churches and cathedrals. Perhaps we ought not to complain, in this country, of harshness in masonry. By comparison with restorations carried out under the supervision of official Government restorers in France, the work in England is everywhere princely. It is only necessary to instance some of the interior restoration work in the Abbey-church on the summit of Mont St. Michel, where the stonework, or granitework, to be more correct, is pointed in much the same hard-and-fast and inartistic spirit as a painter lines a brougham or a locomotive; but this is only one specimen of what the French restorers can do when they make up their minds, as all who know France and old French architecture can testify. It is fortunate that here in England we have not any scheme of official restorations on the lines adopted across the Channel; for, although we all complain enough as it is, we are infinitely better off than our immediate neighbours.

I understand that there has been a species of canvassing in connection with the R.I.B.A. elections for officers for the ensuing session. Is this a proceeding calculated to increase the dignity of those concerned? It has been urged upon me by an old Fellow that it is not, and that the incident is to be greatly regretted. The method of procedure seems to have been that certain members of the Institute issued a circular advising the recipients to vote for certain gentlemen as councillors; and I am informed that this circular had the desired effect of influencing the returns of the poll. It may be all right according to the general view, but it hardly seems to me desirable to thus bias the voting, a better result being obtainable by allowing no circulars of any kind, each member being thus left to vote according to his own secret convictions.

"An Old Member" of the Architectural Association does well in endeavouring to increase the attendance at Conduit-street this evening. It is pitiful to think of the lack of interest evidenced by members in the proposed changes, as indicated by the sparse attendance at the last meeting. I do hope that there will be a better roomful to-night, and I should have liked to have seen a poll of members. But it may be safely taken as some guide to the frame of mind

of members as a whole that there has so far been no great opposition to the scheme. We may rest assured that, had there been anything included in the programme for the future that seemed plainly undesirable, it would have been made clear before now. *Silence* is generally construed as assent and consent. If, at the meeting to be held this evening, objection and opposition be again feeble or absent, the gentlemen desiring the reform may, with an easy conscience, push matters forward. On the other hand, you have received several letters from correspondents that plausibly indicate a feeling of distrust in some quarters, and of doubt as to the need or desirableness of the changes in the organisation of the Association's educational machinery. This seems ample justification for the demand of a poll. This demand, although supported by Mr. Cole A. Adams and Mr. Stannus, has been rejected, so the only way left for objecting members to show their opinion is to vote against the subscription being raised. For my part, I hope that the scheme goes forward; but only so long as it is the desire of the majority. What is offensive to me is the idea that by skilful management a section of the A.A. may make changes not to the mind of the whole. Even this, however, they are perfectly justified in doing, if no visible opposition is to be detected. Every member must now know of the proposed changes, and have had ample opportunity to say or write something.

The failure of the London County Council to enforce the "betterment" principle has given general satisfaction; but it is to be regretted that the views of the hybrid committee will in all probability cause the Strand improvement scheme to drop out for this session of Parliament. For this, it is to be supposed, will be the result of the committee's decision. The whole matter will have to be reconsidered. This seems a pity to those of us more directly concerned in the demolition of the Holywell-street "block," but it is some consolation to think that the adoption of a principle evidently objectionable to people generally has been discouraged. The County Council made a wonderfully feeble stand for the betterment clause. It appears, among other things, that the betterment on some £400,000 outlay in connection with Shaftesbury Avenue has only been £2,000, and that land on the Embankment which should have been greatly "bettered" has been lying vacant some 28 years! GOTH.

## CHIPS.

At a meeting of the governors of the college of Clebury Mortimer, Mr. Meredith, Kidderminster, architect, submitted tenders for the alterations necessary to be made to the old buildings to make them suitable for the extended education about to be given under the new scheme, when that of Mr. Veale, builder, Stourport, at the sum of £1,449, was accepted. The sum includes the cost of providing a hall (£382 10s.), which the vicar undertook to present to the charity.

The vicar of Ormskirk has just issued a final appeal for a fund of £3,000 for completing the restoration of the parish church. The restoration was commenced 12 years since by the late vicar, and is being completed by the present vicar at a cost of £17,000.

The committee appointed to undertake the restoration of Ramsbury Church have met at the Palace at Salisbury. The list of promised subscriptions amounted to nearly £2,300. Instructions were given to the architect, Mr. J. Arthur Reeve, to prepare drawings, specifications, and estimates for the repair of the body of the church, retaining the existing nave roof and putting corresponding roofs on the aisles, following the original lines, rebuilding a falling wall, and in every practical way preserving the present historical character of the church.

A new altar, dedicated to St. Patrick, was solemnly inaugurated last week in St. Francis Catholic Church, Cumberland-street, Glasgow. The structure, which has been erected at a cost of about £200, is from a design by Messrs. Pugin and Pugin, of Westminster, and is one of a series required for the internal completion of this church.

Old St. Paul's Episcopal Church, Jeffrey-street, Edinburgh, was reopened on Sunday after completion, from plans by Messrs. Hay and Henderson, of Edinburgh. The chancel, which has been divided from the nave by an arch, contains three new memorial windows, executed in stained glass by Messrs. Cox, Buckley, Son, and Co., of London; and the heating is on the hot-air principle, by Grundy, of London.

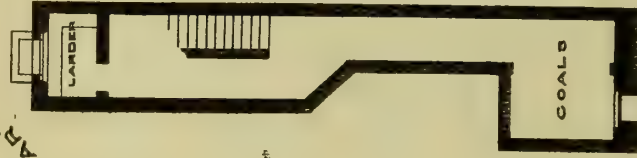


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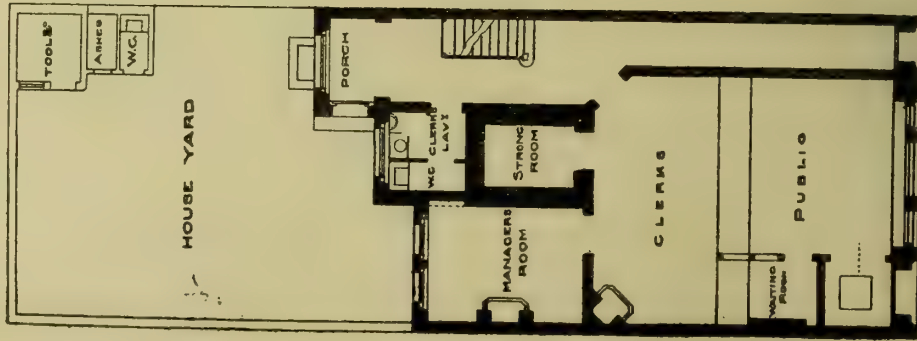
A VILLAGE BANK.

"NORTH STAR"

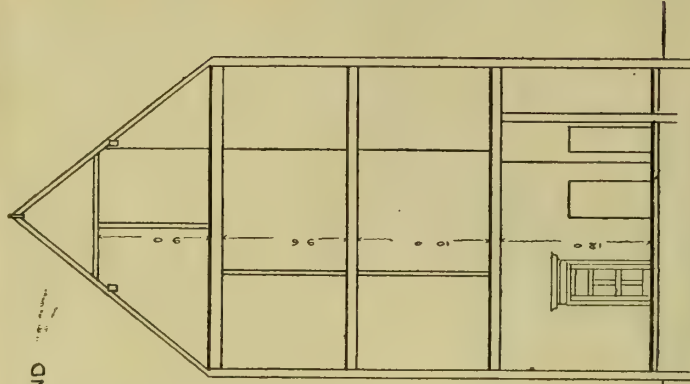
Scale of 1" = 20 feet



BASEMENT PLAN

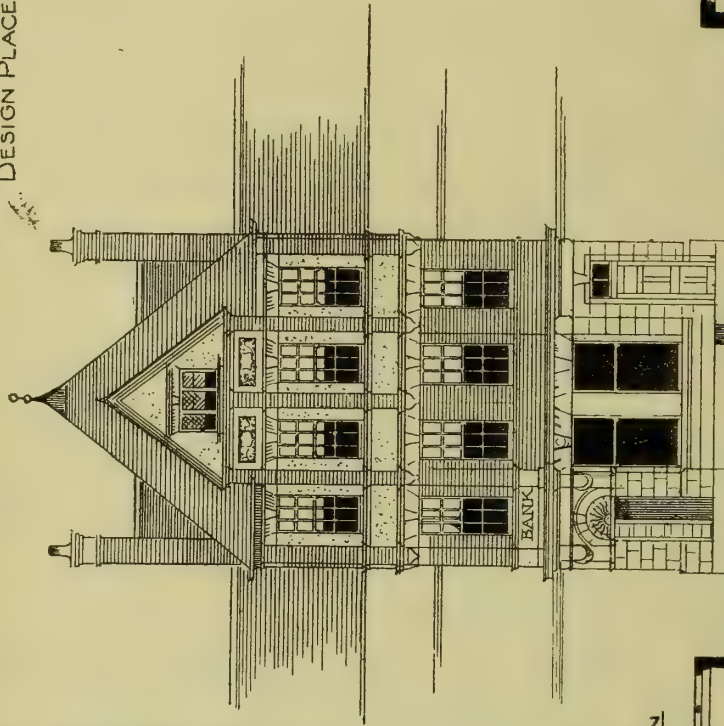


GROUND PLAN

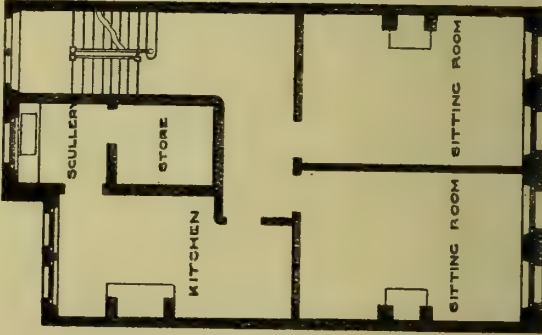


TRANSVERSE SECTION

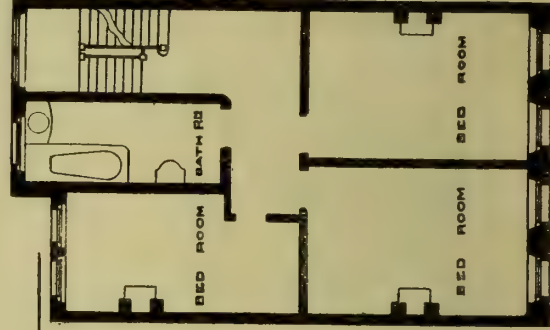
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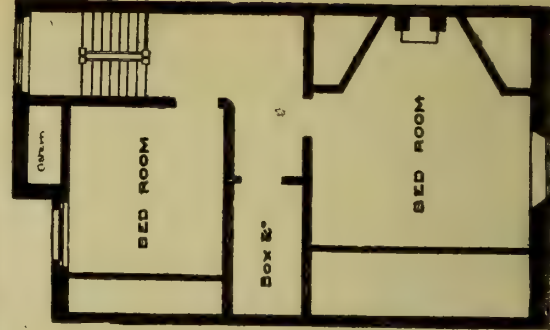
ELEVATION TO STREET



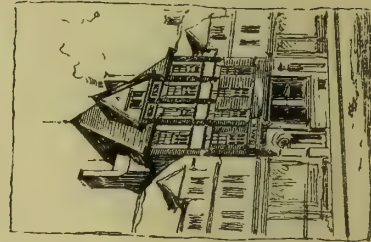
FIRST FLOOR



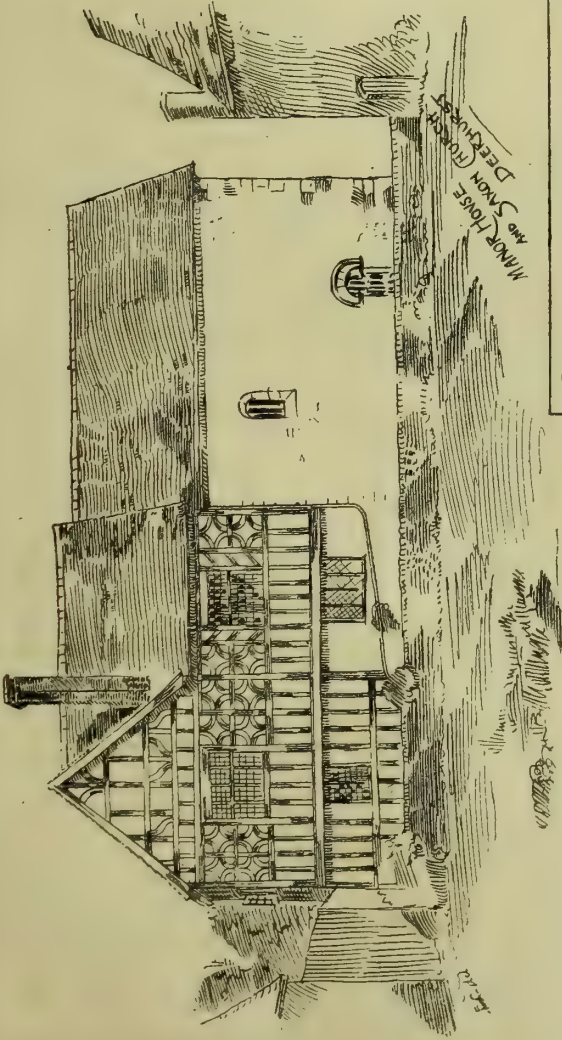
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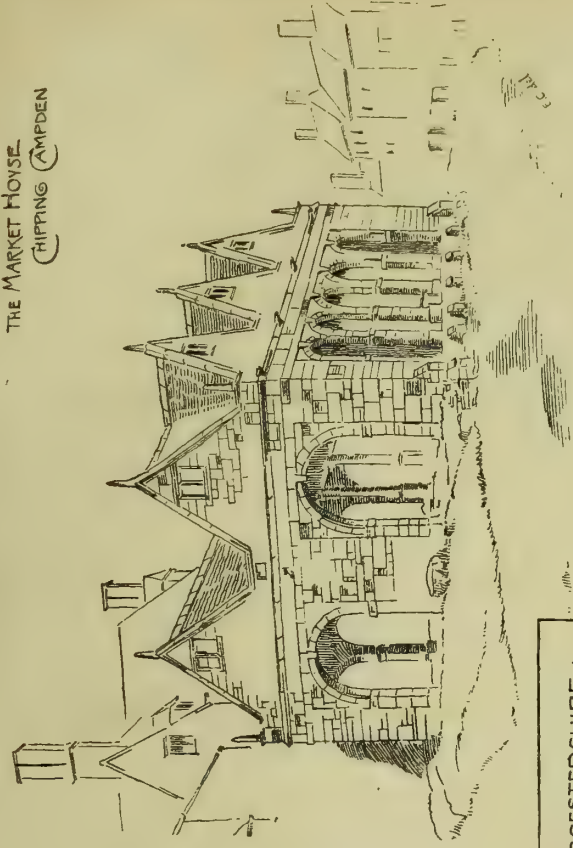
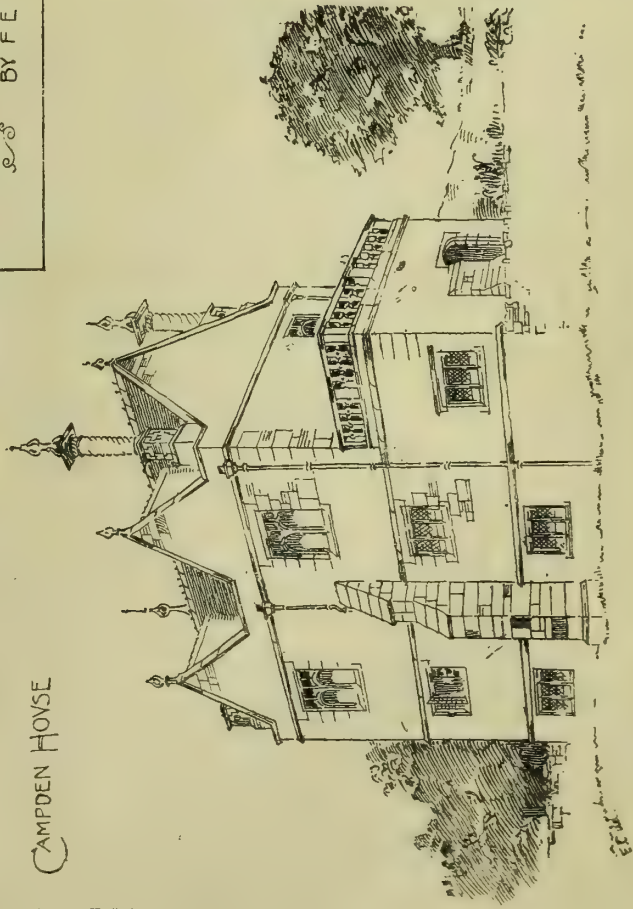
ATTIC PLAN







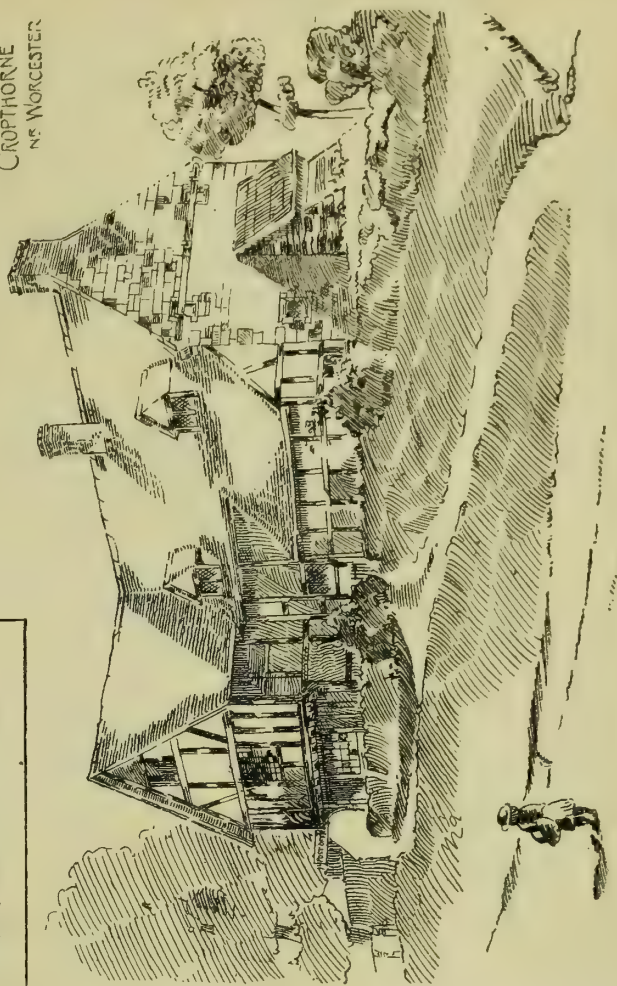
CAMPDEN HOUSE



THE MARKET HOUSE.  
CHIPPING CAMPDEN

SKETCHES IN GLOUCESTERSHIRE AND WORCESTERSHIRE  
BY F. L. HARRIS ARCHT.

CROPTHORNE  
NE. WORCESTER





## "BUILDING NEWS" DESIGNING CLUB.

## A VILLAGE BANK.

"WALLABY" is the author of the design placed first for this subject. "North Star" comes in second, and the third place is awarded to "Fiddler." We do not quite like any of the designs, and we are bound to admit that some of our best members of the Club are not up to their usual standard on this occasion. Summer sports and outdoor engagements may account for this to some extent; but it is a pity not to do the work properly if it be attempted at all. The conditions issued for the competition were these:—"Subject G.—A Village Bank on a street frontage of 25ft. wide, with a depth of 70ft. The adjoining buildings to be taken as three-story ordinary houses with shops. The bank entrance to be on one side, and a private entrance to the manager's residence on the other. The bank to provide public office, manager's room, small waiting-room, and strong room, with clerk's lavatory, w.c.'s, &c. The house to have two sitting-rooms, five bedrooms, kitchen, and offices, with bath-room, and also a store-room. Light only front and rear of the buildings. A good house yard to be reserved at the back; but there is no back way to the site. The coal cellar may be in the basement. Style: 'Free Classic,' in red brick and stone dressings. Scale: 8ft. to the inch. Elevation, section, plans, and sketch." We publish illustrations of the two first designs. The banking-office in the plan by "Wallaby" is not well proportioned, and there is a want of ingenuity in the arrangement of the staircase leading to the manager's residence, to make room for which the banking-clerks' accommodation necessarily in such a plan is curtailed. The waiting-room and the manager's room are well contrived enough; but the desks for the sub-manager and clerks would be difficult to accommodate. The first-floor planning is better, though the landing would be very dark, and the dining-room bay on one side is not a very happy feature. The other arrangements explain themselves. Externally, the upper-floor windows are too squat, and the central ones on the first and second stories bear no reference to those on either side of them. The bald, blank gable, too, towering above, hardly accords with the horizontal treatment adopted for the greater part below. There is, however, merit in the design, and it shows an endeavour to break away from the ordinary commonplace of the regulation type of bank building. "North Star" arrives at his effect very simply—a distinguishing characteristic with him. The red-brick first floor above the stone ground story, with the rough-cast panels and gable crowning the whole, would secure variety without sacrifice of unity. The lower stage of the composition is, however, rather poor and featureless, and the flat arches are not made the most of. Another arrangement entirely would have been better, with probably a big window under one central arch. The banking-room is of better proportions than in the first design; but the living-room in the house part are not nicely set out, and are crude in idea. "Fiddler" can draw better than in this design of his for the Bank. His perspective is excessively paltry; his plan—of course, from his hand, has some originality about it, while his elevation is in good taste; but for all that, he has neither done the subject nor himself justice on this occasion. The front part of the house is on one level and the back part floors at another. The staircase here, as in the first design, cuts up the building needlessly; and in the house for the manager an absence of comfort and homeliness is very marked. Fancy the drawing-room with nearly all one side of it, 25ft. long, devoted to window space almost from floor to ceiling—cold in winter, and tropical in summer. "The Red Rover" may fancy, from the condemnation with which we have mentioned "Fiddler's" design, that his, at least, should have taken the precedence to it; but, as a matter of fact, we could not overlook the great mistake committed by "Red Rover" in wasting the central part of his building by a well area to light the banking room below—a necessary provision, in a way, because the manager's room and the waiting-room are located in front next the street, and thus shut off the window space, save at the rear. "Red Rover" deserves praise for care and ingenuity in planning. His elevation is pretty on the ground and first floors; but the semicircular windows above are not in agreement with the lower part, and although more pretentious, are really commonplace, expensive, and

out of character, at least, with bedrooms. This designer fails in details; thus, for example, the urinal almost under the nose of the clerks at their desk in the Bank is very bad—say what you will about it. "Syak" sends a sturdy common-sense façade in red brick and stone, with all the cornices and strings properly returned on to the face of the front without projecting on to adjoining property. This restriction is a real one, and although no doubt often very difficult to contend with patiently, it must frequently have to be dealt with. Usually a truss is stuck up, and the trick is managed to the satisfaction of district surveyors and adjoining owners; but seldom has good taste been consulted, and originality is generally an unknown quantity. The plan of this design is very good, save for the objection insisted on in "Red Rover's" arrangement—viz., the central open area idea. In so small a building this expedient is fatal. "Syak," with study and work, will do better than this Bank some day. Not a few of the leading designers of the rising school once contributed to our Designing Club, and we contributed our share in their improvement by pointing out their faults, and urging them on to further efforts. "Skull and Cross Bones" is one of our best contributors now; but he has lost his leading position this time. For one thing, he has cramped up his plan too much, and his bank is crowded to such an extent as to be almost made up of doors and windows. How the manager would manage to sit in his room we cannot imagine, and the waiting-room is equally uncomfortable and ill contrived. The kitchen on the ground floor, at the end of a long passage, facing the front door, occupies a wing at the rear, and has a bay window commanding all that goes on in the private room of the manager. The elevation is fairly good, but no more. "Saxon" comes next in merit; but he occupies nearly the whole of the site, extending the bank to undue proportions. He seems to have secured by these means very convenient premises, however, and works out the problem with skill, even if in excess of the wants of a village. "Tyne" draws an elevation as if he were unfettered by regulation methods, and there is an amount of reserve in the square common-sense outline of his façade, the cornice being made to return on to the face of the front. The effect in perspective, however, dispels the illusion engendered by the geometrical elevation, as one finds that the chimney stacks, so important in the "upright," are set back considerably. The lofty roof is made no use of, and the thin projecting hoods to the windows, in a dark climate like ours, would serve no good purpose, save on very sunny days, when the shadows, no doubt, would insure a certain effect. The manager is too much cut-off from the work of the bank, and the clerks, in their room beyond the Public Office, would be without supervision. The plan is otherwise convenient in many ways, and shows "Tyne" to be among those who do not always shirk their work. "West Anglian" cuts up his office with a screen, which we cannot account for, and he apportions his building generally into very small parts, though he nearly covers the whole of the site. He draws carefully, and, if the local authorities would permit him to build the projecting columns or pilasters on to the pavement, his front would work out fairly well, though the upper part requires recasting when drawing out the details. At present, the gable is not well proportioned. "Theta's" plan is not good, but it evinces care, while the main idea of the building outside, architecturally, is picturesque and suitable. How the projecting upper stage of the elevation is made flush with the walls of the adjoining houses, and yet, at the same time, be shown below in a line on plan with their ground stage, is beyond us. The half-columns are ugly, but the three arches to the bank-front would look very well otherwise. "Hubby" draws very badly, and his plan is not well contrived, but we place him here because there is some character in the elevation of his design. He ought, however, to learn drawing and take more pains with his work. "Dot" does his best, evidently, and his sheet shows painstaking industry. The plan is better than the elevation, which suffers from not having the windows properly delineated. "Coombe" who projects his cornice considerably on to his neighbour's part—believes in heavy, curved pediments, and has planned a convenient, well-arranged building, in many points better than some others already mentioned; but this is relatively the place in the contest we must award him. The other designs are by "N.B.," "Y.,"

in a circle; "Glaucus," "Bohemian," "S. C. D.," "X. Y. Z.," "Sector," "Mene-laous," "Renaissance," and "Box," who ranks last, because he does not attend to the rules and so coloured his drawings.

## BUILDING IN AUSTRALIA.

THE greedy landlord is rampant in Melbourne as in other parts. The "land-grabber" appears to be as obnoxious and objectionable an obstructive to light and health as he is in the Metropolis and our provincial towns. A writer in the *Building and Engineering Journal* of Australia and New Zealand complains of the selfish policy of the "land boomer" as he has affected Melbourne. The so-called "land boomer" is the "jerry builder," and has done apparently as much damage to the suburbs of this once-beautiful and charming city as he has in the neighbourhood of most towns. Houses by the hundred are erected, but without a chance of letting, to the manifest injury of other houses in their immediate vicinity. Then we hear that in most of these houses sanitary laws are quite neglected, the consequence of which is that a virulent form of typhoid and diphtheria has broken out in one locality. The evil complained of is that which we deplore—the sacrifice of light area, the covering of every available space to gain more accommodation. The same writer criticises the plans submitted in the recent competition for the Commercial Bank of Australia. The offices were in many cases arranged in positions that could not be properly lighted, the object of the competitors to obtain office accommodation being gained at the expense of proper lighting areas. These comments are instructive as showing that in a comparatively recent town like Melbourne, situated in a sparsely-populated country like Victoria, the very same tendency of overcrowding is manifested, and that builders and architects are playing into the hands of speculators. The rectangular division of towns has certainly not been favourable to light and air, as the plots on which buildings are erected are reduced to the smallest area.

## CHIPS.

Mr. Arnold Taylor, an inspector of the Local Government Board, opened an inquiry on Friday to consider an application by the Skipton Rural Sanitary Authority to borrow £9,000 for constructing waterworks and supplying the town of Barnoldswick, near Colne, with water. For many years the town has been practically without water, the only means of supply being by wells and hawkers who retail the water. The area of the township is 2,129 acres, and the population 5,000. The scheme is a pumping one (for which Messrs. Brierley and Holt, of Manchester and Bradford, are the engineers), and the yield of water is 190,000 gallons per day, equal to the consumption of double the present population. No opposition was offered.

On Wednesday week the foundation-stone was laid of a church to be erected on the Burton-road, Lincoln, to be called the church of St. Matthias. The architect is Mr. E. P. Loftus Brock, F.S.A., of London, and the contract is being carried out by Messrs. Wright and Sons, of Lincoln. The church is to be of stone, with pillars and arches of timber dividing the nave from the aisles. The style will be that of the middle of the 13th century. The church will have a rather low timber spire at the west end of the nave. Accommodation will be given for 500 worshippers in the nave and aisles, and the cost will be under £2,000.

The foundation-stone of a new church was laid at Revesby, Lincolnshire, on Friday. Messrs. Kirk and Knight are the contractors.

The joiners of Malmö, in Sweden, have struck work. Great disturbances have taken place, and it has been necessary to summon the troops from neighbouring towns to restore order.

The parish church of Bredvardine and Brobury was publicly reopened last week after restoration. New concrete floors have been laid with a surface of wood blocks. The tiles in the choir part of the chancel have been relaid upon a concrete bed. This work has been carried out by Messrs. Malvern and Sons, contractors, of Cheltenham. The organ has been taken down and rebuilt by Mr. Eustace Ingram.

The foundation-stone of the Eton Mission church in Gainsborough-road, near Victoria Park, E., was laid by Princess Christian on Saturday. The church will be Gothic in style, will be built of red brick with stone dressings, and will cost £10,000. Mr. G. F. Bodley, A.R.A., is the architect.



## Building Intelligence.

**DEWSBURY.**—Mr. Wyatt Papworth, F.S.A., F.R.I.B.A., as Master of the Clothworkers' Company, opened yesterday (Thursday) the new Technical School at Dewsbury. The school has been erected from designs by Mr. J. Lane Fox, of Dewsbury, chosen in competition, and is situate close to the infirmary in Halifax-road. The basement floor comprises the weaving department, the biological laboratory, store-rooms, &c. On the ground floor is the lecture theatre, which has a large auditorium and platform, a lecturer's retiring-room, which is fitted as a chemical-preparation room, and the platform has the demonstrator's table and draught-closet and other fittings. It is also fitted with diagram-screens, sliding blackboards, and other teaching appliances. On the same floor there are three class-rooms, one of which will serve as a smaller lecture-hall. In the upper story there are a freehand drawing-room, a model and cast drawing-room, and a small lecture-room, in addition to the chemical laboratory. The laboratory is a lofty chamber, fitted with benches for double lines of students, amply supplied with draught-closets, sinks, shelves, and drawers, together with gas and water supplies. Access is gained to the biological laboratory direct from the corridor. The library, secretary's office, and board-room are on the ground floor, closely adjoining the principal entrance. The heating of the whole building is to be carried out on the low-pressure hot-water system. The school was illustrated by perspective and plans in the *BUILDING NEWS* for July 27, 1888. The cost of the whole building, including £1,000 for the furnishing, will be £8,000.

**HEBBURN.**—The new cemetery, which the Bishop of Durham, Dr. Westcott, will consecrate on Monday next, is situated on the high road leading to Newcastle. The grounds cover 14 acres exclusive of the space occupied by the entrance lodge, gates, and a portion of the drive, and has cost about £10,000. The entrance lodge, which is built of stone, is in the Gothic style, and contains three living-rooms and a board-room, the dimensions of the building being 41ft. by 32ft. The walks, which have been laid out by Mr. Allinson, the clerk of the works, run parallel through the ground, and divide it into eight squares. The carriage drive is 20ft. wide, and the walks 9ft. At each side of them there is a border which has been planted with flowers and shrubs. In the centre of the grounds stand the chapel, which are also Gothic in style. Rising from the centre of the chapels is a spire 103ft. in height, and containing a gong. Each of the chapels inside measures 30ft. by 18ft., and is fitted with pews and reading desk of yellow pine. The roofs are open, and the buildings are lighted with eleven windows. The mortuary measures 15ft. by 10ft., and is lined round to the height of 4ft. 6in. with white glazed bricks. The cemetery is supposed to be capable of being used for burial purposes for 200 years. The architect is Mr. F. West; Mr. T. Allinson is clerk of the works; Messrs. Thos. Hepple and T. Lumsden, are the contractors; and Mr. Ramsay, of Yarrow, has superintended the laying out of the grounds.

**WOODHALL SPA.**—The Alexandra Hospital, which has been built from designs by Mr. C. E. Wheeler, of Boston, was opened on May 29th. The external walls are of red bricks, with dressings of red terracotta, Wakefield stone being used for window bands. The building is so arranged that, with one exception, the wards have a southern aspect. On the ground floor are two wards, one 25ft. by 18ft., intended as a day-room for patients, while the other, 30ft. by 18ft., will be a sleeping-room. All the wards are heated by hot-water pipes, and are ventilated on Tobin's system, while the mantelpieces are of Doulton's ware. The rooms are fitted with hanging closets. The main staircase is of pitch-pine, with oak rail, and sunk perforated panels. At the top of the stairs on the south side is a stained window, the glass of which is by Swain Bourne. On the upper story are three wards, two of which face the south, while the third runs through from the front to the south, being over the kitchen. The hospital is designed to accommodate twenty patients; but in case of pressure that number might be increased by ten. The matron's and nurses' bedrooms, linen-closet, &c., are placed on the landing opposite the wards. Mr. Oliver Cromwell, of Chislehurst and London, was the

builder; the lift was supplied by Messrs. R. Waygood and Co.; Mr. Gibson was the clerk of works.

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**DUNDEE INSTITUTE OF ARCHITECTURE, SCIENCE, AND ART.**—The members of this institute held the first excursion for the season on Saturday last. The place chosen was Linlithgow, and the party, numbering about 70, travelled by the Tay and Forth Bridge to Forth Bridge Station, where the train was specially stopped to allow the party to alight. Brakes were in waiting to drive through the grounds of Hopetoun House. At Abercorn Church, the Rev. Mr. Crawford gave an address, pointing out the various parts of interest to the architect and antiquary. A Norman doorway now converted into a window, the old oak pulpit, and the wood-carving and panelling of the Hopetoun pew formed the chief points of interest. Mid Hope House, an interesting specimen of an old Scotch mansion, dated 1582, containing a handsome oak staircase, was next seen. At Linlithgow the old parish church and palace were visited. Mr. Russell Walker, architect, Edinburgh, who is publishing an illustrated work on the pre-Reformation churches of the Lothians, acted as guide to the church. The Palace was visited under the leadership of the Messrs. Henderson, of Linlithgow. The fine Parliament Hall and chapel, the room in which Queen Mary was born, and the bower in which Queen Margaret "wept the weary hour" watching for the return of King James IV. from Flodden were regarded with great interest. Having inspected the dungeons, torture chamber, kitchens, stables, &c., connected with the Palace, the fish hatcheries on the loch, and the portrait tablet of the Regent Murray, erected opposite the spot on the street where he was shot by Hamilton of Bothwellhaugh in 1570, were examined.

**NORTHERN ARCHITECTURAL ASSOCIATION.**—The second summer gathering of the Northern Architectural Association took place on Saturday at Sunderland, when there was a large assembly representing the profession in the whole of the district. It had been arranged that they should first visit the Commissioners' Pier Works at Roker. They were received at the railway station by a number of Sunderland gentlemen, and also by Mr. Brightwen Binyon, A.R.I.B.A., of Ipswich, who subsequently conducted them over the new Municipal Buildings in Fawcett-street, designed by him. On their arrival at Roker, the party were received by Mr. H. H. Wake (chief engineer) and Mr. G. T. Nicholson, his assistant. They proceeded to the Commissioners' Offices on the works, where Mr. Wake, by means of a large plan, explained the nature of the pier works which the Commissioners are carrying out under his direction, and also exhibited a model of the huge crane used at the end of the pier in laying the blocks, together with other working models. The party were next conducted by Mr. Wake through the Concrete House, where they saw the process of mixing the materials of which the blocks are made. One block, weighing about 43 tons, was hoisted on to a wagon and drawn by a locomotive to the extreme end of the pier. About 15 tons of concrete were deposited on the second course of the pier, and on that the block was placed. Close upon 2,000ft. have been laid, and only 760ft. more remain to complete the North Pier. The South Pier, its complement, will probably be started next year. After the process of dropping a concrete bag, weighing 105 tons, in the sea from the barge had been witnessed, and the sub-way had been inspected, the visitors proceeded to the new Municipal Buildings, where Mr. Binyon acted as cicerone.

At Stockport, on Saturday, the foundation-stones were laid of a mission church at Lee-street, off Middle Hillgate, in the district of the parish church. The new building is being erected by Messrs. Brown, contractors, from the designs of Mr. Peter Pierce, jun., architect, Stockport.

The new free public library for Edinburgh was opened on Monday by Lord Rosebery. It has been built at a cost of £20,000 from plans by G. Washington Browne, of Edinburgh, and occupies the site of Hope House, Cowgate, having a main entrance in the thoroughfare adjoining George IV. Bridge. The style is Renaissance, of the period of François Premier. Mr. W. Bruce was the clerk of works.

## Engineering Notes.

**THE ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.**—A meeting of the Lancashire and Cheshire district of this Association was recently held at Burnley. The president (Mr. H. Percy Boulnois, city engineer of Liverpool), and the members were received at the Town Hall in the morning by the Mayor. On the motion of Mr. Mitchell (Hyde), seconded by Mr. Dent (Nelson), Mr. S. S. Platt, of Rochdale, was re-elected secretary for another year. The members then inspected the new Town Hall, the new stone-yard at Danes House, and the sewage works, where Johnson's sludge presses have been recently introduced. On the return journey the Victoria Hospital, built on the circular-ward principle, was visited. In the afternoon the members visited the Cant Clough Waterworks, the most interesting feature in connection with which is that the puddle trench has been carried to the unprecedented depth of 190ft., raising the cost of the scheme from £59,000 to £150,000. On the return to Burnley Mr. Button submitted a paper on the works visited, and there was a discussion, in which the president, Mr. Lobley (Stafford), Mr. Blair (Bootle), Mr. Brierley (Newton-in-Makerfield), Mr. White (Sheffield), and others took part.

## CHIPS.

A new Congregational Church was opened at Heath, Halifax, on Thursday in last week. It is in style Early Gothic, and is intended for both school and church, but a church will, in time, be added beside it. The present building contains two floors, the school and vestries occupying the lower floor. The school is 42ft. by 35ft., with accommodation for about 350. The church is approached from the higher ground by a terrace, and is 78ft. 4in. by 35ft., and will accommodate 450. The seatings and fittings are of pitch pine, varnished, and the rostrum is of an ornate character. The cost, exclusive of fittings, is about £4,270. Messrs. Horsfall and Williams are the architects, and the chief contractors are: mason, Mr. E. Naylor, and joiners, Messrs. C. and W. Whiteley, Rishworth.

A new organ, built by Messrs. Wade and Meggitt, of Tenby and Pembroke Dock, was opened last week at St. Bride's Major Church, near Bridgend.

Memorial stones of a new Congregational Chapel were laid at Hemel Hempstead last week. The chapel will be Early English in style, and built of red and grey bricks, with Bath stone dressings, and the internal walls will be lined with white Arlesley bricks. The whole of the internal woodwork will be of pitch pine. The dimensions are 60ft. by 30ft., exclusive of organ-chamber and vestries. Mr. W. A. Fisher, of Hemel Hempstead, is the architect; and Mr. E. Horn, of the same town, has taken the contract at £1,893.

St. Patrick's Catholic Church, Edinburgh, was formally reopened on Sunday after having undergone alterations at a cost of several hundred pounds, and been redecorated. The chief new features are a porch at the west side, which forms the principal entrance, and the more abundant light admitted to the church itself by an alteration of the windows and the adoption of pale tints for decorative purposes.

Under the personal supervision of the painter, the canvas for Mr. Ford Madox-Brown's tenth decorative panel in the Town-hall of Manchester was unveiled on Monday in position. It is in a good light, its nearest neighbours are akin to it in tone and treatment. "John Kay, Inventor of the Fly-shuttle," is being hastily wrapped in a sheet by his wife and a couple of journeymen, and one of the latter is already shouldering the inventor, in order to carry him off undiscovered by the angry throng of weavers that is furiously attacking the house.

Memorial stones of a new Baptist chapel in Deacon-road, Widnes, were laid on Thursday, the 5th inst. The building will be Geometrical Gothic in style, carried out in red Ruabon terracotta, bricks, and local stone, and all inside woodwork will be of pitchpine. The chapel will be 47ft. by 31ft., and will be seated for 250 persons. At the rear is a schoolroom 46ft. by 17ft. The total cost will be £1,250. Mr. Richard Owen, of Liverpool, is the architect, and Messrs. Sayce and Randle, of Warrington, are the contractors.

The first reading of the Government Bill for the preservation of the Paris Exhibition buildings, and for the conversion of the rest of the Champ de Mars into a public garden, was voted by the French Chamber on Tuesday by an overwhelming majority.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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## SITUATIONS.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., LI., LII., LIII., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

PABOXI, Atherton. (Apply to Jas. Forrest, secretary, Institution of Civil Engineers, 25, Great George-street, S.W.)

RECEIVED.—J. H. and Co.—B. of H.—D. and I.—R. W. and Co.—G. A.—D. T. B.—T. W.—J. and E. G.

## Correspondence.

"NO CHARGE MADE WHERE SATISFACTION IS NOT GIVEN!"

To the Editor of the BUILDING NEWS.

SIR,—The advertisement given below will show your readers the kind of competition architects have to put up with in this place. I cut the slip from one of our leading papers, and I now see that it has been written out, and with the additional information that the "architect of established practice" will prepare bills of quantities free of charge, is stuck on posts at the corners of streets in this city.—I am, &c.,

F. DE J. CLERE, F.R.I.B.A.,

Wellington Diocesan Architect,

Phoenix Chambers, Lambton Quay, Wellington, N.Z., April 18.

## ENCOURAGEMENT TO BUILD.

AN Architect of Established Practice prepares plans and specifications for half the usual price. No charge made where satisfaction is not given. Communications invited from parties knowing anyone about to build; liberal commission allowed. Before you build or make any alterations, apply to R. C. Shearman and Co., Lambton-quay, Wellington.

## ARCHITECTURAL MODELS.

SIR,—Referring to the proposal to establish a museum of architecture at King's College, "Goth," in "Wayside Notes," May 16, objects to the proposal, and says models are mere toys. I would refer him to the following, which appeared in your valuable journal:—

"To promoters of competitions and the general public the model is the only comprehensible representation, and its popular value for instruction in art may be estimated by the interest

the ordinary sightseer takes in looking into models of buildings and engineering works in any of the museums and exhibitions open to the public."

In addition to these advantages, authorities would in time secure possession of a valuable collection of architectural models of executed works, the educational value of which would be very great.—I am, &c.,

June 9.

C. N. THWAITE.

## VARNISH AND OIL ON OLD STONE-WORK.

SIR,—Some twenty years ago the interesting experiment was made at Lincoln Cathedral on the piers supporting the arcade below the triforium, or angels' choir, by covering them with a coating of oil and varnish after the white-wash had been removed. The effect, said to resemble Purbeck marble when it was first done by those who made the application, was, to my mind, anything but pleasing, though possibly the application may have deserved the character of preserving the old masonry. Sufficient time has now passed to judge better as to this, and I shall esteem it a favour if some competent correspondent who knows this cathedral well will tell us how the columns so treated look now, and if the oil and varnish coating is really a good method to adopt in such cases.—I am, &c.,

AN ODD FARTHING.

## ACCIDENTS TO TALL CHIMNEYS.

SIR,—I have been favoured by the owners with accounts of two tall chimneys being struck by lightning, and possibly they may be useful to those of your readers interested in these structures.

The tallest chimney shaft in the United States is that erected by the Clark Thread Co., Newark, N. J. It is 335ft. from ground line to top of cap, circular in form, 28ft. 6in. diam. at base, and 14ft. under cap (27ft. 6in. below the summit). It was built in 150 days of nine hours each, and completed in September, 1888, from designs of Mr. F. Stryker, under the direction of Mr. W. Clark, general manager to the company. The purpose of the shaft is to serve 21 boilers of 200H.P. each. The coping is of cast iron composed of 32 sections, bolted together by internal flanges.

On the 28th March last this shaft was twice struck by lightning. The first stroke tore out a few bricks under the bell-shaped top, then missed a length of about 20ft., and made four ragged-shaped gashes in the exterior wall of shaft, two to three bricks deep by 2ft. wide and several feet long, down the north side, and below this a serious crack about 50ft. long. The second stroke tore out a few bricks of the bell shaped portion of cap. This shaft had no lightning conductor.

The Hurst Mills chimney shaft, Ashton-under-Lyne, which is 225ft. from ground to top, octagon in shape, has an outside girt of 74ft. at bottom and 55ft. round top. It serves to convey the gases, &c., from 11 boilers. The cap of this shaft is in brickwork, and a copper-rope lightning-conductor is attached to the structure.

On the 12th May last the shaft was struck by lightning; the electric fluid passed down the conductor, struck the ground, and bursting some gas-pipes, set fire to the escaping gas, and lifted up some flag stones about 20 yards from the shaft; some of the escaped gas entered a toll-house close to where the accident took place, and an explosion followed, injuring the occupants. The chimney shaft itself escaped damage.

The shaft which preceded the above one was struck by lightning about 40 years ago.

Records of these occurrences may be worth noticing by readers of the BUILDING NEWS, and perhaps other correspondents may have accounts of similar accidents, which would be interesting to all who study the construction and stability of tall shafts and the efficiency of lightning-conductors.—I am, &c.,

R. M. BANCROFT.

## THE BEST BRICK AND TILE KILN.

SIR,—I saw in your paper of May 30 the plans of a new patent brick and tile kiln. I have one myself, but being poor, I could not get it into the market, as I could not afford to pay for advertisements. I have to lose by it, as I cannot afford to pay up my patent. If you could put it in your paper it might do some one good, for it is the very best that can be built or used for burning bricks. It is the cheapest to build, the simplest to work, and the best and coolest for men to work

in. The air passes through the green bricks in front of the fire, dries the bricks, and gets them warm ready to receive the fire, whereby a deal of coal is saved, the bricks also being more of a uniform colour and a deal more solid. It is the study of nearly thirty years. I have worked with the Hoffman ever since 1860, and it has been my study how to get the heat from the men and to turn it to a proper account, which by my arrangement you will see I have succeeded in doing. The heat where the men work is not so great as it would be out in the sun on a hot summer's day. I have been all my life a brick-maker from my infancy. I am now 58 years old, and I am sure there could not be a better kiln built, nor a cheaper one to build, nor one easier to work.

Fig. 1 is a combined side and end elevation of one of my oblong brick kilns showing the roof to protect the same from the weather. Fig. 2 is a sectional plan on line A B. Fig. 3 is a sectional end elevation on line C D. Fig. 4 is a sectional end elevation on line E F. Fig. 5 is a plan with the roof removed. My oblong kiln, as shown by the plan Fig. 2, is divided by green brick walls into twelve divisions or chambers, numbered from 1 to 12, which are shown by dotted lines on the drawings, these walls being burnt, as are the other green bricks, and removed from time to time when the chambers are emptied. The main flue, H, runs under the middle wall to the chimney, G; but this flue, to save expense in massive foundations, may run along higher in the wall than shown. The branch flues, J, run into the main flue, each division being connected with the main flue H, by such a flue and damper; but the two end divisions, 1 and 7, have two such exit flues and dampers for the purpose of varying the direction of the heat as it passes on. The dampers are marked with the letters K, K<sup>1</sup>, K<sup>2</sup>, to K<sup>11</sup>. The upper longitudinal flue, M, only runs along the length, or nearly the length, of the kiln, and is one of the most important features of my invention, by which I transmit the heat from one chamber or division of the kiln to another by means of the vertical shafts, U, U<sup>1</sup>, U<sup>2</sup>, U<sup>3</sup>, U<sup>4</sup> into this flue M and the shafts N, N<sup>1</sup>, N<sup>2</sup> to N<sup>11</sup> into the divisions or chambers, there being one shaft, N, to each division or chamber, of which there are twelve in this particular instance.

The portable bonnets P and P<sup>1</sup>, are also most important as saving considerable expense in flues and brickwork and heat, as they can be moved from one shaft to the other so connecting the various divisions or chambers with each other which, in conjunction with the dampers or branch flues, connect each division with the chimney G, thus transmitting the heat from any hot chamber in which the bricks have been burnt to one in which the bricks are green, to do the initial part of the drying.

The small holes r, r, r, through the top of each division are for the purpose of feeding fine slack into the said chambers to keep the kiln continuously burning. Of course in changing this kiln those accustomed to such work will leave the usual passages so that the heat will have perfect freedom and be guided amongst the articles to be burnt, so circulating throughout the whole mass of bricks to be burnt.

To avoid the necessity of rounding the corners of these kilns I place the passages s, s, s, in the end of the division chamber, No. 6, and the passages s<sup>1</sup>, s<sup>1</sup>, s<sup>1</sup> in the corresponding wall of division or chamber 12. These passages, s and s<sup>1</sup>, lead into the branch flue S<sup>2</sup> and S<sup>3</sup> and past the special dampers s<sup>4</sup> and s<sup>5</sup>, and thence, in the case of chamber 12, in the direction of the arrows to either dampers K<sup>1</sup> or K<sup>2</sup>, or in the case of chamber 6, to dampers K<sup>3</sup> or K<sup>4</sup>. The openings w are for discharging the kiln.

I will now follow out the action of the heat in the kiln herein illustrated, with the bonnets fixed as shown to connect the division or chamber 1 with the division or chamber 8—the other shafts in the flue M would now be covered by caps or plates—I will suppose that the fuel is still being fed into chambers 3 and 4; No. 2 chamber and No. 7 chamber are cooling off; we will also suppose that the men are drawing off No. 12 chamber; then the back draught from No. 3 chamber passes through No. 2 chamber to No. 1 chamber, then along the bonnet P and flue M to the bonnet P<sup>1</sup> and down the shaft N<sup>1</sup> into the division 8 and through the damper K<sup>2</sup> into the branch flue J, and thence to the chimney G. In the mean time chamber 4 is working with a front draught—i.e., leadings into chambers 5 and 6 in



FIG. 1.



FIG. 2.

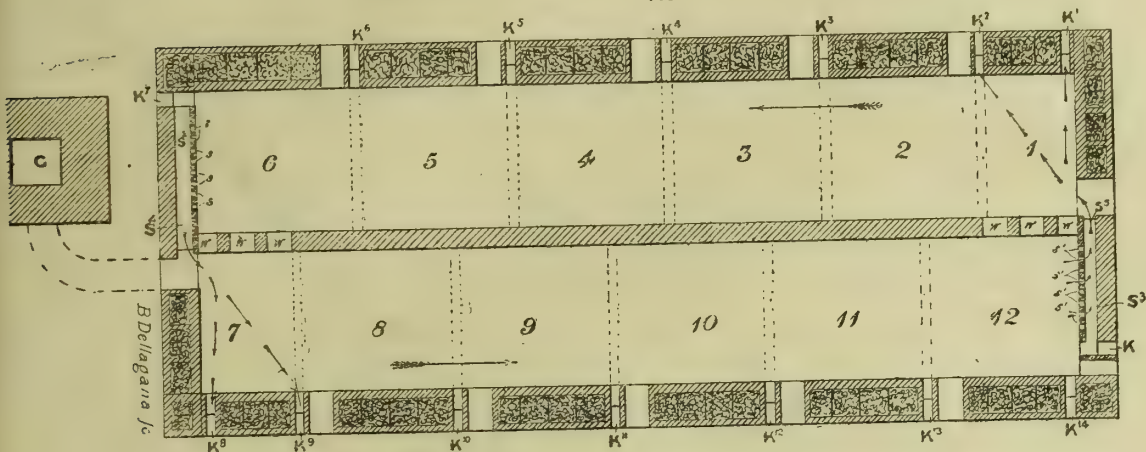


FIG. 3.

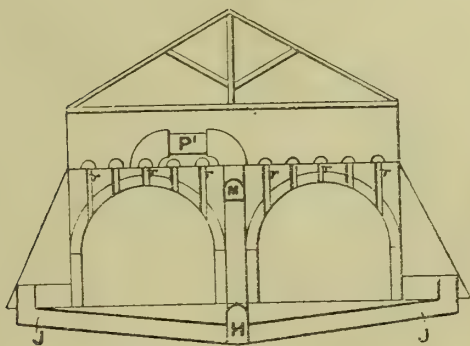


FIG. 4.

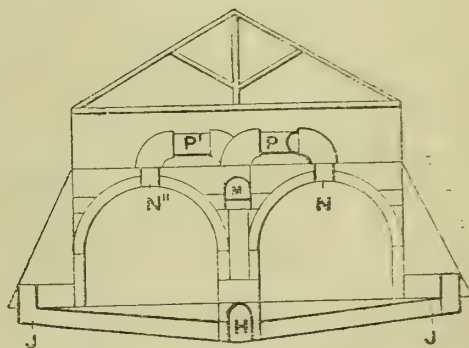
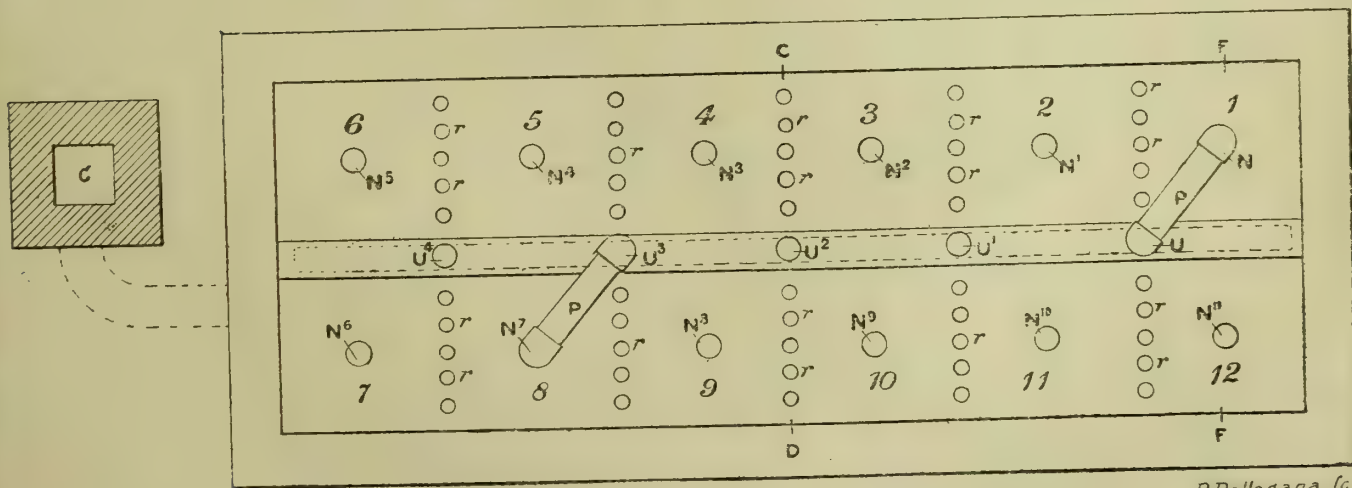


FIG. 5.



B Dellagana &amp; Co

the direction of the arrows and thence through damper K<sup>6</sup> to the chimney.

I do not confine myself to the exact details, such, for instance, as the number of chambers the direction of the flues, as they may be varied without departure from the principle of the invention, but what I do claim is:—Brick kilns having the horizontal flue or tube, M, and shafts or openings, U and N, in combination with the bonnets, P, for the convenience of turning the heat in any desired direction in respect to the

chambers containing the bricks to be dried, as also the passages s, s, and flues S<sup>2</sup> and S<sup>3</sup>, all substantially as herein set forth.

You can build the kiln to any size you think proper, so that they shall burn from 60,000 to 100,000 bricks per week, and as regards the chimney you can build that anywhere, to suit your convenience to make it do the work from the steam-engine that works the machinery. You see by the kiln being built straight the bricks are not crossed so much as in a round kiln,

and that prevents the marks in the bricks where they are crossed in the setting. All the bricks can be set straight or nearly so, which is a great improvement, especially in bricks where colour is required.—I am, &c., G. PITT.

6, Ironmonger-row, Coventry, June 4.

#### CAIRENE DOMESTIC ARCHITECTURE.

SIR,—In your issue of the 6th June you give me the credit of the translation of Count d'Hulst's paper. It was, however, translated by its author,



and well translated, except in some of the technical terms, which are always very difficult to render in another language, the difficulty being increased in this case, Count d'Hulst not being professionally an architect. The principal drawings exhibited were those kindly lent by Mr. Frank Dillon, representing the interiors of some of the finest reception rooms in Cairene architecture, some of which are now destroyed.—I am, &c.,  
R. PHENE SPIERS.

Carlton Chambers, 12, Regent-street, June 6.

### CHIPS.

An explosion of gas occurred on Monday afternoon at 26, Charlotte-street, Bedford-square, on the premises of Mr. J. Aldam Heaton, decorator. A large gas stove was blown to pieces, and other mischief was caused, while a workman was badly burned on the face and hands, and had to be removed to a hospital.

The memorial of the centenary of the Old Church at Swinton will take the form of an extension of All Saints' Schools, Wardley-lane, in that township. Mr. Medland Taylor, of Manchester, is the architect, and the contract has been taken at about £1,000 by Messrs. Jonathan Gerrard and Sons, of Swinton.

On Saturday the village of Kilmacolm was presented with a public park by Mr. Adam Birkmyre. The park is situated about five minutes' walk from the town, and extends to seven and a half acres.

The Earl of Jersey laid, on Friday, the foundation-stone of Holy Trinity Church, Southall, for which he has presented the site. The new building will provide accommodation for 500 adults.

A new church was consecrated last week by the Bishop of Gloucester and Bristol at Cinderford. The architect was Mr. E. Lingen Barker, of Hereford.

The Bishop of Southwark laid the foundation-stone of a new Roman Catholic Church at Blackheath on Tuesday week. The church will be in the Decorated style, and will consist of nave, chancel, altar, two side chapels, and organ-chamber, with tower, spire, and baptistery, and two sacristies with furnace-rooms underneath for heating. It will accommodate 400 persons, and will cost £4,200. It will be built of Kentish rag with Monk's Park stone dressings. Mr. Purdie is the architect.

St. Clare's Roman Catholic Church, Liverpool, the gift of Messrs. Francis and James Reynolds, was on Tuesday week solemnly consecrated. The architect is Mr. Leonard Stokes, P.A.A., London.

The new high altar of St. Ethelbert's Roman Catholic Church, Leominster, was consecrated last week. It has been constructed from designs by Mr. Peter Paul Pugin.

The Duke of Cambridge laid on Saturday the foundation stone of the new theatre and other buildings now being added to the Royal Veterinary College at Camden Town. The buildings are being erected from plans by Mr. Arthur Vernon, F.S.I., of Great George-street, S.W., and comprise on the ground floor a ride of 200ft. long by 23ft. across, having a series of loose boxes behind, and on the floor above a central theatre 40ft. by 37ft., and seated for 350 persons, approached by an external double flight of stairs, with professor's room, bacteriological laboratory, and museum on the right, and private laboratory, reading-room, and library on the left. The outlay will be about £7,000.

Among the adjudications in bankruptcy announced in Tuesday's *London Gazette*, the name appears of Alfred Joseph Beesley, Buckingham-street, Strand, architect.

Messrs. Paley and Austin, of Lancaster, have reported on the proposed scheme of restoring the ancient church, St. Mary's, Whalley. They estimate that the work would cost about £3,000.

At the last meeting of the town council of South Shields the Improvement Committee reported that a premium of £50 had been paid to Messrs. Perkin and Bulmer, whose plan for the proposed new police buildings had been awarded the first place in the recent competition. The committee recommended the town council to erect the buildings, as designed by Messrs. Perkin and Bulmer, on the Keppel-street site, and that the committee be authorised to have the quantities taken, and to advertise for tenders for the erection of the building. The report was adopted.

At the Salon the Medal of Honour in the Class of Architecture has been awarded to M. Redon, and M. Fournereau and M. Marcel have obtained Medals of the First Class.

A new Wesleyan chapel and schools are about to be built at Beverley from plans by Messrs. Morley and Woodhouse, of Bradford.

## Intercommunication.

### QUESTIONS.

[10298.]—**Quantity of Mortar used Weekly in London.**—Some months ago, when in Liverpool, I was told by a gentleman that he had seen a communication from, he believed, the editor or a correspondent of the *Building News*, stating the probable quantity of mortar used weekly in London. Unfortunately, I did not make a note of it at the time, which I regret, as the information would be useful to me now. Can any reader give me the information, together with the average price per ton?—THOS. HYDES.

[10299.]—**Building Estate.**—Having had the management of a new building estate given to me, I should be glad to hear from some of your readers what they would consider a fair percentage to charge, including plans showing development of estate and arranging for sale.—PROUD P.

### REPLIES.

[10288.]—**Stains on Granite.**—You have a troublesome job before you in attempting to get smoke and soot stains out of granite. Try this: A paste of 1oz. ox-gall, 1 gill of strong solution of caustic soda, 1½ tablespoonful of turpentine with enough pipeclay to make it thick and consistent; scour well.—ELBOW GREASE.

[10288.]—**Stains on Granite.**—Washing is about as useful in getting stains of soot out of granite as tickling with a feather or fixing an electric belt round the window sill. Pick out a place where the stain is worst, and as a sample apply the following: Mix together 1lb. whiting, 1lb. soft soap, 1oz. washing soda, and a piece of sulphate of soda as big as a walnut. Rub it over the surface you propose to treat, let it stand four-and-twenty hours, and then wash it off. If it succeeds, try another portion.—A. MASON.

[10288.]—**Stains on Granite.**—Smoke and soot stains can be removed with a hard scrubbing-brush and fine, sharp sand, to which add a little potash.—G. D. M.

[10289.]—**Timber Conversion.**—I am obliged to W. Stevenson for his lucid answer to my question. From what he says I gather that the beams cut from the side of the balk shown (Fig. 1, p. 820) are the best adapted, the rings being in the direction of the width of beam. I can quite understand the reason why they should be stronger, as the rings act somewhat in the manner of plates inserted in the beam depthwise. The best direction for the rings to run in a floor board is crosswise, and this opinion is strengthened by W. Stevenson's remarks, yet, as he observes, the makers of wood-block floors appear to think more of the appearance of the grain or figure. Does W. S. think a beam cut from the centre of balk (Fig. 1) would be suitable at all for a breast-summer? Such a beam is often used, though there can be little question in my mind that it would be weaker, especially if the heart were placed in the lower half of beam, as it would weaken the tensile resistance.—H. W.

[10296.]—**Dry Rot in Timber.**—The wood fungus you have sent me is the *Merulius lacrymans*, of vigorous growth, therefore of great power of destruction and reproduction. The germs or spores of this fungus have been conveyed to the house with the timber used in construction, or in the filling in of the ground (if any) under the floor. It has found a favourable site, all the local circumstances being in its favour for development. This fungus requires heat and moisture. The moisture must have originally been supplied by the locality, after which the fungus is able to absorb and distil moisture from the atmosphere, and is therefore difficult to destroy. The heat is supplied by the temperature of the summer, and the setting up of decomposition in the wood, both which are aided or assisted by stagnation of the atmosphere. I advise you to lower the ground under the floor to admit a greater volume of air, and, if possible, to admit of a man moving about beneath the floor. Let this man scrape or brush off the fungi, and give the wood and the walls a good washing with hot lime. Strew unslaked lime on the ground, and ventilate the space beneath the floor. The main thing in ventilation is to move the air, which, on the ground, is heavy with moisture and stagnant. Arrange your ventilators so that a current is made through. This can be done by a clean draught from side to side of the house; the wind pressure is always on one side of the house, and a vacuum on the other. A better plan still to move this stagnant air is to connect it with one or more chimney flues or Tobin ventilators. The best work on the subject is "A Treatise on the Origin and Progress, Prevention and Cure of Dry Rot in Timber," by Thomas A. Britton. London: E. and F. N. Spon, 48, Charing Cross, 1875.—W. STEVENSON.

Four memorial stones of a new Wesleyan mission school at Colne, Lancashire, were laid on Saturday. The building is being erected from plans by Mr. John Varley, of that town, and will accommodate about 260 worshippers. The cost will be about £800.

Christ Church, Coventry, has been enriched by the addition of a handsome carved oak reredos of the Early Decorated period of architecture. The centre portion, or reredos proper, is carried the whole length of the window, and is divided into three bays by crocketed buttresses and pinnacles. The centre bay contains the sacred monogram, with gabled and crocketed mould over; the two side bays have traceried and carved panels of wheat and vines. On either side of the altar are traceried panels continued to the north and south walls of the chancel. The sides consist of traceried panels with carved buttresses dividing this portion from the centre, and crocketed and moulded gables with carved finials. The work has been executed by Messrs. Jones and Willis, of Birmingham, London, and Liverpool.

### LEGAL INTELLIGENCE.

THE OWNERSHIP OF PLANS.—CLARKE v. MACNAMARA.—At the Altrincham County Court, on Tuesday week, before Judge Wynne Ffoulkes, Mr. Thomas Clarke, confectioner, Station-road, Altrincham, sued Mr. Thomas Macnamara, architect, Hale-road, for £10, the value of the plans of certain property belonging to plaintiff, and £5 for detention. Liability was admitted, the sum of three guineas having been paid into court by defendant. Plaintiff's case was that in October, 1888, defendant was employed by plaintiff to prepare plans and specifications and supervise the erection of two villas in Altrincham. The work was done, but formed the subject of litigation in that Court, and was ultimately referred to architects in Manchester. Before the litigation in the County Court began, defendant was applied to by Mr. Clarke for the plans and specifications, it being important to him to have the work checked. Mr. Macnamara wrote saying he could not give up the plans until he was paid his charges. The amount of Mr. Macnamara's charges was one of the subjects in dispute in the action, therefore Mr. Clarke could not insist upon his right to the plans at that time; but early intimation was given to defendant that the plans were important, and were wanted. The litigation went on, with the result that the arbitrators awarded Mr. Clarke £25 damages by reason of defendant's breach of contract as to the joiners' work only. When the award was made, plaintiff renewed his application for the plans, and eventually received a postcard saying that the plans had been destroyed. For these plans Mr. Clarke had paid 20 guineas, and the architect had also received 2½ per cent. for the quantities from the contractors. Defendant afterwards declared that no duplicates of the plans were in existence. The three guineas paid into court were insufficient, as the plans were of importance to a man who had built a house because of the lay of the drains and the timbers in case of repairs. Plaintiff called, said he could not say how many plans there were, but they were those usually prepared. He had paid 20 guineas for them. The cost of the building was £900, roughly speaking. Witness would rather have reliable plans than 10 guineas. The plans were very elaborate and well prepared. His Honour remarked that the question was as to the intrinsic value of the plans. This could be ascertained by calling an architect or builder. Defendant was called, and said the plans had been destroyed. There were copies at the offices of the Altrincham Local Board. He had told Mr. Clarke that his charges did not include copies of the plans. Considering that he only had 21 guineas for preparing three sets of plans and superintending them, three guineas was a fair proportion. He was engaged 73 days in supervision. For the 73 days he should put on one-third at the rate of two guineas a day. He was so disgusted with the arbitration that he afterwards destroyed the plans. His Honour: Supposing you were to prepare these plans, Mr. Macnamara, and the owner said, "I won't employ you as an architect," what would your charge be? Witness: I should be satisfied with three guineas. His Honour: I can only say it is very different from the Liverpool architects. At the suggestion of the judge, defendant ultimately agreed, subject to the sanction of the clerk to the Local Board, to make tracings of the duplicate plans in their keeping, and to prepare in addition an elevation. The case was adjourned to allow of this arrangement being carried out. His Honour said he thought it right to say that defendant had taken a very mistaken view of his rights in the matter. If the action had been one of trespass the plaintiff might have claimed vindictive damages, because to destroy the property of another person was a very serious matter indeed, and one which the law visited with ample and adequate damages. Therefore he would recommend Mr. Macnamara to meet Mr. Clarke in all that was required.

IN RE THOMAS QUINN, M.P.—An application was made at the London Bankruptcy Court on Friday on behalf of Thomas Quinn, M.P. for Kilkenny, builder and contractor, to confirm a scheme of arrangement agreed to by the creditors, to accept 5s. in the pound, half in cash and half in six months. The gross liabilities were returned at £75,000, of which £70 were unsecured. An adjournment was ordered to ascertain if the sum paid in was sufficient.

RENDLE v. J. EDGUMBE RENDLE AND CO. (LIMITED).—In the Chancery Division on Friday, a motion was brought before Mr. Justice Kay by the trustees of the will of the late William Edgumbe Rendle, roofing contractor, and also proprietor of the Clarendon Hotel, Brighton, to restrain the defendant company and their manager, John Edgumbe Rendle, a son of the testator, from carrying on the business of glass-roofing contractors under the name of J. Edgumbe Rendle and Co. (Limited), or any other name calculated to mislead the public into the belief that such company was carrying on or had succeeded to the business of W. Edgumbe Rendle and Company, and to restrain the defendants from issuing advertisements, circu-



lars, or prospectuses representing or calculated to mislead the public into the belief that the defendant company were, as assignees of John Edgcumbe Rendle, or otherwise, entitled to the system of glazing used by W. Edgcumbe Rendle and Co. for the purpose of carrying out the contracts carried out by W. Edgcumbe Rendle and Co. mentioned in the defendant company's prospectus and circulars, or that John Edgcumbe Rendle was the inventor of Rendle's system of glazing, or was the senior partner in the firm of W. Edgcumbe Rendle and Co., or that he introduced their most successful patents; and to restrain John Edgcumbe Rendle from engaging in any business of a description in any way similar to the business carried on by the late William Edgcumbe Rendle, under the style of W. Edgcumbe Rendle and Co., or from doing anything to prejudice the business of that firm, or affect the sale thereof. Upon the death of the testator, William Edgcumbe Rendle, in September, 1881, disputes arose in the administration of his estate, which comprised his business of W. Edgcumbe Rendle and Co., formerly carried on by him in Victoria-street, Westminster, and at Battersea, and an action, still pending, was commenced for the administration of his estate by the Court. Subsequently the action was commenced in which the present motion was made. Mr. Justice Kay said the defendant John Edgcumbe Rendle was some years ago in business as a bookseller. His father, William Edgcumbe Rendle, had invented a system for glazing roofs, for which the father took out certain patents, and the father had met with considerable success in that business; but the son, John Edgcumbe Rendle, had not been very successful in business. In 1871 the son, and a man named Burrows, at that time a workman in the father's employment, started a business in opposition to the father. The son got into financial difficulties, and gave that business up, and then he went on with his old business as a bookseller and stationer, but in 1876 his brothers and sisters prevailed on their father to take him into his patent glazing business. Accordingly, the son signed an agreement not to go into any opposition business during the father's lifetime or during that of either of his brothers or sisters, and for his services he was to receive so much. Afterwards other patents were taken out by the father, who granted the son the right to use them in foreign countries. The father died, having, by his will, given the son an interest in the business, which he, the father, had established and carried on as "W. Edgcumbe Rendle and Co." The son then started business on his own account in England, either as "John E. Rendle and Co.," or as "J. Edgcumbe Rendle and Co."—his Lordship was inclined to the opinion that it was as "J. Edgcumbe Rendle and Co." However, he got into difficulties, and made an assignment to his creditors of his business, and of all the property he had in the world. Then he lent his name to a joint-stock company, of which he was the promoter, and of which he was appointed manager, the company being formed under the name of "J. Edgcumbe Rendle and Co. (Limited)," and this company started the business of glass roofing in opposition to W. Edgcumbe Rendle and Co., and that limited company was still going on. Then the son proceeded to issue circulars of so fraudulent a character that counsel were obliged to give up the contest as regarded them, and, therefore, an injunction must be granted as to those circulars. He also represented himself as the senior partner in his father's firm, which he was not. To make that out by his evidence, he struck out the last syllable in the word "partner," and represented that he had a "senior part" of the business. But that was not all, for he said, in the circulars, that he was the inventor of some of the patents taken out in his father's name. That he was not, in fact, the inventor was conclusive from the fact, that the patents were taken out in the father's name. In his Lordship's opinion all these facts were evidence of the dishonesty with which this man had attempted to interfere with an established business in which he had no interest, he having assigned all his interest to his creditors. It was a dishonest attempt on his part to get the benefit of the reputation of W. Edgcumbe Rendle and Co. Could a man who was not at the moment carrying on business be allowed to promote a joint-stock company, and lend his name to that company, and induce them to employ him as manager and to start business with his name, which, from its being so like one already attached to an established business, would be quite certain to deceive? As the law of England stood that would not be allowed. The fraud was transparent, and the Court was bound to restrain all these acts. His Lordship granted an injunction until the trial or further order to restrain the defendants from issuing the circulars and prospectuses, and to restrain the defendants from carrying on the business of manufacturing glass roofing or any other business like that of W. Edgcumbe Rendle and Co., in such a manner as to deceive the public into the belief that the defendants were carrying on the business of W. Edgcumbe Rendle and Co., or that they were

that firm, or that the defendant company was a company formed by members of that firm, and to restrain the defendants from representing that the defendant J. E. Rendle was the inventor of any patents taken out by W. E. Rendle, or that he was the senior partner in the firm of W. Edgcumbe Rendle and Co. Subsequently, the defendants consented to treat the motion as the trial, whereupon his Lordship granted a perpetual injunction in the above terms, and ordered the defendants to pay the costs of the action.

**ARCHITECTS' RESPONSIBILITY FOR REPAIRS.**—*R. GINN AND SON V. WALTER HENRY NORRIS.*—The plaintiffs are builders and decorators at Hertford, and the defendant is a surveyor at Hertford and Ware. The claim was for £13 10s. 3d. for work done at the Yews, Bengoe. Mr. Baker said that in 1886 the defendant was a member of the firm of Messrs. Norris and Shoppee, of Hertford, and they then acted for Captain Barry, the incoming tenant of the Yews, Bengoe. Plaintiffs' contract was with Messrs. Norris and Shoppee, who had dissolved partnership, and Mr. Shoppee had since died. Mr. Norris, however, had made himself responsible for the debts of the firm.—Mr. Avery, for defendant: The work was done in 1886, and the plaintiffs wait until Mr. Shoppee is dead, and then try to recover from Mr. Norris, who is not responsible in any way. The bill was not sent in to the firm while it was a firm. Not obtaining the money from the owner of the property, plaintiffs sued the defendant, but the owner of the property, for whom Messrs. Norris and Shoppee were acting, is liable.—Alexander Purkiss Ginn said he was a member of the firm of R. Ginn and Son. In July, 1886, they undertook work at the Yews, Bengoe, the order being given by Messrs. Norris and Shoppee as a firm. There was a change of tenancy at the time, the incoming tenant being Captain Barry. The specification produced was the first they received.—His Honour said the specification set forth that certain works were required to be executed for Captain Barry under the superintendence of Messrs. Norris and Shoppee. The specification clearly showed that the work was to be done for Captain R. M. Barry.—Mr. Baker, for plaintiffs: But Messrs. Norris and Shoppee were the agents.—His Honour: No, nothing of the sort. They were simply superintendents of the work, that is all. This is one of those cases which ought never to have been brought before me.—Mr. Baker: It is not Captain Barry who is the principal, but the defendant says somebody else is.—Dr. Packman, the owner of the property. Messrs. Ginn and Son's letter-book was handed to his Honour, who read a letter from it as follows:—"We herewith enclose you (Messrs. Norris and Shoppee) Dr. Packman's account as directed, and as the work was done in 1886, we ask for a cheque."—His Honour: I shall consult the plaintiffs on that letter. It is perfectly plain from that, that the defendant is not liable. After further discussion, his Honour gave judgment for the defendant with costs, remarking that the case ought not to have been taken into court, for never during the course of his experience had he met with one which rested on a worse foundation.

#### CHIPS.

The contract for the erection of Sale Free Library has been let to Mr. James Hamilton, of Altrincham; and it has also been arranged to face the building with red Ruabon bricks in lieu of Northwich.

The new Roman Catholic Church at St. Annes-on-the-Sea, which has been erected in memory of the late Colonel Clifton, of Lytham Hall, and the late Duchess of Norfolk, is to be opened on Sunday next.

The members of the local board for Shirley and Freemantle, near Southampton, formally inspected the sewage reservoirs at Fourposts on Friday. They have been constructed by Mr. H. I. Sanders, of Southampton, the contractor, and here the sewage of the whole district will be in the future chemically treated, the sludge being dealt with by the Southampton Corporation at their sanitary works at Chapel, it being transmitted thence by means of one of Shone's ejectors. The sewerage scheme has been carried out from plans by Mr. H. J. Weston, surveyor to the local board.

The Cardiff board of guardians have adopted plans by Mr. Edwin Seward, R.C.A., of Cardiff, for the extension of their pauper schools at Ely.

The latest additions to the National Gallery collection are two works, numbered 1305 and 1307, both hung in Room XIV. They are a "Landscape, with Figures and Cattle," by Thomas Barker (1769–1847), a picture bought with part of the Lewis Fund, and a "Portrait of Miss Caroline Fry," by Sir T. Lawrence, a bequest from Mr. W. Wilson.

St. Saviour's National Schools, Paddington, are being enlarged at an outlay of about £30,000. Mr. F. G. Coward is the architect, and Messrs. W. Oldrey and Co. are the builders.

#### WATER SUPPLY AND SANITARY MATTERS.

**BARNSWICK.**—On Thursday, the 5th inst., a Local Government inquiry was held at this place before Mr. Arnold Taylor, in respect of an application by the rural sanitary authority of the Skipton Union for sanction of a loan of £9,000 for purposes of water supply. After hearing the evidence, and inspecting the district and the site of the proposed pumping station and reservoir, and there being no opposition, but, on the contrary, a strongly-expressed wish that the works should be proceeded with as early as possible, the inspector intimated that there would be no doubt as to the sanction for the loan being obtained. There has been expended already in sinking shaft and bore-hole about £1,850, an abundant supply of water to meet requirements having been found. Messrs. Brierley and Holt, of Blackburn, are the engineers.

**EARL'S BARTON WATER SUPPLY.**—The Wellingborough rural sanitary authority have instructed Mr. W. H. Radford, C.E., of Nottingham, to prepare a scheme for the water supply of Earl's Barton, as an alternative to a scheme previously submitted by a local engineer.

**HUCKNALL TORKARD.**—Some time ago the Hucknall Torkard Local Board invited competitive designs from engineers for dealing with the disposal of the sewage at the various outfalls, and for the best means of effectually treating the same. After considerable discussion the schemes submitted by Mr. Herbert Walker, of Nottingham, and Mr. W. H. Radford were selected for further consideration, with the result that the scheme submitted by Mr. Walker was eventually selected. The adopted system is that known as the "international process," and consists of the precipitation and deodorisation of the sewage by means of a magnetic precipitant and deodorant called "ferrozone"; the removal of the organic matter in solution, and the aeration of the tank effluent by passing it through a specially-constructed filter-bed containing polarite. The sludge deposited in the tanks will be deodorised by the ferrozone and pressed into cakes for sale as a fertiliser. The effluent, after being passed over and through four acres of land, will be conducted into the river Leen. The estimated cost of this scheme is £4,000.

**PONTEFRAC TOWN WATER SUPPLY.**—A meeting of the Pontefract Town Council was held on Thursday evening. Mr. J. Robinson introduced a motion in favour of abandoning the well-sinking operations at Roall recently in progress, from plans by Mr. Hodson, of Loughborough. It was announced that an equitable agreement had been come to between the corporation and the contractor to sink a new well at a cost of £950, allowing £150 as compensation for stoppage of the works. On the suggestion of the mayor, Mr. Robinson withdrew his motion.

**SUTTON-IN-ASHFIELD.**—The Sutton-in-Ashfield Local Board made a waterworks for the supply of their district a few years ago, and the quality of the water proved to be so good, that they now supply populations in adjoining districts amounting in the aggregate to nearly twice their own number. The mains extend over an area of 50 square miles, and the board have decided, on the advice of their engineer, Mr. George Hodson, M.Inst.C.E., F.G.S., of Westminster, to duplicate their pumping machinery and increase the capacity of their well to 1,000,000 gallons per day.

**THE VYRNWY WATER SUPPLY FOR LIVERPOOL.**—The Liverpool Waterworks pipe line between Malpas and Tarporley, Cheshire, is so far completed that water from Lake Vyrnwy is being sent down the pipes as far as the valve-house at Egerton-green. Here the overflow pipes have been tested. The erection of the valve-house practically completes the work on this section in Cheshire. In a few days water will be sent down the pipes a further length to the valve-house at Beeston Moss.

**WALTON-ON-THE-HILL, LIVERPOOL.**—The Walton Local Board have just completed an enlargement in their sewerage system. The scheme was set on foot by the complaints which were received from the River Alt Commissioners respecting the pollution of the river, and from the ratepayers about the flooding of the cellars. This was caused by the sudden increase in the population, which is now estimated at 40,000. The outfall sewer, 24in. diam., has been increased to 4ft. 6in. by 3ft. 6in. for a length of 2,930 yards; also a length of 1,100 yards of cast-iron pipes, 3ft. 2in. diam., has been laid, in addition to the present 18in. pipe. At the sewage farm, where these two latter pipes empty the sewage, the size (105 acres) was found to be inadequate. A part abutting on the river Alt has therefore been set off for the purpose of intermittent filtration. A large tank (concrete, and faced with blue Staffordshire bricks) has been built, 100ft. wide by 102ft. long, containing, with the present tank, 700,000 gals., so that the whole of the sewage received between 6 p.m. and 6 a.m. next day may be stored ready for distribution at the latter hour. In case of floods, overflows are pro-



vided, so that the water may run on to the filtration bed. To prevent flooding of cellars, an intercepting sewer has been constructed about one mile in length, ranging in size from 3ft. by 2ft. to 3ft. 6in. by 2ft. 8in. The scheme has cost nearly £20,000, and has been carried out by Mr. W. Hope, Earlestreet, Liverpool, under the direction of the engineer, Mr. S. Middlebrook.

### CHIPS.

Mr. Norman Shaw, R.A., writes Mr. Roger L. Lowe, Farnworth, to say he thinks Mr. Lowe "is doing most excellent work" at New Scotland Yard, and the wood-block floors laid there "give us all satisfaction."

The memorial stone of an enlargement of St. John's Congregational Church, Spring-road and Cowper-street, Ipswich, was laid last week. The works take the form of a widening of the transept, its heightening by 5ft., and the addition of galleries, raising the accommodation to 430 sittings, while, at the back, minister's vestry, and infant school-room, with assembly-hall above for senior scholars have been added, and a new porch built at the entrance. Messrs. J. Pells and Son, of Ipswich, are the builders.

A Wesleyan chapel has just been opened in Sander-road, Birmingham. It is built of stone and red brick in the plainest style of Early English, and measures 81ft. by 30ft., forming a parallelogram of five bays. Sittings are provided for 460 persons at a cost of £4,600. Messrs. Bell and Barnsley are the architects, and Messrs. Moffat and Sons the builders.

At a meeting of the executive committee of the Bishop Parry Memorial Fund, held on Tuesday, it was resolved that a monumental tomb be placed in the nave of Canterbury Cathedral, and that the sum of £1,000 be expended for that portion of the memorial.

The First Saintfield Presbyterian Church at Belfast is about to be repewed, from plans by Messrs. Young and Mackenzie, of Belfast.

The Durham County Council have accepted the tender of Messrs. G. Gradon and Son, of Durham, at £1,550, for the rebuilding of Alden Grange Bridge, from the designs of Mr. Crozier, the county engineer and architect. For the reconstruction of four smaller bridges, at Daddysfield, Killhope (two), and Nancy-pasture, also from Mr. Crozier's plans, the tenders of Mr. E. Fairless, of Wearhead, Weardale, have been accepted.

The Art Gallery of the City Corporation was opened on Tuesday by the Lord Mayor, who attended at the Guildhall in State for the purpose, accompanied by the Sheriffs, after having been reconstructed, from plans by Mr. Alexander Peebles, the city architect.

Out of 41,788 pictures sold during the last 19 years at the autumn exhibitions at the Walker Art Gallery, the Liverpool Corporation have purchased 73 for the permanent collection, the catalogue prices of which amounted to £26,186. Up to last year no legal authority existed for expending the profit balances in the purchase of works of art; but by a special Act of Parliament obtained last season the expenditure of profits for the above purpose is legalised, so that the present and further balances will be available for buying pictures or other works of art.

The new Roman Catholic Church at Oswestry, erected through the generosity of Mr. Thomas Longueville, Llandfords, at a cost of over £4,000, was consecrated, on Tuesday, by the Bishop of Shrewsbury (Dr. Knight). The church is in the Early English style, and will accommodate 300 worshippers. There are also schools and a priest's house. The architect is Mr. W. H. Spaul, of Oswestry, and the contractor Mr. Bowdler, of Shrewsbury.

Alterations have been made to the Grocers' Hall, Cheapside, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

A new church, to be designated the Church of St. John the Evangelist, situate at Robertstown, Aberdare, was opened for public worship by the Bishop of Llandaff on Monday. The church has been erected at a cost of about £600, from the designs of a local architect, by Mr. D. Davies, of Dean-street, Aberdare, and it will provide accommodation for about 150 persons. It is a Gothic structure, built of local stones, the windows, which are filled with tinted lights, being dressed with white terracotta.

The foundation-stone of the new church of St. Paul, Abertillery, was laid on Monday. It will be seated for 305 adults, and will cost £1,100, exclusive of the boundary walls. The contractors are Messrs. Turner and Sons, builders, Cardiff, and the architect Mr. E. M. Bruce-Vaughan, Cardiff.

## Our Office Table.

CARDIFF is to have extended free library accommodation, and additions with this view are to be made to the present institution, which was erected some years ago by Messrs. James, Seward and Thomas, architects, of Cardiff. Some endeavour seems to be on foot in favour of a competition. We can but agree with the six of the other architects in practice in the town who have issued an expression of opinion as to this uncalled-for proposal when they say: "We consider it would be most in accordance with professional usage, and distinctly preferable in this case, to intrust the original architects with a work which appears to all intents to be an extension of their original design." The Council of the R.I.B.A. have likewise given a similar opinion, "As the proper course and the most conducive to the interests of the committee." Unless there are some very good personal reasons to the contrary, it would be simply an act of wrong-headedness to do otherwise, to say nothing of the unnecessary expense of a competition in a work of this character.

As was generally anticipated, the London County Council failed to pass through the ordeal of a Select Committee their ill-considered plan for the removal of the Holywell-street block of houses in the Strand, although in Committee they repeatedly whittled down the area to be included in their crude "betterment" scheme of special rating. They have been more successful in the Bill promoted for the purpose of removing the gates and bars preventing direct access between the Strand and the termini of the three Northern railway companies. Four gates were selected for this preliminary attack, those in Sidmouth-street, Upper Woburn-place, Torrington-place, and Gordon-street, and the Select Committee not only decided to pass the preamble of the Bill, but declined to grant compensation to the Duke of Bedford and the lessees and occupiers of the streets affected. The outcry made about the destruction of privacy, and the consequent depreciation that would result if the obstructions were demolished, carried little weight in the face of Mr. T. Westmacott's testimony that since the gate in Mabledon-place has been removed the assessment of the adjoining house has been raised 33 per cent., and none of the other assessments in the street have been reduced. It was also shown that there is no covenant in the leases granted by the Duke of Bedford protecting the lessees from the removal by his Grace of the gates.

An important proposal with respect to the future management of the parks and open spaces under the control of the London County Council came before that body on Tuesday. During the past twenty years the area of the metropolitan parks and open spaces under municipal control has increased from 178 acres to more than 3,000 acres, about 400 persons are now employed, and the annual expenditure for maintenance alone is nearly £50,000. By a majority of 47 to 42 votes the County Council have this week decided to create a new department for the future management of this branch of the work, so as to obtain efficient control under a single responsible head. It was further determined to place over this department a professional landscape gardener, but a recommendation by a committee that his salary be £600 a year was left an open question.

THE appeal by the Rev. Thomas Field, Head Master of the King's School at Canterbury, for contributions from every diocese of the Anglican Communion towards the erection in Canterbury Cathedral of a pulpit seems to be uncalled for. Mr. Thomas Darling says the existing pulpit in the choir of the Cathedral was the gift of Dean Lyall only forty years ago, and is, he says, "thoroughly in harmony with its surroundings." Mr. G. Cavendish Bentinck, M.P., however, denounces the Lyall pulpit as the poor and spiritless modern work of a Belgian carver, and says that to make way for it the Archbishop's throne, an admirable work by Grinling Gibbons, and presented to the Cathedral by Archbishop Tenison, was stowed away as useless lumber in a dark and damp cellar leading out of the cloisters, where it has since remained. Mr. Bentinck makes, for once, a sensible suggestion—that a sum of money should be raised by Mr. Field, if he wishes to honour the Cathedral, to rescue

Gibbons' throne from its present obscurity and place it in a position where it can be seen and admired. There is no doubt about the throne being the work of Gibbons, for the original receipt for the money paid him for it is still to be seen in the Cathedral Library.

We regret to hear that owing to some carelessness on the part of the workmen engaged, a portion of the refectory wall at Kirkstall Abbey has been demolished. It seems that men in the employ of the Leeds Corporation have for some time been occupied in pulling down a number of trees that had grown within the walls of the Abbey. Their instructions were to remove them piecemeal, and in a number of cases this had been done with safety. On Saturday, however, it was found that an elm, which stood near the wall dividing the monks' refectory from the open court, was rotten, and, curiously enough, it was decided by those in charge of the operations, as there was a clear space in which it was expected it would fall, to pull it down bodily. Unfortunately, the anticipation was not realised; and the tree, in its descent, carried away half of one of the refectory windows and a portion of the wall. It is a matter for regret that since the remains of this beautiful Cistercian abbey have come into the possession of the Leeds Corporation it should have suffered serious injuries, not only from the depredations of roughs, but during the process of removing ivy from the walls and trees from the inclosure. No "restoration" can replace the walls in their old condition, and this is a case in which the unremitting vigilance of all interested in the protection of ancient buildings should be exercised.

MR. GEORGE ENGEL, of 18, Castle-street, Falcon-square, E.C., has sent us some samples of his new transfer graining sheets, which seem likely to be largely appreciated by painters and decorators. By simply wetting the back of the papers, the grain of oak, walnut, maple, mahogany, ash, rosewood, &c., and, in addition, any kind of marble grain, can be transferred on to surfaces painted in the ordinary way, and then varnished. The use of the papers is, of course, very economical, and saves time. A yard of surface can be grained and varnished in five minutes at a cost of one penny, and the designs are in most cases superior to those usually produced. The process is a most simple one, and in many cases will, undoubtedly, supersede graining by hand.

ONE hundred miles of street railway in the city of St. Louis, Missouri, U.S.A., will soon be operated by electricity. The city has granted franchises to new companies, and has also granted permission to old companies to change their horse railroads to electric railways. The work of altering some of these lines is in progress, and there are seven systems either using electric power or preparing for its immediate introduction. Lansing, the capital of Michigan, is to have a model electric street railway, built by the Westinghouse Electric Railway Company.

MR. DAVID J. CHATTELL'S sale on Friday, June 27, of the famous Camden Park Estate, Chislehurst, will be almost historic in its importance. It comprises the famous mansion called Camden Place, so long occupied by Napoleon III. and the Empress Eugenie, and the magnificently-timbered park of 125 acres. The estate is to be sold free from any restrictions, and ground-rents could, of course, be created with ease on such a site to a large amount. Mr. David J. Chattell, who is the recognised land and house agent at Chislehurst—nearly all the development of that lovely neighbourhood having been brought about or assisted by his exertions—will not improbably witness a considerable extension of the district if Camden Place is subdivided and built over—if it must be built on, which one almost regrets—with artistically-designed and substantial houses.

THE company for constructing a railway tunnel through the Simplon have prepared a new plan, which comprises a tunnel 29 kilometres long, 13 of which will be within Italian territory. They have addressed a memorial to the Italian Government praying for a subsidy of 15 million of lire (£600,000). This sum will be secured by differential rates of carriage in favour of Italian goods which are being exported.

In our description last week accompanying the illustration of the City Hall, Philadelphia, it should have been mentioned that Granolithic paving has been largely laid therein by Stuart's Granolithic Paving Company (Limited).







CAMBERWELL.—For alterations and additions to No. 57, Gloucester-road. Mr. W. A. Burr, M.S.A., 65, Chancery-lane, W.C., architect:—

Larke and Son	£1,157	0	0
Stevens Bros.	985	0	0
Walker	896	0	0
Shipton	876	0	0
Sloan	787	0	0
Mackie	775	0	0

CARMARTHEN.—For building new Independent Chapel, Creobin, near Carmarthen. Messrs. G. Morgan and Son, Carmarthen, architects:—

Howell, B., and Son, Llanelly	£893	17	3
Richards, E., Creobin, Kidwelly	679	10	9

(Foundations of building, also all stone, lime and sand, and haulage, done by the committee.)

CARMARTHEN.—For building new residence at Fountain Hall, Carmarthen, for Mr. H. B. White. Messrs. G. Morgan and Son, Carmarthen, architects:—

Jones, T.	£1,597	0	0
Morris, T.	1,550	0	0
Davies, W. (accepted)	1,465	0	0

(Grates, mantelpieces, and outbuildings not included.)

COLCHESTER.—For the alterations and additions to farm buildings, Stanway Hall. Mr. J. W. Start, F.S.I., Cups Chambers, High-street, Colchester, architect:—

Gardner and Son, Coggeshall	£1,483	0	0
Orfeur, C. E.	1,190	0	0
Chambers, W. A.	1,134	0	0
Dupont, F.	1,077	0	0
Ward, T. J.	1,070	0	0
Diss, A.	986	0	0
Beaumont, R., Lexden (accepted)	913	0	0

(Proprietor supplying all bricks, cement, lime, ballast, and sand.)

COVENTRY.—For cycle works, for Messrs. Taylor, Cooper, and Bednell. Mr. E. J. Purnell, A.M.I.C.E., surveyor:—

Hill, C. G.	£5,495	0	0
Worwood, J.	5,427	0	0
Haywood, C. (accepted)	4,875	0	0

COVENTRY.—For new street, for Hon. C. J. Irby. Mr. E. J. Purnell, A.M.I.C.E., surveyor:—

Hill, C. G.	£1,415	0	0
Turner, A., and Sons	1,405	0	0
Heatherby Bros.	1,247	0	0
Haywood, Jun.	1,085	0	0
Soon, W.	1,033	0	0

DARWEN.—For alterations to Theatre Royal Buildings, Darwen, for new post-office premises, &c. Messrs. Stones and Gradwell, Blackburn, architects:—

Lloyd and Millward, Darwen.			
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GRANTHAM.—For alterations to the Sessions Hall, for the town council:—

Hall, J. (accepted)	£117	2	6
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GRAMPOUND.—For Trenowth farm buildings, Gram-pound-road, for Mr. R. Harvey, J.P. Mr. S. Trevail, Truro, architect. Quantities supplied by the architect:—

Berry, J. P., Plymouth	£2,638	6	0
Giles, W., Jun., St. Austell	2,436	7	2
Smith, T. J., St. Austell	2,365	3	8
Tiddy, R., Gram-pound	2,361	10	4
Gellard, W. J., Pentewan			
Smith, W. H., St. Austell	2,151	2	8½
Jacob, J., St. Austell			
Blamey, W. G., Verran	2,135	13	0
Hugh, W., Verran	2,061	0	0
Lapthorne and Goad, Plymouth	1,995	14	2
Trevena, W., Plymouth			
Bennett, R., Gram-pound	1,993	13	6
Bennett, T., Gram-pound			
Richards, A., Gram-pound			
Julian, J., Truro (accepted)	1,961	12	2
Welsh, W. H., Truro	1,944	17	0
Tippett, W. P., St. Columb			
Startridge, J., Lanivet	1,889	0	0

HACKNEY.—For altering the old Well-street College into an auxiliary workhouse, for the Guardians of the Poor of Bethnal Green. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects. No quantities:—

Todd, G. E.	£4,520	0	0
Martin, Wells, and Co.	4,500	0	0
Oliver and Richardson	3,926	0	0
Johnson, W.	3,855	0	0
Croaker, W. and F.	3,790	0	0
Shurmer, W.	3,789	0	0
Holland, J.	3,743	0	0
Edmunds, J.	3,425	0	0
Barrett and Power, Hackney	2,970	0	0

HAMMERSMITH.—For heating apparatus, &c., for the Hammersmith Synagogue, Brook Green, W. Mr. D. Joseph, F.R.I.B.A., 17 and 18, Basinghall-street, E.C., architect:—

Strode and Co.	£92	0	0
Rosser and Russell	67	10	0
Musgrave and Co.	49	2	6
Fox, W. J. (accepted)	47	2	6

HEREFORD.—For altering the premises of the old Savings Bank, St. John-street, for the town council:—

Lloyd, J. (accepted)	£56	17	0
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HORSHAM.—For the erection of a house and shop at Broadbridge Heath, Horsham, for Mr. J. Stanford. Mr. W. E. Challis, West-street, Horsham, architect:—

Potter, J.	£253	0	0
Potter, H.	249	0	0
Sharp, G.	223	0	0
Pannett Bros.	210	19	0
Rowland Bros. (accepted)	209	0	0

(The employer finding all materials for bricklayer and tiler; also doing all plumber's, glazier's, painter's, and ironwork, and all cartage.)

KIRBYMOORSIDE.—For the extension of the water supply, for the rural sanitary authority:—

Plaice, T., Kirbymoorside (accepted)	£53	0	0
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HYTHE, KENT.—For laying a watermain and construction of a reservoir, for the Corporation of the Borough of Hythe. Mr. A. R. Stenning, 121, Cannon-street, E.C., surveyor. Quantities by Mew and Ovenden, 121, Cannon-street:—

Johnson and Co., London	£1,181	0	0
Wallace and Son, Maidstone	1,090	0	0
Stiff, Dover	1,050	0	0
Amos, W. M., Hythe	1,018	0	0
Hayward & Paramor, Folkestone	990	0	0
Peattie, J., Oxford	979	0	0
Palmer, E. R., Beckenham	850	0	0

IPSWICH.—For the erection of the Ipswich Lyceum, in Carr-street. Mr. W. Emden, of London, architect:—

Patman & Fotheringham, London	£7,368	0	0
Pells, J., and Son	7,330	0	0
Reed, Blight, and Co., Ltd., Plymouth	6,885	0	0
Coe, A.	6,834	0	0
Pattinson, S. and W., London	6,818	0	0
Bennett, F.	6,690	0	0
Grimwood and Sons (accepted)	5,943	0	0

[Provisions: £400 for decorative work, £350 for electric lighting, £90 for fire appliances.]

KIRKCALDY.—For the alteration and extension of a mill in Black-street, Path-head, converting it into a linoleum factory:—

Fraser, A., jun., Kirkcaldy (accepted)			
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LIVERPOOL.—For works of painting and repairing the reading-room and theatre of the Brown Library, William Brown-street, for the city council:—

Morton, G. H., and Son (accepted)	£107	0	0
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LIVERPOOL.—For 100 tons of 7in. cast-iron pipes, for the city council:—

Firmstone, C. E., and Bros., Stourbridge (accepted)	£4	19s.	6d. per ton.
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LIVERPOOL.—For painting the lodges and the iron and woodwork throughout Sefton Park, for the city council:—

Haywood, J. (accepted)	£454	18	8
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LIVERPOOL.—For the erection of boundary walls, pillars, gates, and railings at the labourers' dwellings, for the city council:—

Kelly Bros. (accepted)	£242	2	0
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LLANTOOD.—For building buttresses and restoring the stone dressings of Llantoood Church, Pembrokeshire. Messrs. G. Morgan and Son, Carmarthen, architects:—

Morgan, U., Cilgerran (accepted)	£172	0	0
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LONDON, W.—For rebuilding No. 49, Great Portland-street, W., for Mr. J. Thompson. Mr. A. E. Fridmore, 2, Broad-street Buildings, E.C., architect:—

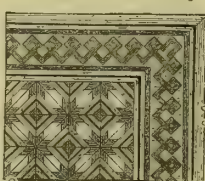
Perkins, E.	£987	0	0
King, H., and Co.	960	0	0
Crane, J.	870	0	0
Killby and Gayford	843	0	0
Lundy, L. F. (accepted)	755	0	0

OFFICES—  
22, QUEEN'S ROAD,  
Bayswater, London, W.  
**TURPIN'S**  
Parquet Floor, Joinery, and  
Wood Carving  
Co. (Ld.)

## PARQUET FLOORINGS

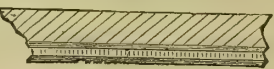
One inch and ½-inch thick.  
Immense Stock always ready for Laying.

### ARTISTIC



Turpin's Patent,

5-16in. thick, laid in Patent Composition on Concrete, Stone, and Deal Floors. (See section.)

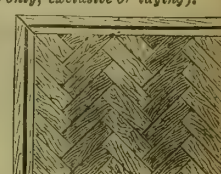


Wood Backing  
Architectural Designs  
Executed in all Styles.

## OAK BLOCK FLOORINGS

One inch thick, 4s. 6d. per yard super.  
(for material only, exclusive of laying).

### JOINERY.



Turpin's System  
of Preparing for Laying such Block  
Floor on Concrete or Stone.



Section B. Full Size.

STEEL BAR.

Strong enough to form part of Construction of Roof.  
"KING'S CROSS BAR."

# HELLIWELL'S PATENT

## GLAZING WITHOUT PUTTY

AND

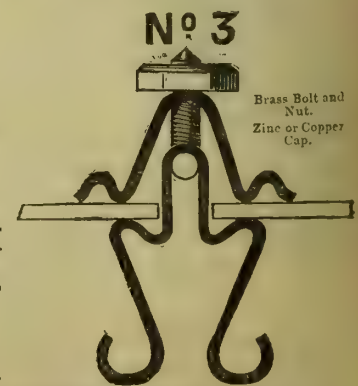
## ZINC ROOFING WITHOUT EXTERNAL FASTENINGS OR SOLDER.

MANY MILLIONS OF FEET FIXED

For H.M. Government, principal Railway Companies, Corporations, and Leading Engineers and Architects throughout the Kingdom.

ALL WORK ABSOLUTELY WATERTIGHT.

**T. W. HELLIWELL,**  
BRIGHOUSE, YORKSHIRE, & 9, VICTORIA STREET, LONDON, S.W.



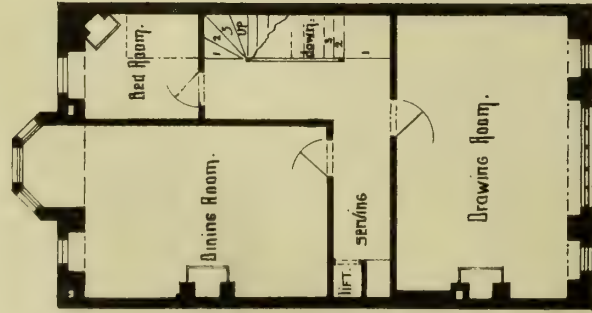
"PERFECTION BAR," in Zinc or Copper.



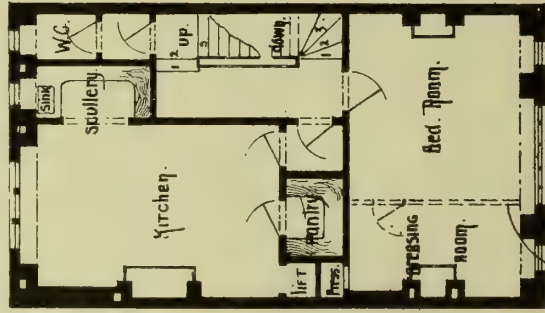




DESIGN PLACED FIRST

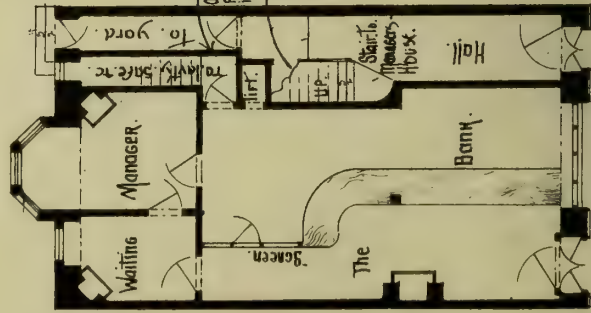


First Floor Plan.

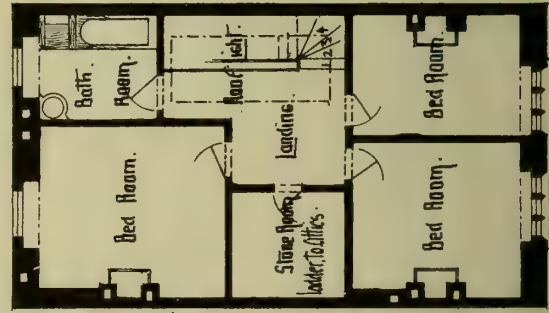


Second Floor Plan.

A partition here if required. The centre window being reduced in width.



Ground Floor Plan.



Third Floor Plan.



# Building News Designing Club.

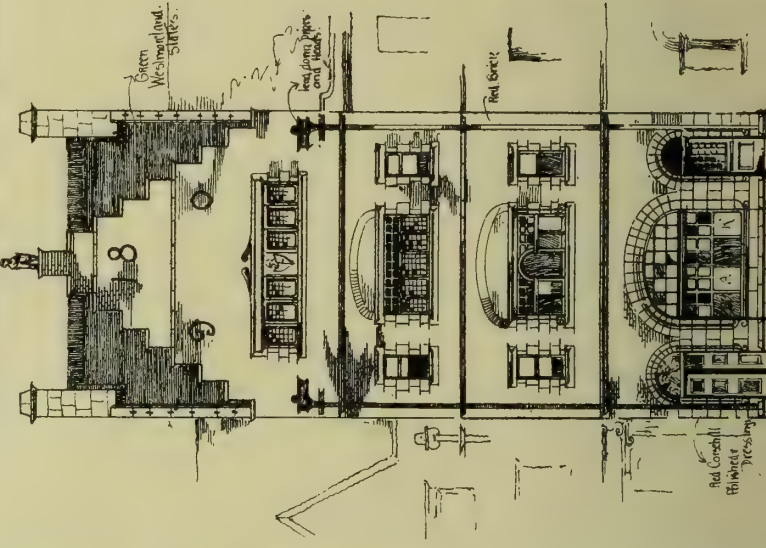
## A Village Bank.

Design by Wallyby.

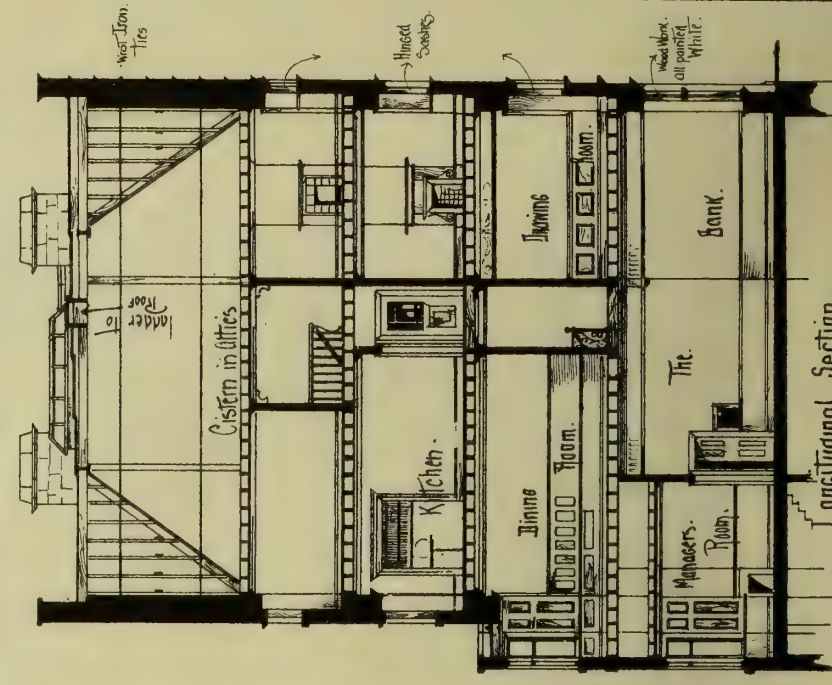
Sketch. basement. Plan.

Note. Stone room with lift. —  
cleans lavatory and wash-  
and coal cellar in base-  
ment. Wash Ho-in yard.  
if wanted.

Scale of 0 5 10 20 30 Feet.



Front Elevation.



Longitudinal Section.





Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

NORMAN DOORWAY, GLASTONBURY ABBEY. DRAWN BY A. BENNETT BAMFORD.



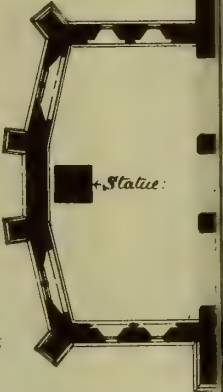




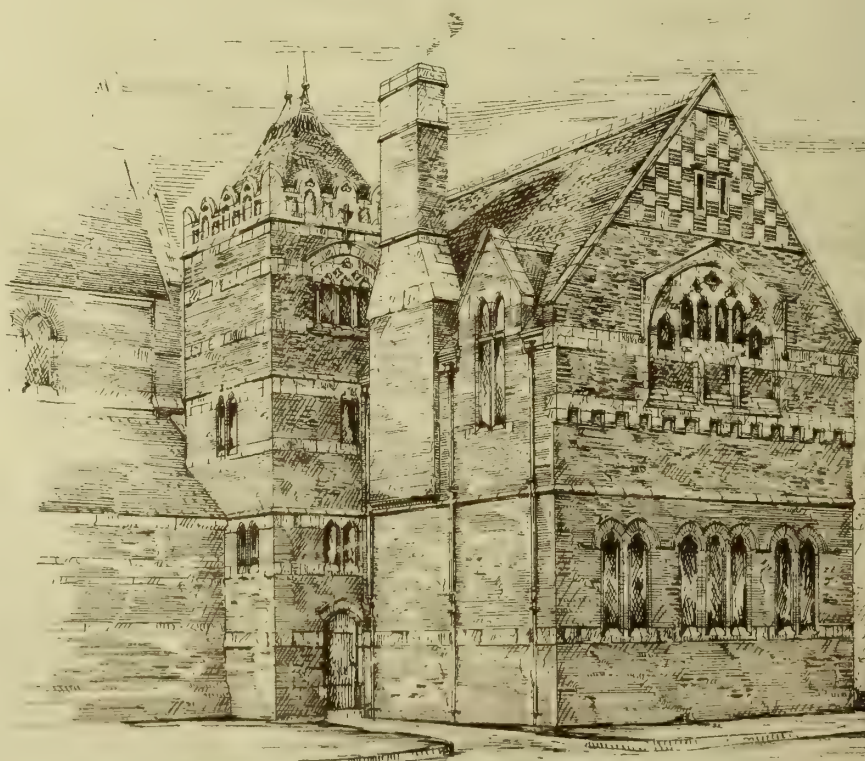




THE THRING MEMORIAL CHAPEL.  
THE SCHOOL UPPINGHAM.



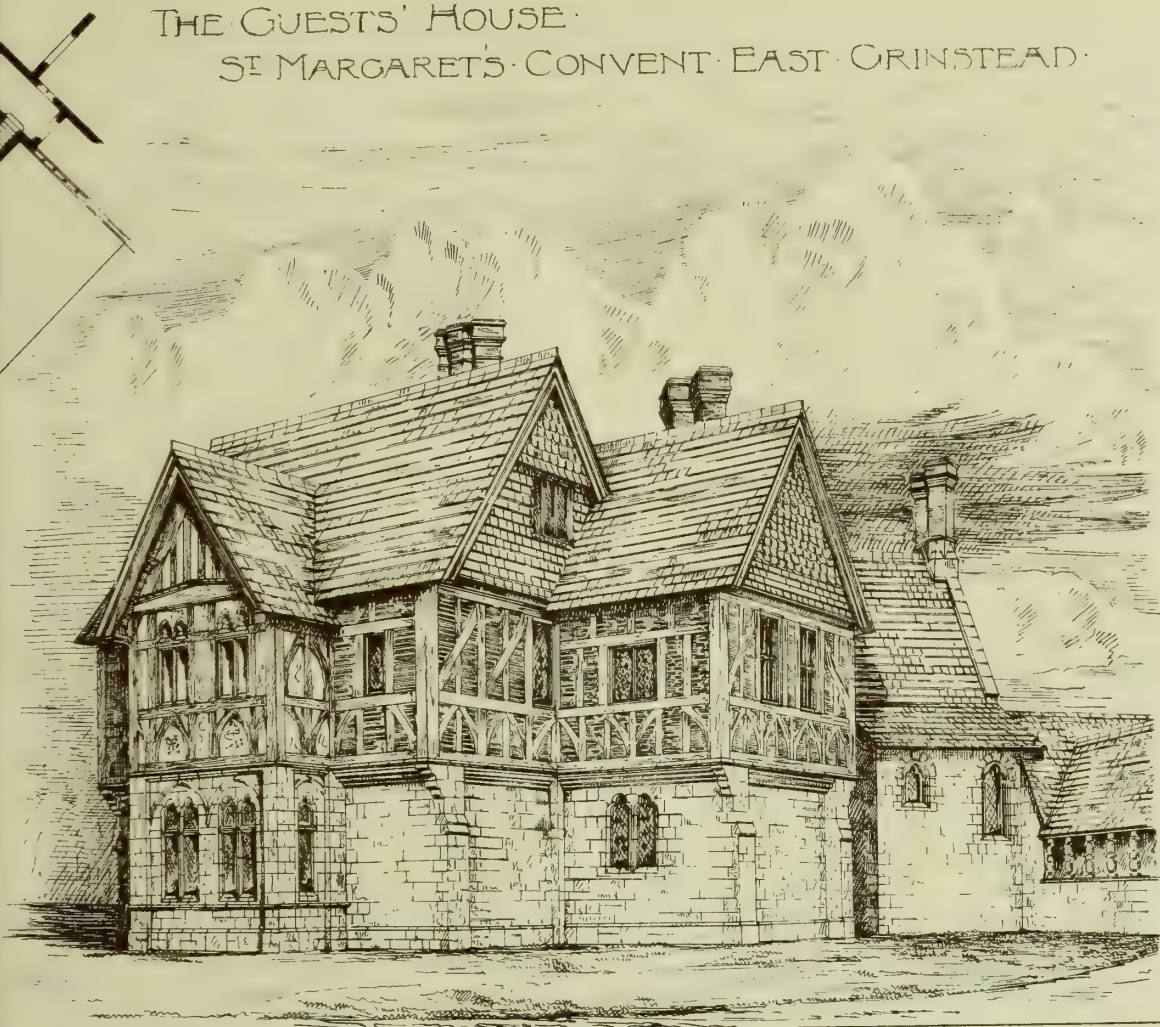
ST JAMES THE LESS · WESTMINSTER · NEW





JUNE 13, 1890.

THE GUESTS' HOUSE.  
ST MARGARET'S CONVENT EAST GRINSTEAD.



INFANT SCHOOL. ARTHUR EDMUND STREET. M.A. ARCHT



QES. 1890.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1850.

FRIDAY, JUNE 20, 1890.

## AN ARCHITECTURAL CURRICULUM.

MANY attempts have been made to formulate an architectural scheme of education, but with only partial success. There are those who believe that, to make an architect proficient in his calling, it is necessary to subject him to a system of cramming and examination—that is, that he should undergo a course of instruction in various academical subjects; there are others who have no faith in scholarly attainments, and think it a waste of time that would be better spent in acquiring practical knowledge in some busy office. Between these two opposite opinions there are intermediate courses proposed, in which the academy or the workshop has a leading position assigned to it. The fault of both these extreme views is that they fail to represent the architect's requirements. The purely scholastic scheme, while an admirable training, does not fit the pupil to solve the problems he is called upon to consider, while the purely practical course fails to supply the student with the necessary motives for his work. The two must be combined in such a manner as to form a motive for study. Under the heads of Materials used in Construction, Construction, Requirements of Buildings including plan, History of Architecture, Aesthetics, Decoration, Professional Practice, the graduate in architecture may acquire both the theory and the application of science to his own special objects.

These remarks are confined to the question of—What ought to constitute a curriculum in architecture? The great objection to the schemes of the existing universities and colleges in which architecture is made a subject is that abstract science is learned as a separate course, having little or no relation to actual wants. Science and its applications are learned separately as two distinct branches. The lectures on particular sciences are given by professors who have made them distinct studies, and who are not necessarily architects, and with no particular reference to structures. Many who attend the lectures are general students, for whom they are well adapted. Take, for instance, mechanics: the instruction contains nothing appertaining to the problems of construction like the forces to be dealt with in roofs, the stability of walls, and buttresses, and arches, the stresses called into play in beams, cantilevers, &c. The lectures on chemistry rarely allude to the questions touching the composition or disintegration of stones, the composition of limes and cements, or the action of moisture and gases on materials such as iron, zinc, or copper. Geology is taught in its general principles without reference to the architect, and the same indifference to practical applications is shown in the instruction given in physics—heat, light, sound, hydraulics, pneumatics, &c. The examination papers show on all these subjects a want of practical requirements. A logically prepared programme for the architect ought to be something very different. Every lecture on the general properties of matter, like gravitation, motion, force, and friction, should have some reference to construction. On dealing with heat the lecturer ought to give point to his instruction by particularly noticing radiation and reflection, as they bear on the construction of grates, expansion of metals, and gases. Of what value is a study on gases, unless it shows him how to form his flues and to promote ventilation? The laws of sound ought to be taught as to make it clear how the archi-

tect can design his churches and lecture halls to insure the proper acoustical conditions, and how too much resonance and echo can be prevented. The study of electricity ought, of course, to be directed to touch all that appertains to the electric light installations, to the construction of dynamos, the wiring of buildings, and the merits of lamps. It may be replied, and in one sense truly, that these things cannot be best learned from a study of natural laws; but this is because lecturers have not generally the practical knowledge of details. Practical rules can only be deduced by knowing the requirements of actual buildings, therefore it is more likely for an architect to find them out than a student of pure science. Herein is the difficulty of forming a satisfactory curriculum for the architectural student. Hitherto he has been instructed partly by science professors, partly by practical men, each ignorant of the other's wants. To attempt to sketch out a programme, therefore, that shall be at once logical and progressive, is attended with some difficulty. A combination of the two requisites in the same teacher is rarely found.

We may imagine the student has received a liberal education of a general kind, and now wishes to commence a course of architecture. What should be the order of teaching? In many of the universities the mathematics, pure and applied, are pursued through the entire course. Physics and chemistry are taught theoretically and experimentally; general history is pursued as preliminary to the history of art and the development of architectural styles; and the languages are taught as accessory to critical and artistic literature. All very well as far as they go; but there is a strong line of demarcation between what is taught in theory and what by experiment. There is, moreover, a want of order in the lectures; the pupil is expected to put the whole together in his brains—to sift the wheat from the chaff. An architect's curriculum ought to begin with applying principles to real problems. It should begin with those of simple construction, and proceed to more complex conditions. Thus materials offer a capital opportunity to teach chemistry and physics practically. A course of instruction on brick, stone, concrete, timber, and iron should also include examples of design in those materials. The student, for instance, might be asked to show the construction of a dome or a vaulted building of stone or brick having reference to the action of weight and thrust, by which his knowledge of the "resolution of forces" or graphic statics could be tested. A certain section to scale should be given him to find out the thrust of the vault and its stability, and he should be asked to design a section that would give a secure margin of stability, showing the depth of buttresses. The lectures on materials might, in short, begin with their chemical composition, deal with their physical properties in the way described, and afterwards proceed to treat of them artistically. This threefold way of considering material would impress upon the mind of the student, by association of ideas, all that was necessary to be known of theories and physics as applied to material. Materials, as an important section, might form a distinct course of lectures. It would extend the limit of this article if we were to give examples of the kind of information that would be taught at this stage. For example, the constituents of Portland cement, the mode of manufacture, the precautions required in using it to avoid expansion and cracking, the different kinds of brick manufactured, bond, the load that may be safely placed on a pier of best stock brickwork—say, 2ft. square and 15ft. in height; the varieties of stone quarried for building, their chemical composition, their durability and means of protection, and the load a pier

of stonework of a given description will sustain. In concluding the course, the student would be required to submit designs of a brick or stone pillar to support a certain weight; to show plans of consecutive courses of brickwork for jambs, chimneys, bay windows, and other construction; and to submit designs for brick and stone details of a simple kind, such, for example, as base mouldings, capitals, jambs, arches, having particular reference to bond, joints, dowering, &c.

In timber the same course would be pursued, the natural description and growth, the conversion and seasoning, the proper kinds to be used for roofs and floors, and for internal fittings; the specification description, the causes, prevention, and cure of dry rot; the construction of timber beams and roofs, and the elements of design in timber, are points that would be necessarily dealt with. So with iron, concrete, and other materials used in building. After such a course of instruction in materials—which ought to be placed in the hands of specialists—the student would be better able to commence a course on Construction in which the higher branches of the science would be pursued. The kind of instruction should be given with more particular relation to actual requirements. Thus the student ought to be instructed in the necessary conditions of properly draining a site for a building on a clay subsoil; he should be taught how to apply a system of drainage to a house, how the soil and sink pipes, and rain-water pipes should be treated; where the traps and disconnecting-chamber should be placed, the ventilation, and the methods of damp prevention. In this advanced course the method of bonding brickwork for particular objects, wood and iron bond, hollow walls, composite walls of brick and stone, the proper methods of connecting stone in masonry, domical, and arch construction, vaults and groining, the thrusts, and modes of counteracting them, would be dealt with. In woodwork the stresses and framing of roofs, the theory of beams, and the formula for calculating girders and joists for safe loads, methods of jointing timbers, the framing of doors, windows, the construction of staircases, &c., would be comprised. Fireproof construction, the methods in use in which iron joists, concrete, and arching are introduced, iron columns and girders, would form another branch. Designs for warehouses, floors, roofs, and other special features of building would form a fitting test of the student's acquirements.

A third course of instruction would naturally be the application of the above scientific training to the actual requirements of various kinds of buildings. At this stage, the art of planning and designing domestic buildings, schools, churches, infirmaries, workhouses, factories, and other structures might be exercised. The course of instruction should point out the statistical data and main considerations in arranging plan for different accommodations, the areas of floor required per individual, the planning of houses in relation to aspect and prospect, the seating of churches, grouping of desks and benches in schools, beds in hospital wards, special fittings for other institutions. No university course in England has made this a special feature; but until it is, the practical knowledge of the architect's requirements will be neglected. Simultaneously with lectures and classes in this department, which would be best conducted in an atelier, the student should have access to models and examples of buildings of every class; lectures might be given on the history and literature of architecture, the development of styles, decorative design and ornament, perspective drawing, and modelling. In a fourth and final course of lectures, the science of aesthetics, the history of the fine arts, colour decoration, and specialities would



receive further attention, and the student would be required to submit designs for buildings of a more elaborate and decorated character.

Mensuration and professional practice could form an independent subject, and be given alternately with the earlier or later courses. In no other way, we conceive, can a thorough practical knowledge of the art be acquired in its various branches. The course sketched out would prepare the graduate step by step for his profession. The special branches of construction, which are not touched by the ordinary classes—warming and ventilation, electric-lighting, the special requirements and fittings of schools and hospitals—would be included in connection with the second and third stages—the courses dealing with construction and the requirements of buildings. Each course would be necessary for that which is to follow, though each might be pursued independently. The graduate at the end of his studies would be practically, as well as theoretically, grounded, and not, as now, obliged to acquire his practical knowledge afterwards in the pursuit of his profession. In the American Universities, mathematics and physics absorb so large a portion of the entire course as to render it impossible for the student to know anything of the actual requirements of building till considerably advanced. Thus the Report of the Committee on Education, read at the Convention of the American Institute of Architects, says:—"The students in the College of Fine Arts of the Syracuse University are not encouraged to originate designs for edifices of any kind before the last two years of the course, nor is it required till the last term of the senior year, when the candidate for graduation is expected to make an original design for an edifice, with the necessary working drawings and specifications." The point that appears of moment is that every science should be taught in its application to building or the requirements of the architect, instead of being taught independently of construction.

#### DUDLEY GALLERY ART SOCIETY.

THE water-colour drawings and sketches now open to the public in the Egyptian Hall represent very varying degrees of merit. As usual there is a large sprinkling of landscape, the amateur hand in which is discernible. Among these, of course, we do not include the works of such artists as Hubert Medlicott, Reginald Jones, Mildred A. Butler, John Fullwood, Rupert Stevens, J. Culverwell, and others, whose drawings are the chief attraction of the gallery. Going through in the order of hanging, we come across some nice drawing and colour by William V. H. Cobbett, as in "Canale Greco, Venice" (9), and his minutely-drawn and sharp little sketch, a *bon bouche* of delicate handwork, "St. Mark's Library" (103), in which the architectural detail and tone are expressed; also "The Salute, Venice" (270). Percy Dixon's "Misty Sunlight" and "Moorland View, Ross-shire" (6), are clever sketches, the former a coast view—a sleepy bay suffused with misty light. Celia P. Culverwell sends two or three delightful studies. "A June Morning on the Wicklow Coast" (17) is a clever piece of coast and sea drawing, the waves breaking on the rocks, and the soft smoothness of the sea, and blending and purity of the colour. "Golden Evening" (55), a river flowing between wooded banks, is another example of the softened tones of this painter. The president, Walter Severn, enthusiastically paints his usual subject—torrents and streams limping over rocky beds. "Kelburne Glen" (28) and "Auchen Darroch Glen" (37) are drawings of this description, in which a close study of nature and a strong and decided touch are shown,

perhaps a little hard. Besides glens, his views of Mentone, and his large view of "Kelburn Castle, Ayrshire" (259), will be noticed. Nice tone is seen in Arch. Webb's "Evening" (29). A bright bit of colouring is the sketch of "Dordrecht" (78); other sketches show a keen sense of colour. A large contributor is Hubert Medlicott, who sends several drawings of more or less merit. "Battersea Mill and Old Chelsea Church" (38) is a pleasing river sketch, the grey tones and atmosphere well rendered. The "Doorway, Venice" (39), an Italian Gothic example, and the sketches of the church of St. Germain l'Auxerrois and Rouen Cathedral (42-44), and other views from Rouen, show that Mr. Medlicott has not been idle. The sketch of "Porch of St. Germain l'Auxerrois," with its blue and star-spangled vault, is pleasing and feelingly drawn. Other sketches on the Thames (239) and "At Shoreham" (367) show that river scenery has not lost its charm. George Marks limns, in his usual rather mannered style, "The Miller's Daughter" (53), soft in handling and poetical in sentiment. "When the Sun is Low" (56) is another drawing mellow and harmonious in tone, a stippled effect being given to the shadows. John Fullwood is a strong painter of landscape. "The Vale of Shere" (63) is a large landscape of hills and wooded middle distance, autumnal in tone. The russet-brown trees and the hilly distance make a telling picture. "Isleworth" (57), "Brentford" (69), "Chiswick" (212), are bright and clear in colour and handling. We must pay a tribute to Mrs. Alfred Jephson's "Rainy Day in the West Country, Totnes Bridge" (61), a clever suggestion of moisture and humidity, grey in tone. The rift in the dark rain-clouds lights up the bridge and river very realistically. The Westminster sketch, "A Day of Fog and Snow," is also clever. William Henry Wallis (74) has a drawing of "Netley Abbey," showing the south transept, in which the details and colour are truthful, also some "Old Houses, Dieppe" (67). Fred Burgess's large views of "Santa Maria della Salute" (82) and "Afternoon Light, Venice," are more meritorious in point of colour and tone than drawing. Other views on the Continent show him to be an untiring member of the society. P. E. Bishopp's "Font, Winchester," and "High Tide, Rye," are noticeable; so also the works of Henry Terry in figure studies are worth attention. His portrait, "Most Reverend Signior" (1), is a caste of countenance we are most familiar with; "A Straw-Plaiter" (97) is a well-drawn and pleasing study of a girl standing, the expression and pose, simplicity of colouring, and manipulation worthy of the artist; "In Fault" (249), a neat cottage interior, in which sits an elderly woman correcting her grand-daughter, is characteristic—the sour expression on the girl's face is cleverly rendered. R. Werner has a good drawing of "Mantelpiece in Doge's Palace" (92); Frances C. Fairman's "Spring," a pleasing study of sunlight on light-green foliage; H. J. Thurnall's "Rochester" (109), with the Medway, is a nice study of atmosphere and grey light. At the end of room, in the centre, hangs a bold landscape—the only picture—by Rupert W. Stevens, whose work at this gallery we have so often admired. "Amberley" (133A) is delightfully picturesque. The painter has selected the old church, with its massive square tower and tiled roof seen above the tiled cottages and alders of the river bank; the breadth of handling and purity of colour—fresh and thoroughly English—are characteristic of Mr. Stevens's work. Two small works by Albert Stevens, both river sketches, are worth notice (122, 127). Carlo Giorisio (138) has a carefully-treated woodland subject, the sunlight effect clever. David Green's "Marshland" (141), and especially "A Wet Day"—a dock quay with a group of labourers under a shed—is

clever as a study of moisture and glistening wet, the colour excellent. Nor must we forget to mention the miniature studies of figures by Menta, of Nice, exceedingly clever sketches in colour. Reginald Jones's work is always charmingly bright and broad in treatment, simple washes of colour, with the lights left on the rough-toothed paper. "Monte Rosa" (173), "Spire of Chislehurst Church" (168), "In the Bright Month of May," "A Grassy Mere" (176) are brilliant examples of his pencil; also the atmosphere and colour in the fine mountain study, "The Oberalp from Andermatt" (320). Mildred A. Butler (171, 185, 183) is a lady whose cattle subjects and meadows are full of freshness and life. "Peace and Plenty" (185) is one of the best contributions. We must also notice the minute finish and conscientious work of Lexden L. Pocock (181, 186), Albert Stevens's clever sketch of Durham, Helen O'Hara's skilfully-painted sea studies, the realistic group of books by L. Block (194), Miss Bailward's "Lonely Shore" (227), Rose Barton's "Wallflowers" (237), B. J. M. Donne's "Autumn Evening near Bolzen," R. A. K. Marshall's view of "Needles and Alum Bay" (244), Haward Gaye's fine drawing of the west front of Ely. On the screen, Miss Dorothy Tennant contributes two or three sketch-studies in pencil of boys bathing, and a clever group, "Our Small Brother" (342); these, though small and unimportant, will have, just now, an interest. Another lady artist, Josephine Culverwell, in "Springtime at Lucan" (317), has made her mark in landscape. There is much that is mediocre and commonplace, but we believe that the last few exhibitions have shown greater strength. One large and powerfully-painted picture on this screen is a coast scene, "On the Welsh Coast," the rocks and sea in strong colour, but we find no name to it.

#### THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of the Architectural Association, adjourned from the evening of May 16, was resumed on Friday evening, the President, Mr. Leonard Stokes, occupying the chair.

The names of three gentlemen nominated for election were read out.

Mr. FARROW, hon. secretary, announced that the next two visits of the class for sketching and measuring would be made to St. Mary Overy in July, the precise date not finally settled. A vote of thanks was awarded to Messrs. Satchell and Edwards in connection with the previous visit.

The PRESIDENT read the names of those who had signed the requisition to alter some of the rules—viz., Messrs. Stokes, Appleton, Baggallay, Burrell, Hooper, Horsley, Mountford, Pratt, Pryce, Slater, Town, Farrow, and Gale. It was decided to revise rules 3, 4, 5, 8, 10, 11, and 18, the most important changes being the mention in rule 3 of "an architectural studio" as one of the objects of the Association, and the recasting of rule 4 as follows: "The arrangements for each class or course of lectures shall be determined by the committee, who shall appoint the lecturers or visitors and fix the number of meetings, the fees to be paid by the members, and the remuneration to be given to the instructors, but members desirous of associating for the study of a specific subject shall, subject to the sanction of the committee, be allowed to form a class, frame their own by-laws, and appoint such officers as they deem necessary." Town and country members were defined in rule 5 by the addition of the words, "country members shall be those having neither residence nor occupation within a radius of thirty miles from Charing Cross." Rule 18 will read, "The annual subscription shall be one guinea for town members, and half-a-guinea for country members, due upon election, and at the commencement of each succeeding session."

Mr. STIR hand in a requisition proposing to alter Rule 43, so that it should in future read:—"All voting shall be taken by show of hands, but no question touching any alteration of the rules or constitution of the Architectural Association shall be decided upon at any meeting



without first submitting such proposed alterations to the whole of the members, and furnishing each member with a printed voting paper; the decision of the majority so voting shall be considered final."

The requisition was signed by Messrs. Sedding, Stannus, R. Phené Spiers, W. White, Boyes, Crace, Collins, Max Clarke, R. W. Edis, Needham Wilson, Bulman, Rope, Jacob, Sirr, Leverton, Hudson, Whitmore, Reavell, Waterston, Mew, F. Fawcett, Elphicke, Perks, and Lansdown.

Mr. STANNUS asked whether it was not usual to read the minutes.

Mr. FARROW replied that there were no minutes to be read, the present meeting being the adjourned meeting of the 16th. The minutes of the previous special business meeting would be read when the special business meeting opened.

The special business meeting was then opened and the minutes were read.

Mr. STANNUS rose to question the President about the proceedings at the last meeting, and ask what had been done with an amendment that he had proposed at the meeting on May 16. The necessary explanations were given.

The PRESIDENT said the special meeting had been called to consider the modifications to the rules formulated by the committee. All the members in the room and outside had had the notice paper with the proposed changes sent to them. They wanted to discuss these. They were now met by a countermove in the signed requisition to alter Rule 43. At a special meeting duly called, the proposal that "expression of opinion" papers should be sent round to all the members had not been carried. Now they were told that they were not competent to alter their rules, and at the same time they were called on to alter Rule 43. Not a soul outside the room knew of the requisition. The rules clearly contemplated that these matters should be known outside. Practically the requisition, if carried, meant the rescinding of the decision arrived at a fortnight ago. He left to the meeting to decide which requisition should be discussed first. If they decided to take the alteration of Rule 43 first, the only course would be at once to adjourn the meeting, and send out notice papers.

The ensuing discussion lasted about an hour. The attendance was not quite so numerous as on May 30, and it would have been still less only for the presence of members who seldom attend the meetings. The resolutions were as follows:

Mr. STANNUS proposed to consider the alteration of Rule 43 first. This was seconded by Mr. J. D. Mathews, and supported by Mr. Pite. 38 voted in favour and 26 against.

Mr. MAX CLARKE proposed that the meeting should adjourn for a week, and that notice papers be sent out. Mr. BRODIE seconded.

On an amendment by Mr. STANNUS to adjourn till after the Presidential address next session, 30 held up their hands in support and about 40 against. The result was received with great applause.

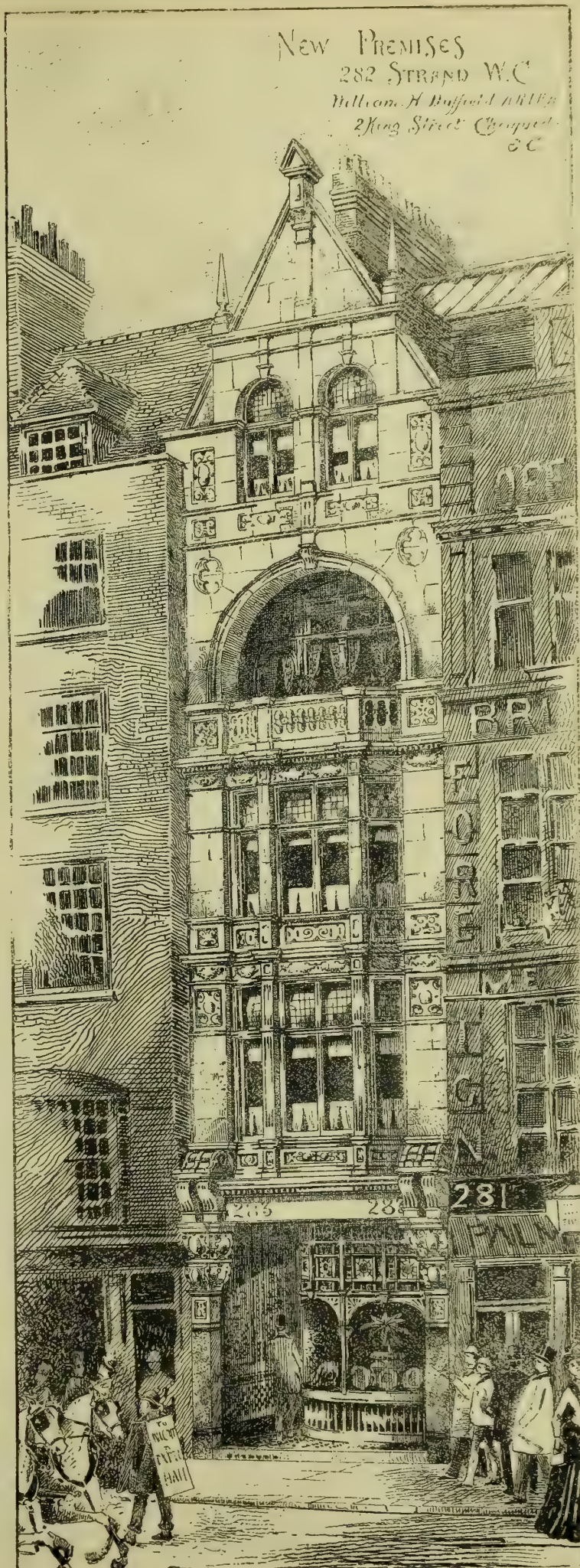
A further amendment by Mr. J. D. MATHEWS, seconded by Mr. LEVERTON, to adjourn for a fortnight, was lost by three votes—46 against 43.

The motion to adjourn for one week was then carried without opposition, and the meeting adjourned at 9 p.m.

#### No. 282, STRAND, W.C.

THESE premises have recently been rebuilt, and are now being fitted up and furnished for the purposes of a restaurant, with dining-rooms on the first floor over the shop. The basement is arranged as a smoking-room, with lavatories, &c., attached, and kitchen and living accommodation is provided on the fourth floor. The intermediate floors are arranged as offices. The Strand front is executed in Portland stone, with grey and red granite pilasters to the shop, and the carving has been executed by Mr. G. Arrowsmith, of Brixton. The premises have been satisfactorily erected by Messrs. Newton and Co., The Chase, Clapham Common, S.W., the contractors, from the designs, and under the supervision, of the architect, Mr. William H. Duffield, A.R.I.B.A., 2, King-street, Cheapside, E.C.

A new Wesleyan chapel, with schoolroom adjoining, is about to be built at Penryn, from plans by Mr. J. W. Trownson, of Penzance. The outlay will be about £3,200.





## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE closing meeting of the session was held on Monday evening, Mr. Alfred Waterhouse, R.A., President, in the chair. The minutes of the previous meeting were confirmed. The secretary stated that many donations had been made to the library, and mentioned some, time not allowing the long list to be read. Among those mentioned was a Latin edition of Vitruvius, presented by Mr. Cates. A hearty vote of thanks was awarded the donors on the motion of Mr. Hansard, who strongly appealed that donations of books and newly-published works might be made. A ballot then took place, and the following were elected as Fellows:—

Frederick William Tarring, 1, Woodland-road, New Southgate; Edward William Mountford, Associate, 22, Buckingham-street, Strand, W.C.; Stockdale Harrison, Associate, St. Martin's East, Leicester; Christopher Harston, 15, Leadenhall-street, E.C.; Nathan Solomon Joseph, 45, Finsbury-pavement, E.C.; John Salmon Quilter, Associate, 10, Brunswick-square, W.C.; William Henry Spaul, The Poplars, Oswestry; Philip Henry Tree, Associate, 59, London-road, St. Leonard's-on-Sea; Edward Henry Bruton, Associate, Glamorgan Chambers, 15, Queen-street, Cardiff; James Neale, F.S.A., Associate, 10, Bloomsbury-square, W.C.; Walter Augustus Hills, 149, Bow-road, E.; William Henry Thorp, Associate, 61, Albion-street, Leeds; Leslie Ower, 104, Commercial-street, Dundee; William Douglas Caroe, M.A. Cantab., 35, New Bond-street, W.; Leonard Aloysius Scott Stokes, Associate, 31, Spring-gardens, S.W.; Robert William Collier, Associate, 30, Lincoln's Inn-fields, W.C.; Frederick Atkinson Powell, Associate, 344, Kennington-road, S.E.; Stephen Shaw, 57, Highgate, Kendal.

The following were elected as Associates by show of hands:—

Herbert William Doe, 84, Prince of Wales-road, Ken-tish Town, N.W.; Frederick Moore Simpson, 9, Dean's-yard, Westminster, S.W.; Samuel Edward Wall, 16, Russell-square, W.C.; Herbert Stone Wood, Meadow View, Rectory-road, Beckenham, Kent; Bastick William Nunn, 5, Bath-street, Brighton; Thomas Edgar Eccles, Oak Hill, Roby, Liverpool; William John Mettam, 8a, Park-lane, Leeds; William Eaton, 31, New-walk, Leicester; Eustace Corrie Frere, 16, Great College-street, S.W.; Richard Thomas Beckett, West House, Hartford, Cheshire; Robert Stodart Lorimer, 1, Bruntsfield-cres-cent, Edinburgh; Henry Harold Hughes, 13, Drayton-green-road, Ealing Dean, W.; James Sivewright Gibson, 40, Albany-street, N.W.; George Harvey, 18, Ingersoll-road, Shepherd's Bush, W.; Samuel Bridgman Russell, 34, Craven-road, W.; Alfred Eustace Habershon, 10, Pevensey-road, St. Leonard's-on-Sea; William Brame Goodwin, 63, Florence-road, Stroud Green, N.; Henry Leonard Hill, 12, New-court, Carey-street, W.C.; Alfred Henry Hart, 23, Glasshouse-street, Regent-street, W.; Arthur Edward Ansonbe, Hazelbank, Harpenden, Herts; Edward Carter, Bradnor House, Surbiton; Arthur Harry Beron, 153, High-street, Uxbridge; Harold Arthur Woodington, 47, Endymion-road, Brixton-hill, S.W. As Hon. Associates: Alexander Stuart Murray, LL.D., F.S.A., Keeper of the Greek and Roman Antiquities, British Museum, 54, Gower-street, W.C.; Right Hon. Lord Savile, G.C.B., 28, South-street, Park-lane, W. As Hon. Corr. Member: Professor Johannes Otzen, Member of the Royal Academy of Arts (Berlin).

The next business was the presentation of the Royal Gold Medal, the gift of the Queen, to Mr. John Gibson, a past vice-president, for his works as an architect.

Mr. ALFRED WATERHOUSE, R.A., the president, said that of the 42 gold medals already awarded, 20 had been given to fellow-countrymen whose greatest claim to distinction was their success as practising architects, while seven other medals were awarded to Englishmen whose claims were rather that, as authors or archaeologists, they had done something noteworthy for the advancement of the architect's art. Of the fifteen foreigners who had received this honour, more than half the number had been distinguished for their buildings rather than for their books. He trusted that the fact of the choice of the Institute having fallen in 28 cases out of 42—or on two-thirds of the total number—on practising architects might be looked upon as matter for congratulation as a sign of architectural vitality and progress during her Majesty's reign. There was now a greater number than ever of men of capacity, merit, and sterling character, who were doing their best by their lives and practice to uphold the status of the profession, and make it appreciated by the world. Pre-eminent among those stood the colleague who had been chosen by the members of the Institute to be commended to her Majesty as the recipient of her gold medal in the present year. Mr. John Gibson entered the office of Sir Charles Barry as his articulated pupil in 1835. After serving a three years' term of pupilage, he remained with him for six years, and assisted him in his great work, the Houses of Parliament. Beginning practice in 1844, after so excellent a training, Mr. Gibson appeared to have entered at once on his most successful career. Mr. Waterhouse gave a

catalogue of Mr. Gibson's principal achievements, and said he had the greatest possible pleasure in handing to him the highest distinction which it was in the power of the Institute to confer, and which was presented to him with Her Majesty's most graciously expressed approval.

Mr. CHARLES BARRY added a few words of tribute to Mr. Gibson, who briefly expressed his cordial appreciation of the high honour done him. The proceedings of the session thus terminated.

## CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE fourteenth sheet of portraits of living British architects is that which we print to-day, and the following notes furnish a few particulars of each of those now represented:—

Mr. G. H. Hunt, of Gray's Inn-square, lately in partnership with Mr. Thomas Verity, is the architect of the Gloucester Municipal Buildings, now in course of erection. Among his former works which have been carried out we may mention Great Alne, Warwickshire; Avenue House, Bishopton, Stratford-on-Avon; Holly Mount, Evesham; Englethwaite, Cumberland; house for Sir Geo. Philipps, Bart., Birmingham; The Hall, Thornton-le-Street, for Lord Cathcart; Sand Hutton Hall, for Sir James R. Walker, Bart.; and the Gloucester Municipal Buildings, now in progress, which was won in competition. Jointly with Mr. Verity, Mr. Hunt built the Scarborough Spa Saloon, Nottingham Guildhall, and the Agricultural Hall improvements at Islington; with him he was also placed second in Admiralty and War Offices competition. His plans in conjunction with Mr. Bateman were placed second in the competition for the Birmingham Law Courts. Mr. Hunt's photograph was taken by Mr. Barraud, of Oxford-street.

Colonel C. O. Ellison was the first President of the Society of Architects, and also was the assessor of the Liverpool County Courts. He is the senior partner of the firm of Messrs. C. O. Ellison and Son, of Dale-street, Liverpool. He has designed a large number of commercial buildings and banks. The hospital for the Borough of Bootle, Eye and Ear Hospitals at Liverpool and Shrewsbury, another hospital at Belper, Derbyshire, and the Town Hall at Birkenhead, are among his chief works. He has built churches at Brighton, Rugby, Leeds, Bradford, Newcastle-on-Tyne, &c.; schools for the School Boards of Bootle, Toxteth, and Liverpool. He carried out the town improvements well known as the Loch Promenade, at Douglas, Isle of Man. He has been for some years Honorary Colonel of the 1st Lancashire Engineer Corps, of which he was the founder at the beginning of the Volunteer movement. He is now erecting Artisan Dwellings for the Liverpool Corporation.

Mr. John George Finch Noyes, F.R.I.B.A., was a pupil of Mr. William Burn, of 6, Stratton-street, and has been in practice for about 26 years. He was elected a Fellow of the Institute in 1876. He has carried on a considerable private practice in London and the country, and has been for some time past laying out a large building estate called Heathfield, at Handsworth, Birmingham, formerly the property of the great James Watt, the engineer. His principal works are Glenisland, Maidenhead; Chesfield, Hampton Wick; Green Park Residential Chambers, Piccadilly, W.; 21, Lennox-gardens, Pont-street, S.W.; Oakley Court, Windsor, alterations and additions, and new stables; Cefn Park, Wrexham, alterations and additions; Chippenham Park, near Newmarket, alterations and additions; Kingsclere racing stables; Branches Park Schools, Newmarket; Mapleton Lodge, Edenbridge, alterations and additions, and new stables; Llanwithwl Church, Brecon; new chancel, Chippenham Church, Cambs; rectories at Eakring, Notts; and Freston, Suffolk; vicarages at Scrivelsby, Lincolnshire, and Handsworth, Birmingham. Mr. Noyes has also built largely for himself, in the way of residential chambers in Half Moon-street, W., on the Sutton Estate. Mr. Noyes' portrait was taken by the London Stereoscopic Company, Regent-street, W.

Mr. Hugh Roumieu Gough, F.R.I.B.A., Past President of the Society of Architects, is well known to our readers as a pioneer in the cause of registration. He was elected chairman of the Architects' Registration Act Committee in 1886, a position he still holds. He is also a corre-

sponding member of some colonial and foreign architectural societies who are making efforts to obtain similar legislation. He succeeded his father, the late A. D. Gough (to whom he was articulated) in 1872. Amongst his principal works may be mentioned the completion of St. Anne's Church, Holloway (commenced by his father), the restoration and enlargement of St. Mary's, Walkern, Herts; St. Philip's, Islington; All Saints, Barmston; St. James's, Lissett; St. Oswald's, Methley; SS. Mary and Nicholas, Kippax; St. Giles's, Killamarsh; Marston, St. Lawrence, and Greatworth, Northants; cemetery chapel at Colombo; St. Stephen's, Gloucester Gate; St. Giles's, Crowhurst; SS. Michael and All Angels, Sheffield, and some others. Of new churches are St. Elgin, North Frod-ingham; St. Lawrence, Atwick; St. Agatha's, Shoreditch; St. Cuthbert's, Kensington; St. Lawrence, Catford Bridge; and the parish church of St. Paul at Hammersmith. This latter was built in conjunction with Mr. J. P. Seddon, of Westminster. The pro-cathedral for the diocese of Brisbane, now in course of erection, is also from his design. Amongst his school buildings we may mention Marchington, Woodlands, Staffordshire; St. Anne's Schools, Holloway; St. Philip's, Islington; Ardsley and Walkern, Herts; Board Schools at Micklethorn and Scholey Hill, Leeds; Langley, Horsemoor Green, and Middle Green, Bucks; Atwick, Yorks. Alterations, partial reconstruction, and entire redecoration of the Army and Navy Club, Pall Mall, was an important work, and St. Mary Magdalene's Home, Paddington. Mr. Gough did some works at the Health Exhibition for the Duke of Buckingham and Col. Sir Francis Bolton, the Lambeth and Finsbury Polytechnics, and St. John's Mission Hall, Hammersmith. Mr. Gough was one of the founders of the St. Paul's Ecclesiological Society, and is a member of other archaeological and architectural societies. He took an active part in the formation of the Society of Architects, and was its second President. He has recently taken into partnership Mr. Percy M. Roberts, of Sheffield. Mr. Gough's photograph was taken by Mr. Bassano, of Bond-street, W.

Mr. Walter Emden, of the Strand, was architect to the following buildings, viz.:—Dublin Exhibition, 1872; St. James's Hall Restaurant, Piccadilly; St. James's Hall entrances, Piccadilly; old Court Theatre, Terry's Theatre, Strand; new Court Theatre, Chelsea; Garrick Theatre, Charing-cross-road; and the Tivoli Music-hall in the Strand, all of which works have been erected from his designs. Beyond these works, he has carried out various alterations at the different theatres and music-halls, among others at the Oxford, the Aquarium, and the Globe Theatre. These works are exclusive of private houses, warehouses, and other classes of work executed by him. The new theatre at Ipswich is one of Mr. Emden's more recent buildings, and a market in Shaftesbury-avenue is proposed to be built from his plans. His portrait was specially taken for our series.

Mr. Arthur Billing, F.R.I.B.A., architect to Guy's Hospital, concludes our double-page plate. He entered Mr. Benjamin Perry's office in 1847, and was with him for several years, and after that was with Mr. Hardwick. Having been surveyor to this hospital for many years, he has designed several important additions to it, such as new large operating theatre, post-mortem room and dead-house, coroner's court, and various large classrooms for medical school, new houses, St. Thomas's-street, for the medical staff, &c., as well as large hop and other warehouses on the "Guy's" estate, Southwark, for Messrs. West, Jones, and Co., Thorn, Son, and Kenneday, Pattenden and Smith, Latter's, Hooper's; also new wharves and warehouses, Messrs. Barclay, Gray, and Co.'s Oil Mills, St. Saviour's Dock; wharf and warehouses, Messrs. Talbot and Sugg; Gladdish's, Shad Thames; Colonel Beresford, Brown and Elmslie, Davis's Wharf, Messrs. Carbutt's Rice Mills, Shad Thames; Dunn's Warehouse, South-street; warehouses, St. Thomas's-street, &c. The following new churches have been built by Mr. Billing:—Parish church, Kidmore End; Christ-church, Deptford, galleries; St. James', Kidbrooke, near Blackheath, tower; Christ Church, Somers Town, galleries and tower, and school for 600, with residences; All Saints', Hatcham; St. Matthew, Stepney, tower; St. Peter, Paddington, tower; Holy Trinity, Penge; St. Luke, Homerton, tower; St. Andrew's,



Fulham, tower; St. Peter, Eltham-road, Lee; St. Thomas, Islington, galleries; parish church, Hammerwich, near Lichfield; Meyringen Church (English), Switzerland; St. John's, Chelsea; St. Andrew's, Newington, tower; St. Paul's, Old Ford, small tower; St. Augustine's, Stepney; and St. Peter's, Fulham. The following ancient parish churches he has restored or enlarged:—St. Dunstan's, Stepney, Middlesex; Dingley, Stanford, Berks; Garveston, Norfolk; Caversham, Oxon; St. Magnus, London Bridge; St. Sepulchre's, Holborn, London; St. Margaret's, Ridge, near St. Alban's; St. Michael's, Hernhill, Kent; St. Mary's, Finchley, Middlesex; Seddlescombe, Sussex; St. Lawrence, Reading, Berks; Wrotham, Kent; and St. Peter le Poor, Broad-street, City, now in progress. Of parsonage houses and schools:—St. Olave's Rectory, Southwark; St. Paul's Vicarage and Schools, Southwark; Rectory House and Schools, Berkhamstead; Vicarage House and Schools, Kidmore End, Oxon; St. John's Vicarage, Blackheath; St. Simon's, West Kensington; Stoke Rectory, near Chichester; Seddlescombe Parsonage and Schools, near Hastings; St. Peter's Vicarage, Lee; Thatcham, near Newbury, &c. Mission Halls at St. Luke's, Homerton; Crouch End, Hornsey; St. Mary's, Finchley; St. Matthew's, Wandsworth Bridge-road; College Park, Kensal Green; Parson's Green, Fulham; also the Burley Vale Mills, near Leeds; Westbourne Hall and Bayswater Athenæum, now appropriated to a very different purpose to what they were originally intended by Mr. Whiteley, the Universal Provider, Westbourne-grove. On the decease of his late partner, Mr. A. S. Newman, in 1873, Mr. Billing became surveyor to the St. Olave's Board of Works, Southwark, and held the appointment till the last four or five years. The photograph given is by Mr. Parker, of High Holborn.

# CARPENTRY AND JOINERY.—XXXI.

WINDOW FINISHING.—(Continued.)

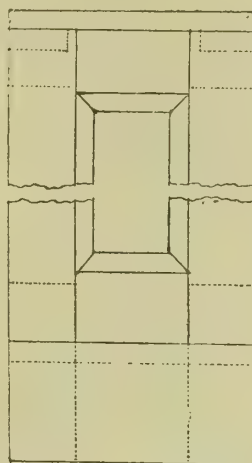
ALL that has been written of window finishing has been introductory to what is now about to be entered upon—namely, a full-trimmed window. This used to be considered a kind of masterpiece for a joiner; as he who could lay down the working lines in plan and elevation, for soffit, back, elbows, shutters (including backfolds) with splay blocks, back boxing or wall lining, foxings, freezing beads, architraves, and some other odd

plaster—in fact, it is the same breadth as the shutter, which will be considered presently.

The back fits in between the two elbows, thus making it necessary that the elbows shall be first fixed (temporarily, at least).

Fig. 212 shows a front view in elevation of the elbow without any plinth or skirting. There are two stiles, showing equal width and of the

FIG 212



1 1/2" Scale

same thickness, and two cross rails, the bottom one being broader, so as to form a groundwork for the upper edge of the plinth to be nailed to. Now it will be best to detail one of the simplest kind of full-trimmed windows, so as not to perplex the reader or the somewhat inexperienced workman. So let the capping on the elbow have a 3/4 in. bead on its front edge; it will be plain then that the height of the elbow will be the distance from the floor to the top of the groove in the sill of the frame, less 3/4 in. for this capping. The depth of plinth or skirting will determine the position of the bottom rail; let it show from 3 in. to 4 in. of a rail above the plinth.

It will be noticed that the elbows and back are tenoned in the ordinary way, and the groove for panels is kept back from the face to suit the moulding.

Haunching has to be left on the top rail; 1 in.

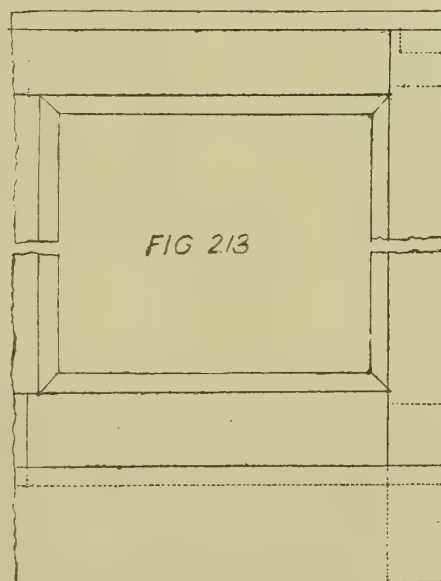


FIG 213

1 1/2" Scale

will be sufficient, and this will tuck in the depth of the plough groove. It is not necessary to enter further into the particulars of the finishing of this framing, as it has been explained already how framing is mortised, tenoned, and finished. Of course the horns are left on the stiles above the top rail until the elbows are being fixed, and a floor line should be drawn on the face and edge

of stiles to serve as a guide in fixing; of course, this is not very necessary, seeing the joiner can work from the groove in the sill. The back will correspond in height with the elbows, and now its width requires to be fixed; well, then, the shutter shows 1/2 in. of a margin from the edge of the inside casing of sash-frame, so that when the thickness of the back is set out from the sill of the sash frame, and the measurement taken between the elbows along this line (face line of back) which gives the extreme width of the back, the stiles of the back should show the same width as the stiles of the elbows which are furthest from the sash-frame, and to refer again to the future shutter, the width of the stile of back may be obtained from it—the reason why this is stated being that the inner stile of each elbow is partly covered by the stiles of the back. The object of the elbow being framed, as shown, is to have the panel to correspond in width with the shutter; this, however, is not invariably done.

Of course, in framing the back, it is allowed to be a little larger than actually required to allow for fitting, &c.

Fig. 213 shows the elevation of that portion of the back which is shown in plan in Fig. 211. The whole back would be divided into two panels by the muntin, half of which is seen. The top and bottom rails are continuous throughout their entire length, and mortised in their centre for the muntin. The ends of the top and bottom rails are tenoned to fit the mortises in the stiles; haunching is required in the top rail, but the bottom rail may have its tenon the full width of the rail, less, of course, the plough groove; in other respects it is similar to the elbows. A dotted line is shown along the bottom rail, to indicate the line which shows the full breadth of the bottom rail; the continuous line immediately above it is the line of plinth. The shutters now command our attention, and their heights is arranged in this way: 1/2 in. of margin is shown all round from the baton slip or staff bead, and this includes the margin shown along the shutters, along the

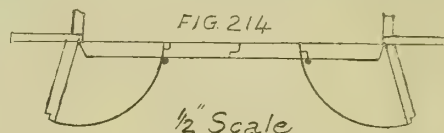


FIG 214

1/2" Scale

soffit, and between the capping of the back & the baton slip; very often at this place 3/4 in. or 1 in. is shown. A freeing bead of 3/4 in. is usually put on the soffit just above the shutter, and this serves to prevent the shutters from rubbing on the soffit whilst being extended out to close the window, and folded back into the box again. All this means that the shutter in height is equal to, from the capping of the back to the soffit, less 3/4 in. for the freeing bead. It may only be repeated similarly to the description of Fig. 207, where a framed jamb-lining is treated of, that the shutter is framed with a top and bottom rail, the bottom rail being usually 1/2 in. wider than the top one. The middle rail occurs just opposite the meeting rail of the sashes, and the middle rail is usually twice the width of the top rail, and 1/2 in. bead or reed, which is worked in the centre of its width. Shutters usually, unless very long or high, are never more than 1 1/2 in. thick, and are put together with mortise and tenon as ordinary framing, grooved at a distance from the face to suit the moulding intended. It is not considered necessary to enter more fully into the framing of the shutters; nor is it thought necessary to give any elevation of the shutter. The width of the shutter is an important item, and, of course, is adjusted according to the width of the window. We will suppose, for sake of example, that the window is 3 ft. wide, then the shutters, which include front and backfolds, would be 3 ft. 1 in.—that is, 1/2 in. extra each side of a margin as previously stated.

This 3 ft. 1 in. will require to be so arranged as that the backfolds will readily turn in behind the front shutters, and the front shutters cannot be rebated in front. It will be found that, with front shutters 10 1/2 in. wide, the backfolds (backlaps) will readily fold back into the boxing.

Fig. 214 shows a skeleton plan of the shutters, no attempt being made to show the panelling or moulding of shutters, as in the Fig. The width, rebating, and arrangement of the shutters is what is wished to be thoroughly understood; note the rebating, and that it is the right-hand

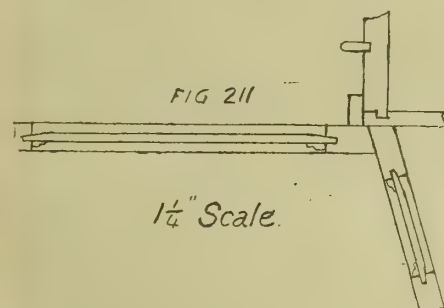


FIG 211

1 1/4" Scale

items, taking off his quantities, prepare and fix same, had or has attained to a position which does not fall to the lot of every joiner. And, indeed, the joiner who has done all this can look at the completed window with some degree of satisfaction and pardonable pride, since he has perseveringly climbed the ladder so far.

It may be considered a slight digression, and even mis-quotation—

"Art is long, and life is fleeting,  
And our hearts, though strong and brave,  
Still like muffled drums are beating  
Funeral marches to the grave."

And true joinery is an art.

The reader who has followed thus far will now be initiated into the details of work, &c., connected with the above piece of workmanship. And, even at the risk of repeating a little of what has been stated before, it may be as well to keep this masterpiece intact. We will begin with the back and elbows, and it will be necessary to show one half only—that is, dividing the back by a central line, and showing one elbow.

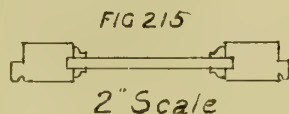
Fig. 211 shows the plan of half the back and one elbow. It is seen that the elbow reaches into the sash frame and extends out to the line of



backfold which is the closing one, this being most convenient. The heavy dot shows the centre pin or pivot of the hinge. Usually beads are worked at the rebates so as to *hide the joint*.

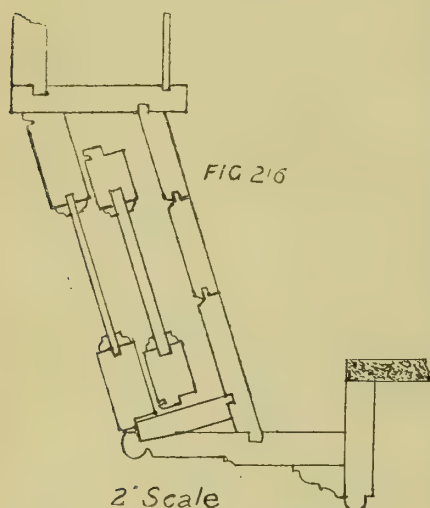
Fig. 215 gives an enlarged section of the closing backfold, so as to show the beads. No mouldings are shown in this backfold, as very often in ordinary houses which have this style of finishing only the front face of the front shutters is moulded.

Fig. 216 shows the right-hand shutters and boxing complete, so as to give a thorough idea of the whole arrangement. It is readily seen from the figure how the backfold is turned in behind, and the *foxing piece* at right angles to the front shutter and *back boxing* keeps the front shutter from going in beyond its proper place; this *foxing piece* serves also to stay and strengthen the architrave between the elbow and the soffit, where otherwise it would have little or no support, the capping being the only support apart from a little given by the back boxing in some cases. The *back boxing* is, of course, fastened to the



grounds prepared for it, and is usually in narrow widths, which should show equal breadths between the *foxing piece* and the inner casing of the frame. It is seen also that the back boxing, if carried out as shown, gives additional support to the architrave. Here it may be stated that in ordinary cases there is no *foxing piece*, and the front shutter is kept from going too far in by two little blocks screwed either against the back of the architrave at the top and bottom of the shutter, or on the capping of the elbow and under side of soffit, just inside the architrave.

Having, then, all the shutters, back, elbows, and soffit ready for fixing, the workman will proceed to fix them. In doing so, of course, he will be guided by the plan laid down on his



drawing-board or *rod*. He will ground for the back boxing, if it has not already been done, fit it up, and he may *cross-groove* it for the freeing bead of the soffit and the capping of the elbow, and then firmly fix it.

Having bevelled the front shutters for right and left-hand side respectively (they are usually rebated before being taken from the workshop, except the centre, which is left so that if necessary a little may be planed off), they are hinged to show the proper margin; usually three hinges are required in the height for each shutter.

The hinges may be *tailed* into the inner casing where they occur—that is, the *knuckle* edge of the hinge is sunk fully into the edge of the shutter, except what is allowed for *hinge room* (freedom), and only one *tail* of the hinge on the opposite or plain edge of the hinge, the other tail being let into the inside casing as stated. Having hinged the front shutters, and placed them at the proper bevel, and *stayed* them temporarily, the back and elbows can be fitted and fixed. Splay the outer edges of the elbows and

tack them, allowing a little on each elbow so as that when the architraves are fastened to the elbows, the shutters will readily clear. When the elbows have been fitted and temporarily fixed, the back may be fitted between them; take all out and screw the elbows to the back in their proper position, and then firmly fix all in their place—viz., to floor and grounds. The capping may be fitted and fixed on back and elbows, the capping of elbows reaching into the groove of back boxing, and the capping of back into the grooves in the sill of the sash-frame.

If any scribing or mitring to the architraves is required in connection with the capping of elbows, that must be attended to. For instance, if the capping on back and elbows has a  $\frac{3}{4}$  in. bead on its outer edge, and the architrave have a  $\frac{3}{4}$  in. *returned* bead on its inner edge, then the capping is mitred into the bead of the architrave, although in some cases, for the sake of economy, the capping just abuts against the back of the architrave.

The soffit will now be fitted and fixed. A level soffit is still supposed, and when the soffit has been fitted, lines may be drawn on its under or face side to guide in nailing on the *freeing bead*, which, of course, is directly above the shutter at each side. The soffit is also allowed a little broader than the shutter on account of the architrave being fastened to it. When the front shutters have thus been hinged, and the back, elbows, and soffit fixed, and the capping on back and elbows, the stays may be removed from the shutters, and these turned round against the window, and the width of the backfolds obtained. The front shutters may be taken down again (it is not necessary to put all the screws into the tails of the hinges which go against the casings until the time for permanently fixing them) and the backfolds hinged to them, each in its respective place, and then, when hinged, cut and planed to the length of the front shutters. Should it be found that they are too wide, before the beads have been worked on at the centre joint, any alteration required may be made, and then they may be taken down and beaded and put up again permanently. The hinges used for backfolds are usually what are known as *backfold hinges*, which are sunk *flush* (level) into the stiles of the shutters; sometimes, indeed, *butt* hinges are used, but with light shutters they are hardly suitable.

The same number of hinges is required for each backfold as for the front shutter. A *shutter-bar* is used to fasten all together when the shutters are closed against the window; this bar is so simple to fix, and also in its working, that any joiner will know how to put it on when once he has seen it. The grounds being up for the architraves, they are next fitted and fixed; the *foxing pieces*, if any, are put in, or if they are *housed* into the capping and freeing bead, must be fixed before the architraves. If the architraves are capped, this capping is put on last; the plinth may now be put along the back and elbows, and the window is *trimmed*.

Some fix the architraves before fitting or hingeing the front shutters, but it will be found perhaps that the above method is preferable. One point must not be omitted: be sure to allow plenty of *box room* for the shutters—it is better to have  $\frac{1}{4}$  in. or  $\frac{3}{8}$  in. too much, than have it a case of *touch and go*, and remember also the room required for the shutter bar, and provide for it.

#### THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

THE second annual meeting of this association was held in Manchester last Saturday. Mr. Pridgin Teale, president of the Yorkshire centre, occupied the chair, and delegates were present from various towns in Lancashire and Yorkshire. The report of the central council stated that the sanitary inspectors of Plymouth were considering the formation of a western centre. In the Manchester district there are 73 members, 6 associates, and 24 honorary members, and in Yorkshire there are 138 members, 12 associates, and 38 honorary members. The honorary members include 29 members of Parliament—11 in Lancashire, and 18 in Yorkshire. The President said that in time the association would become a powerful piece of machinery, by which the broad question of public policy would be brought before the Legislature with greater effect. With regard to the superannuation of inspectors, there was no chance of their getting anything from Parliament, and the inspectors

must themselves initiate and work out the plan. At some future time Government might be induced to give some help. Mr. C. C. Smith (Skipton), in a paper on defects of the Public Health Acts, urged that the Acts should be consolidated and made more uniform. Mr. Wilkinson (Derby), who read a paper on "House drainage—a duty neglected," believed that one-half of general sickness was due to insanitary conditions, and nearly the whole of the other half to careless living. He condemned the Sanitary Registration of Buildings Bill as a measure drafted in the interests of the proposed licentiates, and deemed the entire scheme unworkable.

#### FIREPROOF FLOORING.

MESSRS. MARK FAWCETT AND CO.'S system of fireproof flooring is finding favour with architects and builders, and the firm call our attention to the fact that their system (patented February 25, 1888, which at the time was an entirely new departure) is now being imitated by others, and as these imitations at first sight appear equal to theirs, they point out that the main advantages of their system are covered by their patents, and are not embodied in the imitations referred to. They claim, for instance, that (1) their concrete bears directly on the bottom flange of the joist, and so relieves the fire-resisting material of the floor load; (2) the bottom flange of their joist is completely encased—this can only be effected by their diagonal fixing, as a square fixing requires play, and therefore leaves an open joint; (3) their system provides for the passage of a current of air under the bottom flange of the joist, which keeps the iron comparatively cool; (4) in barracks, warehouses, stables, &c., their tubular lintels are fixed in zigzag arrangement, and make a finished ceiling without plaster. The cost of their floor is less than the imitations in competition.

The floor invented by Mr. Mark Fawcett was patented in February, 1888, and first used by Mr. J. Douglass Mathews at Barclay and Fry's new factory in the Grove, Southwark. About 150,000ft. has since been used in twenty-nine different buildings, and the firm has about 110,000ft. in hand at the present time. It has been used three times by Mr. J. D. Mathews, and twice each by Mr. Somers Clarke, Mr. E. Vigers, and Messrs. W. and E. Stone. The tubular lintels are manufactured at Reading, and Messrs. Mark Fawcett and Co. are building a new factory and two kilns for burning. They are selling about half the tubular lintels they manufacture to builders and using the remainder themselves, and are also doing the constructional ironwork. One of the works at present in hand is the Children's Hospital, Great Ormond-street (Mr. Charles Barry, architect), and the patentees have his permission to invite architects and the Press to inspect this work.

#### A SAFEGUARD FOR WORKERS IN COMPRESSED AIR.

IT has been found by sad experience that work in compressed air, such as has to be done sometimes in sinking foundations, or in driving subaqueous tunnels, often results in serious injury to health, and sometimes even causes death. The danger does not appear to lie so much in the application of the pressure as in its too rapid removal, especially after being exposed to it for too long a time, and it has been observed that if a workman who has collapsed on coming out of the air-lock is promptly put back in the chamber, and the pressure then reduced very gradually, he will suffer little, if any, ill effect from what might otherwise prove a serious matter. Noticing this circumstance, and finding frequent occasion to employ such treatment for the men engaged under his charge on the Hudson River Tunnel, the resident engineer in charge of the work, E. W. Moir, determined to make a special arrangement for such cases, as the gradual reduction of the pressure in the air-locks often consumed so much time as to interfere with the progress of the work. He has, therefore, designed a separate pressure chamber, in which any man who shows symptoms of suffering from too rapid release of pressure on coming out of the air-lock can be at once placed, and the pressure relieved as slowly as need be, while, at the same time, opportunity is given for the entrance of a

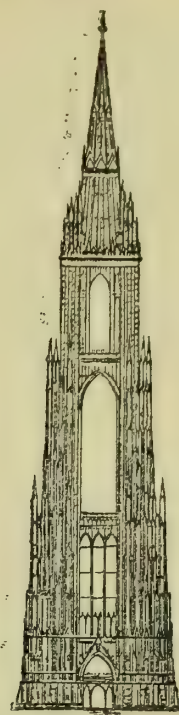




Messrs. A. D. STEWART, J. M. MACLAREN, and W. DUNN'S Design; 1,200 feet high. (Placed First.)



Messrs. J. J. WEBSTER and J. W. HAIGH'S Design; 1,300 feet high. (Placed Second.)



Mr. MAX AM ENDE'S Design; 1,550 feet high. (Awarded Honourable Mention.)

physician, and no interference with the working air-locks is necessary.

The apparatus consists of a cylinder of  $\frac{3}{4}$  in. boiler plate some 6ft. in diameter and 16ft. long, lying on its side. The airtight door opens inward at one end, and in the middle is a partition, with a similar door. Light is given by some bull's-eyes in the sides, and the structure is designed and braced for a pressure of 40lb. per square inch. The patient is carried in on a stretcher and placed in the inner chamber, the middle door is then closed and the air pressure turned on, which is afterward allowed to slowly escape. Should it be necessary for a physician to enter, the outer chamber will answer as an air-lock for that purpose; or, in the case of emergency, it can accommodate another patient on a stretcher. The chamber is being built by the Cockburn Barrow Company, of Jersey City, and it seems reasonable to expect that it will materially increase the safety and comfort of work in the tunnel.

#### THE LONDON TOWER COMPETITION.

THE committee of jurors, having made their examination of the competitive designs submitted for the Great Tower for London, after consideration have decided to award the prizes as follows:—First prize, 500 guineas, to Messrs. A. D. Stewart, J. M. MacLaren, and W. Dunn, 21, King William-street, Strand, W.C., joint authors of design No. 37. Second prize, 250 guineas, to Messrs. J. J. Webster and T. W. Haigh, 67, Lord-street, Liverpool, joint authors of design No. 51. As a whole the arbitrators say:—"The designs were of very varying merit, and, although there were good points about many of them, we must confess to a feeling of disappointment on the whole as to the result of the competition, there being no single design which we could recommend as it stands for execution." We give illustrations of the two premiated designs, and also of the one awarded honourable mention.

#### ARCHITECTURAL ASSOCIATION EXCURSION, 1890.

THE annual excursion of this society will take place from August 9th to 16th, and the South of Oxfordshire has been chosen, with Oxford as a centre. A more deservedly popular district could hardly have been selected, and it will afford a good contrast to the country round King's Lynn and the Wash, visited last year.

The details of the programme have not yet been settled, but the following places will probably be included:—Witney, Coggs, Minster Lovel, Asthall, Burford, Cumnor, Stanton Harcourt, South Leigh, Eynsham, Iffley, Sandford, Dorchester, Ewelme, Wantage, Abingdon, White Horse Hill, Uffingham, Horsepath, Cuddesdon, Great Milton, Great Hurley, &c. Mr. Herbert D. Appleton, F.R.I.B.A., is the hon. sec. of the excursion, and Mr. Mardon Mowbray, F.R.I.B.A., of Oxford, has assisted in the arrangements, we understand. Given fine weather, the trip should be both enjoyable and instructive, rich as the district is in examples of English architecture.

#### BOOKS RECEIVED.

*Pavements and Roads: their Construction and Maintenance* (the *Engineering and Building Record*, New York).—This is a reprint of a valuable series of contributions compiled by E. G. LOVE, Ph. D., with the object of collecting data and arranging information for the use of the surveyor or engineer. The subject is treated without reference to mere local conditions, though the streets and roads of England, France, and other countries have been studied and placed under contribution. For this purpose Mr. Love visited Europe, and his work is a *repertoire* of all that has been done or written on road construction in Europe and America. The work of over 400 pages will be found to contain in a condensed form, and one easy of reference, particulars of construction, specifications, cost of construction and maintenance in connection with stone pavements in Liverpool and New York; wood pavements in London, Paris and other European cities; asphalt pavements in the United States, Paris, London, and Berlin, &c.; brick pavements, tramways, kerbs maintenance in London, Liverpool, and other towns; the construction and maintenance of country roads, and various notes of value. Engineers and others who wish to have a record of wood paving done in London and Paris will find Chapter II. a very fair *résumé* as regards construction, cost, and durability. The author "inclines to the opinion that it is undesirable to lay blocks of a greater depth than will provide for a life of seven years, as very few pavements retain a good surface after about seven years' wear." As regards cost, it is stated (in Mr. Stanton's paper) that the annual cost of constructing, repairing, and renewing wood pavement subject to traffic of 500 to 700 tons per yard width per day of 16 hours, and leaving it in a

good condition at the expiration of 15 years, does not exceed 1s. 9d. per square yard, which compares favourably with the cost of macadam. Much valuable information will be found on contours. Steep gradients are especially objectionable, as in this direction the blocks abut close to one another without any joint, and thus little foothold is obtained. The notes and cross sections of streets like Great George-street, Westminster, and Sloane-street are useful; also the information given in the reprint and discussion of paper by George Henry Stanton, Assoc. M. Inst. C.E. The notes on "top-dressing" are to the point. The chapter on asphalt pavements contains also some important reports on asphalt paving in Paris, the specification and instructions issued by the Department of Bridges and Roads, and on the asphalt pavements in New York and other cities.

#### CHIPS.

The Ashton-under-Lyne Town Council had under consideration last week the question of a site for a technical school, for the erection of which £10,000 was recently given. The Corporation have to find the land, and it was decided to give £2,750 for a plot adjoining the Armoury in Old-street. Several members urged the desirability of acquiring an adjoining piece of land, so as to provide for extensions, and the committee promised to consider the matter. Messrs. Eaton and Sons, a local firm, were appointed architects.

Mr. James Forsyth has been selected as the sculptor to execute the recumbent effigy of the late Dr. Parry, Suffragan Bishop of Dover, which it is proposed to place, by public subscription, in the nave of Canterbury Cathedral.

A Local Government Board inquiry has recently been held at Midhurst, Sussex, by Colonel J. Ore Hasted, R.E., one of the Inspectors, with reference to an application by the Rural Sanitary Authority for the borrowing of £700 for sewerage works. Plans of the proposed works were submitted by Mr. H. Howard, surveyor. Some opposition to the scheme was made by two ratepayers.

The chancel of Knutsford parish church has been reopened after having been closed three months. New choir stalls have been erected, and also a rail to divide the chancel from the body of the church. The work has been done by Mr. W. Downes, of Knutsford.

The foundation-stone of the first lunatic asylum built for the "County of London" was laid at Claybury, near Woodford, Essex, by Earl Rosebery on Thursday, the 12th inst. The asylum is being built from plans by Mr. G. T. Hine, of Nottingham, and will house 2,000 patients.



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## ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—SCULPTURE AT THE ROYAL ACADEMY.—ORGAN, PARISH CHURCH, PAIGNTON.  
—NEW BANKRUPTCY COURTS, LINCOLN'S-INN.—MARBLE PULPIT AT GENOA.—CCLXXXII. STRAND.

## Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 862.)

SCULPTURE AT THE ROYAL ACADEMY, 1890.

CONTINUING our series of photographic illustrations from the sculpture galleries at Burlington House, we give to-day a double-page plate of characteristic examples. The first of these is Mr. Hamo Thornycroft's diploma work, entitled "The Mirror," an exquisitely delicate relief in marble. "Hypatia," by Mr. F. J. Williamson, of Esher, Surrey, is perhaps one of the most heroic figures shown this year. The statue is represented in illustration of the following words of Kingsley:—"She shook herself free from her tormentors, and springing back, rose for one moment to her full height, naked, snow-white against the dusky mass around. . . . One long white arm was stretched upward toward the great still Christ." The "Genius of Sculpture," also a group in marble, stands in the Lecture Theatre, near the "Angel of Death," which we illustrated a few weeks ago. The winged boy, mallet and tool in hand, sits on the block of rough marble out of which he is creating a beautiful female face, himself the personification of grace and elegance of form, rendered with freedom of touch and a reserve of repose so essential in successful sculpture. "Old Marjorie," a grand bust by Mr. George A. Lawson, is in every way worthy of his masterly hand, full of force; an ideal rendering of character, rugged with time's full measure, energetic still, though tempered with experience.

NEW ORGAN, PAIGNTON CHURCH, DEVON.

THIS grand organ, of which we give a detail elevation and two plans from the drawing now on view in the Architectural Gallery of the Royal Academy, has been built by Mr. C. Martin, of Oxford, from the designs of Mr. A. Mardon Mowbray, F.R.I.B.A., at the cost of Mr. Paris Singer, as a gift to the parish church of Paignton, near his Devonshire residence. The instrument is situated in a gallery constructed to receive it, and every care has been taken to secure a rich and highly decorative case worthy of the church and its organ.

NEW BANKRUPTCY COURTS AND OFFICES.

THE above buildings, which are now being erected on a site which lies between the garden ground on the south-western side of the Royal Courts of Justice and King's College Hospital, are intended to provide accommodation for the Courts and Departments of the Registrars in Bankruptcy, now in Lincoln's Inn Fields, and for the Departments of the Chief Official Receiver in Bankruptcy, now occupying hired offices in Carey-street. The front of the new building

facing towards the Strand, and the returns next Clement's Inn and Carey-street, from both of which there will be entrances, will be of Portland stone, the back next King's College Hospital being of plain brickwork. The building will be of fireproof construction throughout, the iron, tile, and concrete floors of Messrs. Homer and Rodgers having been adopted, and the interior will be kept quite plain and suitable for the business of the departments, glazed brick being freely used for all the public portions. The two courts, with registrars' rooms adjoining, will be placed at the back of the building on the ground floor, and will be both top- and side-lighted, the Official Receiver's public meeting room being in the front, on the first floor. With the exception of these special provisions, the building will be constructed to meet the ordinary official requirements of the various departments, large storage accommodation for papers being provided on the basement floor. The cost of the building complete will be about £61,500. The foundation works were carried out by Messrs. John Mowlem and Co., Millbank-street, Westminster, and the contractors for the superstructure are Messrs. Foster and Dicksee, of Rugby, the date for the completion of their contract being August, 1891. The architect is Mr. John Taylor, of H.M.'s Office of Works, &c., and Mr. Dyer is the clerk of the works.

## ARCHITECTURAL STUDIES IN ITALY.

MR. WM. J. ANDERSON, the first "Alexander Thomson" student, and President of the Glasgow Architectural Association, has just published a handsome folio of sketches and measured drawings photo-lithographed from his studies made during the tour through Italy, which he undertook in fulfilment of the conditions of the studentship in 1888. The trustees of the fund suggested the Classical Renaissance as the chief subject for Mr. Anderson's attention, and the Central Period, which in Italy was nearly coeval with the first half of the 16th century, was chosen for the greater number of his drawings, thus brought together in the book before us.\* The author says, "The work of this, the perfected period of the whole Classic revival, is marked by the equal attention given on the one hand to the refinements of proportion and to design in the mass, and on the other to the proper subordination and homogeneity of the details. The general effect is never lost sight of in the elaboration of detail, which, if less delicate and original than that of the Early period, is generally more simple and appropriate." A considerable portion of the plates represent designs by the architect, Baldassare Peruzzi, of Siena, whose work is the best in his time. Roman and Greek remnants, mostly from the museums in Rome, occupy some of the sheets. The great feature of the book, however, is the careful way in which the detail is delineated and measured up, in which part of the undertaking Mr. Anderson was helped by his travelling companion, Mr. D. B. Burnie, of Edinburgh. The frontispiece represents a view of one of Alexander Thomson's last works, and one of his best—the church at Queen's Park, Glasgow, and the book is dedicated to the trustees of his memorial fund. We have chosen, by way of an example of the type of the Later work illustrated, Mr. Anderson's drawings of the marble pulpit in the church of Sant' Annunziata, at Genoa, and have arranged them in one sheet of illustrations to-day to another scale, to accommodate the drawings to the proportions of our pages. The interior of this church at Genoa is well known as one of the best and richest specimens of the Late Renaissance. The pulpit, in marble and costly stones of various colours, is placed near one of the nave piers, as indicated by the small-scale study. These are simple Corinthian pillars of white marble inlaid with red, which, without intervention of any entablature, receive the pier arches—an arrangement not so common as might be expected, although the simplest, and, in this instance at least, having a grand effect. The drawings describe themselves, and the dimensions are given in plain figures. Among other specimens of work in this capital collection is the Cortile of the Palazzo-Massimi alle Colonne at Rome, the best and most complete piece of Baldassare Peruzzi's architectural design. A similar set of measured drawings is with equal care devoted to the church of San Salvatore del Monte, by Il Cronaca, the architect (A.D. 1504), the last of the Early Floren-

\* "Architectural Studies in Italy," by WM. J. ANDERSON. Glasgow: Macure, Macdonald and Co.

tine School. Besides the geometrical plan, elevations, and sections, with details, two views of this truly grand church are given. The Campanile of St. Mark's, Venice, drawn in water-colour, serves to give variety to the volume, with kindred studies of the Palazzo Fava, Bologna, and Pal. Cornaro, Venice. The Palazzo Albergati Façade, Florence, is diligently measured, with the end entrance set out at large in elevation. A perspective sketch in pen and ink follows of the portal of the Palazzo Prosperi (Sacrat) Ferrara, and the Roman gateway at Verona figures in a rough pencil sketch. Como Cathedral is rendered in a washed study; but we think Mr. Anderson is more happy in detailed work, such as the sheet of capitals in Plate 41, the last page in the book. Plate 1, too, has many admirers for the freedom of the brush sketches there given of two Campanili in Genoa. They certainly are crisp and suggestive, without being crude, though it must be confessed that such impressionist studies hardly go well by the side of such elaborated and measured delineations as those forming the chief parts of Mr. Anderson's collection, and to which we have already referred with so much profit and pleasure. The line views of houses in Siena (Plate 16) are much more to the purpose, and certainly far more useful to the architectural student. The volume is well got up on good paper, bound in an artistic cloth case, and the plates are admirably printed.

## THE SOCIETY OF ARCHITECTS.

THE Seventh Annual General Meeting of the Society of Architects was held at St. James's Hall, Piccadilly, W., on Tuesday evening last, the chair being occupied by the president, Mr. Robert Walker, A.M.Inst.C.E.

Five nominations for membership were announced for ballot at the next meeting, and the following were duly elected as members of the Society.

Charles George Scott Acock, Ashburton, Devon; Frank George Billingham, 15, Market-place, Devizes; Thomas George Price, Victoria-buildings, Temple-row, Birmingham; Albert Edward Pridmore, 2, Broad-street-buildings, E.C.; John Augustus Sant, 24, St. John's-crescent, Canton, Cardiff; Edward Jenkin Williams, 15, Queen-street, Cardiff.

A vote of condolence was passed with the relatives of the late Mr. William Rickwood (Member), and various votes of thanks were passed to the officers and members of council for services rendered during the past year, a letter being also read from Mr. R. P. Sharp (Member), describing the timbers of British Columbia, and discussions arising upon several matters of minor importance.

Messrs. S. Marsland and G. F. Burr, acting as scrutineers, declared the following to be elected as the—

OFFICERS AND MEMBERS OF COUNCIL FOR THE YEAR 1890-91.

President: Robert Walker, A.M.Inst.C.E., 17, South Mall, Cork.

Vice-Presidents: Edwin Clerk Allam, Romford; George Soudan Bridgman, Torquay and Paignton, Devon.

Council: Henry Adams, F.S.I., M.Inst.C.E., M.Inst.M.E., 60, Queen Victoria-street, E.C.; William Allport, 36, Southampton-street, Strand, W.C.; Charles William Bevis, Whittington Chambers, King's-road, Southsea; Robert Cruwys, 451, Brixton-road, S.W.; Arthur Richard George Fenning, 46, Lincoln's Inn-fields, W.C.; Edwin James Hamilton, 70, Ship-street, and 13, Wellington-road, Brighton; John C. P. Higgs, 44, Bedford-row, W.C.; Samuel Couch Johns, The Limes, Crowmarsh, Wallingford; Reginald George Pinder, F.R.I.B.A., Avenue Chambers, Bournemouth; Percy Morton Roberts, 12, Carlton Chambers, Regent-street, S.W.; Edward Tidman, Connaught Mansions, Victoria-street, S.W.; William Robert Wells, A.R.I.B.A., 10, Farrant-avenue, Wood Green, N.W. (Note.—The Past Presidents are *ex-officio* Members of Council).

Treasurer: Charles Henry Searle, 12, Southwark-street, S.E.

Honorary Secretary: Edgar Farman, 39, King-street, Cheapside, E.C.

Honorary Corresponding Secretary: Charles Edward Gritton, A.M.Inst.C.E., 20, Bedford-street, Strand, W.C.

Secretary: George Alexander Thomas Middleton, A.R.I.B.A., St. James' Hall, Piccadilly, W.

Auditor: Henry J. Pain, 19, Buckingham-street, Strand, W.C.

The Bishop of Gloucester and Bristol consecrated on the 29th ult. the first portion of a new parish church, dedicated to St. Stephen, Cinderford, Forest of Dean, the plans of which were made by Mr. E. H. Lingen Barker, of Hereford. The completed part of the work comprises a wide and lofty clerestoried nave, portions of the chancel, south and north aisles, baptistery, north and south porches. The materials of walls are Forest of Dean stone and Bath stone dressings. An illustration appeared in these pages towards the end of 1888.



## WAYSIDE NOTES.

VISIONS of the regal splendour and palatial magnificence of old banqueting halls arose before me when I read that the Queen had decided to erect an addition to Osborne House for the purpose of State repasts. Great roofs of carpentry, at one and the same time massive and delicate; high, panelled walls; oriels with long, mullioned windows and vaulted ceilings; dais, bright with tapestry; oaken tables, and wide-spreading fireplaces arose in my imagination, and carried me back to the crackling yule-logs and merry feasting of our goodly ancestors. Yet had I but commenced my day-dream when I remembered the nature of the architecture of the Royal residence that looks out over the placid waters of the Solent. Italian campaniles and balustrades broke in rudely upon these visions and memories of the past. I must, perforce, rather reflect upon the sombre stateliness of the building in Whitehall, for even in these advanced days we do not tack on Gothic additions to Renaissance conceptions. Such proceedings would have been bold even in the time of the Second Revival, so there is not much chance of our beginning at this time of life.

All that those not privately informed know of the proposed work is that it will be of truly magnificent proportions, and that on the lawns west of Osborne House will arise a banqueting hall of noble mien, fitting the dignity of the occasion. Thanks chiefly to the recent visit of the German Emperor to the Queen, the necessity for the new provision became very evidenced, and as the necessary works are to be proceeded with at once, Osborne will in a very short time possess that which it should perhaps have had from its original foundation. To those who know the Queen's marine "villa," it may be interesting to learn that the new building will almost convert the open space fronting the private entrance into a quadrangle, the pleasant lawn that now exists being destined for some months to be the scene of building operations. As these latter were not, within the memory of man, known to have been conducted without noise and dust and disturbance, and as the Queen is due at Osborne at the end of next month, one can only conclude that the ring of the trowel and its various more or less melodious accompaniments will have to be silenced for a season—during, that is to say, her Majesty's usual visit to the Isle of Wight.

I read of the proposed formation of a decorative arts guild, "founded by a number of well-known artists for the purpose of helping people of moderate means to create homes of taste." It is intended to establish a central bureau in the West-end, and a householder will, by paying a fee, be able to secure "the best of advice in every department of furnishing and decoration." Further than this, the householder in question "may either place the whole business in the hands of the guild, which will turn him out a house from kitchen to garret, or he can do the work himself, having first been guided by the guild." Among the names mentioned as likely to be on the consulting committee are those of Mr. Marks, Mr. Aitchison, A.R.A., Mr. Seymour Lucas, A.R.A., Mr. Alfred Gilbert, A.R.A., and Mr. Dendy Sadler. The business ought to be good; for although the names proposed to be connected with the concern are so well known and respected, and although the term "Decorative Arts Guild" is high-flown enough for anything, the affair will be of a purely mercenary and commercial character, if, as asserted, the managers will be prepared to turn out a house "from kitchen to garret." Did the proposed "guild" merely seek to advise on matters connected with house decoration, and to spread abroad a knowledge of decorative principles, one would deem the object most laudable; but if a company of artists, art decorators, and architects form themselves into a corporation to do the work of an architect proper, it shows that art and architecture and the allied arts are indeed coming down from their high estate, and being transformed more and more into purely money-making pursuits. It is early now to judge of the merits of this proposed Decorative Arts Guild, and, after all, the source from which I gather my scant information may be untrustworthy; but, as architects, we have to put up with so much that is detrimental to the interest of the profession, that we become distrustful of

new concerns dealing with our own work. Conceived and managed in a proper spirit, nothing could be more useful than a Decorative Arts Guild, while a general architecture-mongering company would be a most deplorable infliction.

We often come down low enough; but, thank goodness, we haven't quite reached the depths indicated by your correspondent from the Antipodes. We draw the line at bill-posting. With all our faults, we do not invite communications "from parties knowing anyone about to build," and although "universal providers" provide architecture (of a sort) at the lowest possible terms for cash, and leading firms of architects in the city of Edinburgh do work for 1 per cent. or less, we do not prepare bills of quantities free of charge. There would thus appear to be something original in the composition of the redoubtable firm of Messrs. R. C. Shearman and Co., of Wellington, N.Z., whose peculiar methods of seeking to develop an already "established practice" were set forth in your columns last week by Mr. F. de J. Clere, the Wellington diocesan architect. The firm might, however, improve their methods by employing the modern system:—"Shearman and Co.'s architecture. Have it in your houses—the only genuine, &c., &c." and "Who are Shearman and Co. & Co.?" As to the extra competition that New Zealand architects will suffer from Messrs. S. and Co.'s posters, I don't fancy it will be very incommencing. The advertisement is more likely to act on the boomerang principle. It would, of course, in this country; but whether or no in a Colonial city like Wellington I am not in a position to say. The chief harm to be feared by the Wellington architects is that caused by the habit of generalisation, common and natural to all men in all countries. We know that in this quarter of the globe, when someone calling himself an architect advertises in such a manner as to be clearly derogatory to the profession, we do not fear that he will get all the work, but that his advertisements will create an impression on some persons that his ways are representative of the average architect. If I were working in a town where any person calling himself architect made a constant practice of acting unprofessionally, I should endeavour to get the whole of my brother professionals practising in the same town, to issue a public disclaimer of any connection with the individual in question.

The Tower Company (Limited) has received the report of the jurors appointed to award the premium offered in connection with the recent competition, the designs for which were exhibited at the Drapers' Hall. It is not surprising that the report should state that, in the opinion of the jurors, no design could be recommended as it stands for execution. The weak point of the whole exhibition was, as most critics pointed out, an absence of sound constructive principles. Where any evidence of skill in this direction was apparent, there was an accompanying negative quantity in respect to comeliness of appearance, and where pretty pictures were made, the construction was generally treated as a matter quite beneath the designer's notice. So, as I say, there will be little surprise that the assessors in this competition find no scheme worthy of being carried into execution. Personally, too, I must confess to surprise at the awards, neither of the prizes going to a design I should have put forward. As it is, the first premium comes to London, and the second premium to Liverpool. Messrs. A. D. Stewart, J. M. MacLaren, and W. Dunn get the 500 guineas; and Messrs. T. T. Webster and T. W. Haigh take the 250 guineas. Of whatever opinion we may severally be as regards the issue of the competition, no one will deny that the successful competitors have well earned their money. Mr. Max am Ende's design is honourable-mentioned by the jurors. Many will hope that this will be the finish of the Watkin Tower business, and that the promoters, if sadder, will be wiser men in the future. Supposing, however, that they are very much in earnest, it is to be concluded that they will get the London design amended by its authors, so that, in the opinion of the experts acting as assessors, it may be safely carried into execution.

It is not every architect who, in his youthful days, laboriously constructs a cardboard model of some building, minutely to scale and as complete as 'prentice hands are able to make it. It

is, therefore, no little satisfaction to me to remember how I once erected, from plinth to chimney-top, a model of a house to a 3<sup>rd</sup> scale, showing nearly every brick and tile, cutting out in cardboard window-frames, barge-boards, porch, and balconies of elaborate woodwork, endeavouring conscientiously to build out every moulding, and modelling to scale every projection and reveal. And many an evening's work it proved! I remember, too, that this was not my only model; for, previously to commencing the house, I tried my hand on a pair of simple cottages, which, being completed, I essayed the larger work. Much I was proud of the latter when finished, and oft was it displayed to admiring friends! I have the miniature house yet, although, not having surveyed it for many years, cannot at the moment say whether it is in good and tenantable repair. Being my own contractor, however, I can answer for it that there was no jerry-building, only the best and most suitable paper being used for the manufacture of the cardboard, and only the best paste and glue employed in putting together the various parts; and although professional modellers would smile in a superior manner at the mitring and joining of roofs, I am not ashamed of the model I made in my pupil days. The style of architecture, it is true, is somewhat *passé*, but that does not affect the work as a model.

I cannot say that I have in after years derived much benefit from the long and numerous evenings spent in working upon this model. It was a recreation at the time rather than a study, and so my good master essayed to hint. A certain deftness in cutting-up and carving cardboard may be put down as the most noteworthy accomplishment acquired during the construction of the model, and, farther, a power to know a good model when I see it. I believe I am, therefore, more than ordinarily competent to appreciate the excellence of the models constructed by your correspondent Mr. Thwaite, who wrote you last week. A contemplation of those which he has prepared with more than usual care, at all times affords me much pleasure. But, as an architect, I really do not think that there is much value in models in museums, except for special purposes, and that space occupied by them may often be more usefully employed for the exhibition of good photographs. Anyhow, I am also of the opinion that if models are employed, they are out-and-away the best if constructed by Mr. C. N. Thwaite. All who can judge as to the merits of a model will hold the same opinion.

In the matter of the A.A. changes a friend writes me as I bring these paragraphs to a conclusion:—"If you are commenting upon the present crisis in your 'Wayside Notes' this week, and would kindly bear in mind the following, I shall be obliged, as the true facts are apt to get lost sight of unless one attends the meetings. The committee have themselves (unconsciously, no doubt) brought about this present deadlock, so to speak. They deferred bringing up the Report of the Special Education Committee until the *very last* meeting in the session, which they had to adjourn into June (against the rule which says the session shall end in May), in order that their proposals might be voted upon and become law. In the mean time, they hold a special business meeting and adjourn it, and both at the meeting and the adjourned meeting requests are made for an appeal to members by means of voting papers. The committee merely meet these requests by pointing out it is against the rules to vote by papers. The natural outcome of all this is that at the resumed general meeting in accordance with the rule a requisition is presented to alter rule 43 in order that each may be furnished with a voting paper and vote thereon upon the proposed change in the constitution. This requisition was signed by some two-dozen members, amongst them being Messrs. R. W. Edis, J. D. Sedding, H. C. Boyes, R. P. Spiers, H. Stannus, Wm. White, L. P. Crace, F. H. Collins, and R. Needham Wilson."

The above from an old member is worth more than any comment from myself, and should be borne in mind by those attending the meeting at Conduit-street at 7 p.m. *this evening*.

GOTH.

The tenth annual autumn exhibition of modern pictures in the Castle at Nottingham will be opened on the 6th of September next.



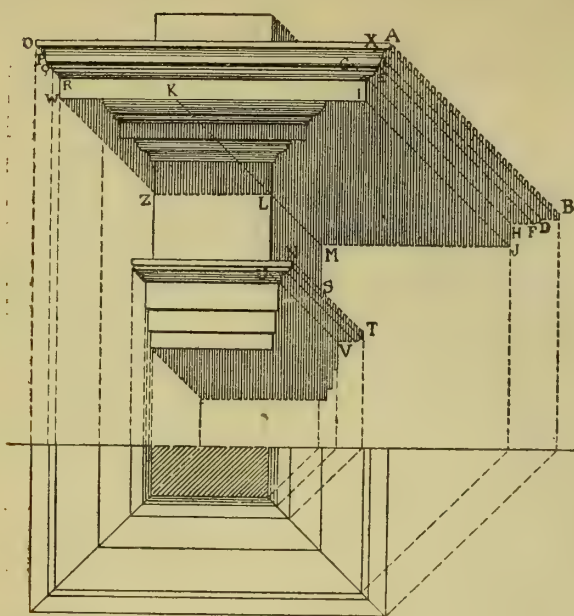


Fig 7

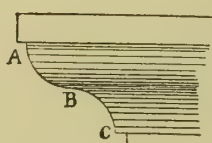
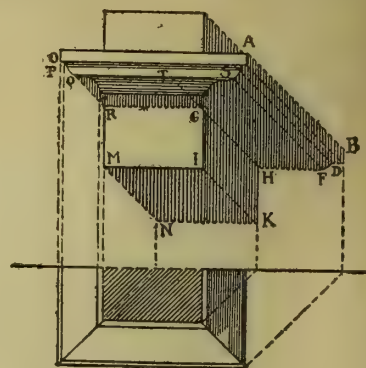
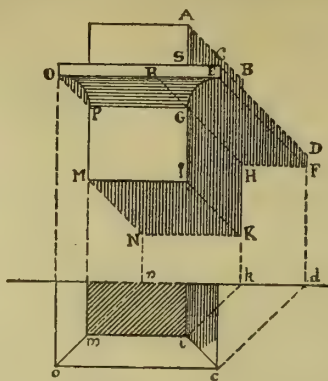


Fig 6a



Figs 5+6

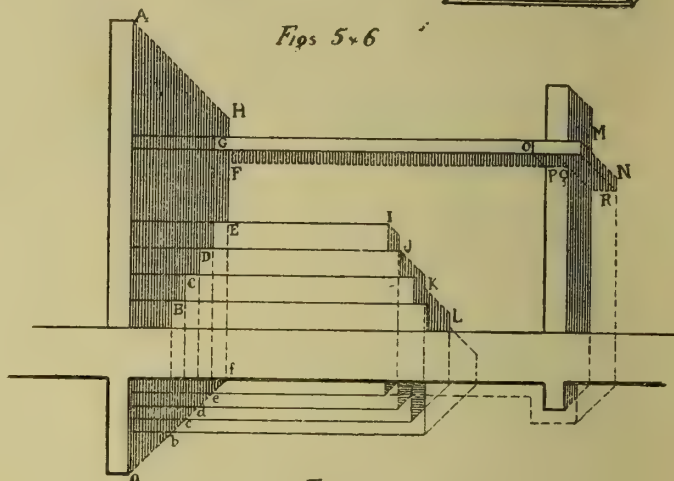


Fig 8

## SHADOWS.—II.

WE will still continue to follow the system for shadows thrown by simple mouldings before proceeding to the more complicated forms.

In Fig. 5 we have the quarter hollow, and in Fig. 6 the reversed ogee, crowning the projecting block as in the preceding example. By following the system already shown, there will be no difficulty in establishing the shadows thrown in Figs. 5 and 6.

Draw in the elevation (Fig. 5) at  $45^\circ$  the lines  $OP$ ,  $AB$ ,  $CD$ ,  $EF$ ,  $RGH$ ,  $IK$ ,  $MN$ , and in the plan the lines  $mn$ ,  $ik$ , and  $cd$ . Raise the perpendiculars  $nN$ ,  $kK$ ,  $dD$ , thus determining the points of intersection and the shadows thrown by the points  $MIC$ . Draw the horizontal  $NK$  for the shadow of  $MI$ ; and the horizontal  $HF$  for the shadow  $RE$ . The line drawn at  $45^\circ$  at the point  $O$  determines the point  $P$ , the distance of the shadow thrown by  $O$ , and the horizontal line  $PG$  the shadow thrown by  $OR$ .  $B$  on the perpendicular  $BK$  is the shadow of the point  $A$ , a portion of the shadow of  $AS$  falling on the upper surface of the moulding.  $DF$  is the shadow of  $CE$ , and  $HK$  that of  $GI$ . The whole of the quarter hollow  $OPGE$  being thrown into shadow by  $OE$ , will of itself throw no shadow;  $EG$  being thrown into shadow by  $ER$  will also cast no shadow,  $ER$  casting its shadow over and beyond  $EG$  as the horizontal  $HF$ ,  $GP$  being the shadow of the remaining portion  $RO$ . It is quite unnecessary to demonstrate the shadow of Fig. 6; we have only to follow exactly the method already employed for the preceding examples. We will notice, however, after drawing the tangents at  $45^\circ$  at  $OP$  and  $QR$ , that a portion of  $PQ$  of the moulding not being covered by any shadow will itself project a shadow at  $DF$ .  $SG$  is thrown into shadow by the projecting lighted portion of the moulding  $ST$ , the horizontal  $FH$  is therefore the cast shadow of  $ST$ , and  $GR$  the shadow of the remaining portion  $TQ$ .

Let us now find the shadow cast by a simple entablature, following exactly the same system and being always careful to remark the various shadows thrown on to the mouldings by the upper projecting portions of the same mouldings. These shadows are to be regarded as natural shadows, and not as cast shadows; the latter (the cast shadows thrown by the mouldings on to retreating planes) are always darker than the shadow proper to each moulding.

We must always proceed to draw, firstly, the lines at  $45^\circ$  in both elevation and plan, and secondly find the intersections of the projections of these lines. The shadow of  $A$  is at  $B$ ,  $C$  is thrown into shadow by  $X$ , which throws its own shadow at  $D$ . The shadow of  $E$  is at  $F$ ; the portion  $CE$  of the ogee being in the light will cast its shadow at  $DF$ . The mouldings from  $I$  to  $L$  are thrown into shade by the projecting slip  $IW$ , the shadow of  $IK$  is therefore at  $JM$ , the remainder  $KW$  projecting to  $LZ$ . The lighted portion  $LU$  of the frieze throws its shadow at  $MS$  and a portion on the upper surface of the architrave. The reversed ogee  $U$  of the architrave, being partly in the light and partly in shadow, will cast a shadow as at  $V$ .

The student would do well to draw the various mouldings to a large scale, and then find the shadows thrown by each individual moulding, carefully remarking the different portions in light and shade; in such a way great facility will be acquired, and he will be enabled to do without a large number of the constructional lines we are now employing in order to establish the various shadows.

In tinting the natural shadows of each moulding, it should be observed that, proportionally as the curve of the moulding approaches the horizontal, the shadow becomes darker, the reverse taking place as the curve approaches the vertical. Thus, in Fig. 6A, the shade is darker at  $B$  than at  $A$  or  $C$ . This is the effect of the natural shadow of the moulding; but this effect varies in the case of reflected light or cast shadow. In Fig. 5 the shadow at  $OP$  gradually becomes lighter on approaching  $P$ . The rays of light striking full at the point where the tangent at  $45^\circ$  touches the moulding, a line of light should, in tinting the shadow, be left at this point, the whole length of the moulding, as at  $P$ ,  $Q$ , and  $U$ , Fig. 7. In all rounded mouldings (even when in shadow) this fillet of light should be left more or less bright; in this way brilliancy of effect and transparency of shadows will be obtained.

We now come to the system of shadows thrown by a projecting body on to planes retreating more or less from the plane of the body casting the shadow. We have remarked above that the size of a shadow is in proportion to the distance of the plane receiving the shadow; thus the shadow of the projecting wall at  $aA$  (Fig. 8) is larger when thrown on to the wall at  $F$  than when on to the

planes  $DC$  or  $B$ , projecting more or less from the wall surface  $F$ . To establish the shadow of Fig. 8, we draw the lines at  $45^\circ$  at  $A$   $I$   $J$   $KL$ , &c., in both elevation and plan.

The shadow  $af$  of the projecting wall meets the first step at  $b$ ; we raise the perpendicular and so find  $B$ , the point where the shadow is stopped in the elevation. It is the same with the points  $cde$  and  $f$ . The point  $f$  being the point of contact of the shadow thrown by  $a$  with the wall, the perpendicular raised from  $f$  will establish the points  $F$  and  $H$ . The projecting band  $GO$  throws its shadow as far as  $P$ , therefore at  $P$  we draw the horizontal  $FPQ$ , the shadow of  $GO$ .

We obtain the shadows of the steps  $IJKL$  by means of the intersection of the projection of the lines at  $45^\circ$  at these points in both plan and elevation. The remaining shadows are easily found.

ARTHUR VYE-PARMINTER.

Palais des Beaux Arts, Lille.

## NOTES FROM EDINBURGH.

THE open winter has been very favourable for steady work, and the succeeding months have shown no abatement in the prosecution of building operations, which are extensive, through the fulfilment of a few heavy contracts, the usual speculative building, and a fair amount of alterations. Some large works are in the near future. One of the largest schools, and the most complete of all yet erected by the Board, will shortly be commenced; to cost about £20,000. The plans for the new Caledonian Railway station at the west end of Princes-street have been made, but their ultimate shape will not probably be fixed till the issue of the present application for the extension of the line to Leith has been determined. If sanctioned, the proposal to tunnel under Princes-street will occasion sundry alterations, greatly for the better, at the east end of the thoroughfare, and the works will probably give two years' employment to a large number. The proposal, when first made public, occasioned only alarm, and especially amongst the proprietors and tenants of the princely thoroughfare, where the foundations would be dislocated, and fine architecture damaged. The vibration, besides, would inevitably disturb the slumbers of hotel visitors, and stop every chronometer, whilst the air would be polluted with the smoke from ventilating shafts. Ground for these alarms was not altogether wanting, as experience



showed in the case of the Scotland street tunnel, where many houses have been somewhat injured in appearance—a disadvantage probably counterbalanced by the effective drainage of the basement floors. Opinion, however, has now gone round to the opposite quarter; the dangers and difficulties of construction and ventilation have disappeared, and the unquestionable advantages to the public of fair competition may overcome the strong N. British opposition to the scheme.

Notwithstanding the gift of probate duty towards free education in the five standards, the school rate is to be raised. It commenced with 4d., and will next year stand at 7½d. For some years one or more new schools have been erected by the Board—or additions made to the existing schools; and one is disposed to agree with the American visitor to the city, who thought there were more boys in it than any other he had seen. The new school erecting this year contains accommodation of a varied character, including gymnasium and swimming bath, for 1,900 children. People are beginning to see that something is not yet perfect in the system of such costly education, and though the rate cannot be held to be excessive, the sixth standard of attainment is poor compared with what was often obtained under the old and irregular system. As a rule, the buildings of late years have been fairly economical in their design, and the expenditure moderate for a system which is undoubtedly in its tentative and transition stage. The International Exhibition is not drawing as yet the crowds expected, being less of a novelty. There are some exhibits of architectural interest, but not so many as in 1866.

The new University tower and McEwen Hall is making some appearance now, having passed the first-floor stage, and being considerably above the dentil stringcourse which marks the second floor throughout the building. It is interesting as a specimen of the very best system of construction, and will certainly be standing, perhaps entire, when Macaulay's New Zealander comes to sketch the ruins of London. The plan of the hall appears to be the best possible in adaptation to its purpose. The side next the large building contains a recess, in front of which is the body of hall, stretching past it on either side, with segmented periphery on opposite side. The basement story is furnished with white glazed brickwork in the walls and windows. Two entrances on the ground floor give access to a corridor about 12ft. wide, separated from the hall by an inner wall, the height of the gallery floor, and which carries arcading to the roof. This corridor is finished with good facing bricks on the walls, and will probably have concrete vault. It is lighted by large circular windows in each bay. The interior of the hall shows pedestals or podiums of ordinary sandstone; but the piers or pilasters and pillars over these are in red sandstone, and the walls have decorative finishing in ornamental tilework. Externally the effect of the hall, which completes the eastern end of the University, is a great improvement, with the tower, to the somewhat monotonous façade of the Lauriston-street frontage. It is broken up by massive piers of good projection, with deep couch canopied recesses for statuary, on both first and second floors. These are carried all round to meet the tower on the north and the court of the building on the south. A good circular staircase is placed about the centre of the corridor for access to the gallery. The exterior of the new National Portrait Gallery is at last completed, and the pavement in front only remains to be made. The inscription states that the building is devoted to illustration of the history of Scotland, and probably, at least for many generations, some other appellation than that of the National Portrait Gallery would be more appropriate. The apartments on the highest floor above the hall and portrait gallery are now open to the public, and contain a very large and complete collection of very fine and interesting engravings of eminent characters in both Scotch and English history. Among these, there are two of Oliver Cromwell, which show him to much greater advantage than the oil painting. It is interesting to compare the engravings of several others with the portraiture in oil on the floor below. The rooms contain also a large collection of busts. The light is from the roof, giving the largest possible amount of wall for the exhibits. The apartments below the portrait gallery have been fitted up as a temporary home for the Geographical Society—that is, the north being a hall for public meet-

ings, and the south library and committee-room. The arcade which forms the division has been formed into a partition, and makes a convenient recess for library shelving. There is still, however, a good amount of work to do towards complete finishing of the many interior apartments east and west of the larger rooms.

There is much elaborate decorative detail in the front, especially in the angle turrets; but there is also a great want of buttress projection at the piers, which have something of a weak look under the heavy mass which they support, and the large windows of the ground floor would have been much better with ordinary transom bars than the preposterously heavy lintels—which serve no ornamental or useful purpose—at the impost level.

The Free Library will shortly be opened in all departments to the public. The opening ceremony, however, is over, and the appearance of the interior is very satisfactory in all details of the finishing, and the great essential requisite of good light is well provided for.

Professor Blackie has been writing strongly against the decoration recently adopted for the Balmoral Hotel, a large building partly in red stone in Princes-street, and which now stands out conspicuously white beside its somewhat dirty-grey companions. It will probably soon be grey, but stone-colour would have kept better, and the dirty-white, already visible below, is not suggestive of cleanliness within. White, however, is better than the black system of decoration adopted in the Princes street arcade, a glance at this funereal embellishment in passing being quite enough for most people, who prefer the sunshine of the street.

It is worthy of note, as an incident marking the complete change of public sentiment in the matter, that the architecture of the church was, probably for the first time in its history, mentioned as matter for congratulation in the closing address of the Moderator of the General Assembly of the Church of Scotland. Hitherto, and for generations, the Cistercian feeling, that there is virtue in a plain, if not an ugly, edifice, has prevailed. This feeling, reinforced by the instinctive love of economical disbursement, had brought nearly all the parish churches to a very low standard of architectural adornment, and it was considered really beneath the dignity of the supreme council of the Church to interfere. The Moderator of the Assembly this year was the well-known essayist, "A. K. H. B.," whose hearty appreciation of bishops and fine churches is conspicuous in all his interesting works. In his characteristic and happy way he compliments the Church on the improvements in the fabrics and the service, and says, "Where great cost is impossible, one often finds a simple beauty, pleasing and helpful. Lath and plaster are being banished. In many churches you find chairs. The communion table is not now carried in and out again. The font, too, of suitable dignity, is part of the furniture of most churches. In some the pulpit is used only for preaching from," &c. This is the subject seen, *coulour de rose*, from the clerical standpoint, as appears from the delusive hope that lath and plaster are ever likely to be banished from church walls of average thickness in the cold northern clime, or that people generally will prefer chairs that they may really kneel, and have their weddings in the church. Economical considerations will continue to prevent the comfortable width for kneeling, and the instances of church celebration of the marriage tie are very rare as yet.

With the opening of the west wing of the Industrial Museum, there has been a rearrangement of exhibits in the great hall, and some interesting architectural ones have been added. Of these, the most notable is an exact copy in plaster of the lofty tabernacle of a church in Belgium. It is of gigantic proportions, and would require steps to reach the ciborium. The height is about 54ft., open work in an octagonal pyramid above the ciborium stage, with 300 figures. The design is Gothic in construction, carried out with Renaissance detail, and is said to have been built in 1552 for 600 florins. It contains nine stages above the steps of the base—the lowest, curiously placed, on the imitation of a thin cushion with corner tassels. Another addition is a copy of the pulpit in Pisa Baptistery by Nic. Pisano. It is a hexagon resting on seven pillars, with one in the centre, and three of the angle pillars on couchant lions. The sculpture of the panels, especially the one representing the Day of Judgment, is a very

elaborate and quaint assemblage of figures, which would no doubt tell its story better in 1260 than now.

There is also a copy of a very fine carved stone altar-piece and Crucifixion from Bromsen Chapel, of St. Jacob's Church at Lubeck, of the 14th century; a copy of the Norman south door of Barfreston Church, showing the flints. Not less interesting is the frieze (in enamelled brick) of the Palace of Darius the Great, at Susa, from the original in the British Museum.

There are also good specimens of ironwork from Paris and Vienna, and Messrs. Powell and Son, of London, have presented some valuable exhibits in stained glass. There are some pieces of old Venetian and Flemish glass, with a sample of the modern Munich work; but the exhibits in this department are very limited.

The west wing contains, on ground floor, some interesting machinery and ship models, and the floor above has a splendid collection of the art and industry of savage nations. The models in plaster of the cave dwellings of Colorado and Arizona are very curious samples, very different from those of Petra, with better provision for air and light.

#### ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

MIDLAND INSTITUTE.—The first excursion of the archæological section this year took place on Saturday to Coventry. Mr. W. G. Fretton, F.S.A., conducted the party. The first place visited was Cheylesmore Manor House. Proceeding through the ancient gateway, the party next visited Ford's Hospital, dating from the year 1529, and in excellent preservation, thanks to the care bestowed upon it. Proceeding through Greyfriars-lane the party arrived at the newly-restored Church of St. Michael. In this church were at one time eleven altars, and the mercers, drapers, armourers, cappers, girdlers, and other trade societies had chapels in it. After noting the parvise over the porch, the curious inclinations of the apse walls, the "Gwillington monument" (which has been described by a county historian as that of a gentleman with his two wives, but which is really that of a lady—Dame Gwillington—and her two husbands); the old carved church chest, dating from about Henry VIII.'s time; the misereres in the Drapers' chapel, carved with figures illustrating the "Dance of Death"; the old stained glass which had been preserved in the windows of the apse, and other curious objects of interest—all felicitously described by Mr. Fretton—the party left St. Michael's, noticing the ten bells (one of which weighs about 32cwt.) standing on the floor of the church, and awaiting the decision of the authorities as to their future habitation. A hope was expressed that they would not be hung to endanger by their ringing the restored tower. A move was next made to the site of the old cathedral, the western wall and respond-piers of which were unearthed when the Bluecoat School was erected. Holy Trinity was next visited, and was found no whit less interesting than St. Michael's. The ancient parvise, or priest's dwelling, on the north side; the constructional skill displayed by the buttressing-up of the central tower by the arches of the nave arcade; the stone pulpit, rivalling that at Wolverhampton, built up with the masonry of the tower pier; the old cast-brass eagle lectern, the monument with the canting heraldic crest to Moreton (a Moor's head on a tun or barrel) in the archdeacon's chapel, the old black-letter Bible in the vestry, the beautiful modern stained-glass window on the north side of the chancel-aisle, with other objects, were much discussed and admired. Proceeding through Earl-street to Whitefriars, Mr. Fretton spoke of the number of vaulted cellars, or crypts, that existed in Coventry, and said that he was aware of no less than 60. At Whitefriars the party was agreeably surprised to find that the old eastern limb of the monastery cloisters had been preserved and put to use as a refectory for the inmates of the workhouse, while over it was the dormitory, an oriel window in which was pointed out as that from which Queen Elizabeth made her celebrated pithy speech to the citizens. On leaving, a hurried visit was made to the Charterhouse. Much interest was displayed in some remains of fresco-painting on the walls of the old refectory—one picture representing the Crucifixion, the other very graceful Renaissance scrollwork. After tea at the Queen's Hotel, a hasty visit was paid to St. Mary's Hall and crypt on the way to the railway-station.



## Building Intelligence.

**BOOTLE.**—The corner-stone of the new police-courts and offices in Oriel-road, Bootle, will be laid on Monday. The architect of the new buildings is Mr. C. J. Andersson, of 36, Dale-street, Liverpool, the contractors being Messrs. George Woods and Sons, of Bootle. The building will be Classic in style, and with a frontage of Manera stone will match the museum and town hall which adjoin the site. On the ground floor there are placed the cells, and offices will also be provided for the administrative department, including chief-constable and detective offices and a charge-room. In the basement will be a recreation room. On the first floor are two courts, a magistrates' room, rooms for magistrates' clerks, and a waiting-room for witnesses. Spacious dormitories, fitted up on the cubicle principle, will be provided to accommodate some 20 policemen. Housekeeper's apartments are also included in the arrangements. The heating will be on the hot-water principle chiefly. The cells are to be lighted and ventilated by gas pipes. The contract is undertaken for £10,600. The first estimated cost was £8,500; but enlargements and improvements on the original plan have necessitated an increased outlay.

**BOW (NORTH DEVON).**—Bow parish church, which has been undergoing restoration, was reopened on June 12. The work at present carried out is the restoration of the nave, north aisle, and interior of tower, and the erection of a new chancel. The old "cradle" roofs of oak have been repaired *in situ*, and the roofs boarded and slated. The old windows have been repaired, and new tracery put where required. The old lancet window on the south side has been restored. Six of the windows are filled with stained glass. The chancel walls are of Itton stone and the windows of Hatherleigh stone. The reredos and choir stalls were made by Mr. Harry Hems, Exeter. The main work of the restoration has been carried out by Mr. H. Geen (Okehampton) and Mr. J. M. Ash (Sampford Courtenay), from plans prepared by Messrs. Medley, Fulford, and Harvey, architects, Exeter. The cost has been about £800.

**COVENTRY.**—At the annual meeting of St. Michael's Church Council, Coventry, held on Tuesday night, the vicar said he understood that a gentleman who signed the memorial against a new bell-tower was now in favour of it, and was willing to give £1,000 to meet Mr. Woodcock's offer of £5,000, or half the cost of the new tower should it exceed £10,000. The present position was this: The bells could not possibly be rung with safety in the old tower, and they had good authority that chiming could not be carried on above the groining with safety; and no one would be so mad as to propose to put in a wooden chamber, and make a coal-hole in the tower as before. And then no provision would be made for the clock and chimes, which the whole of Coventry was anxious to have back again. People were rapidly becoming converted to the bell-tower scheme; and at a meeting of the restoration building committee last week, the south-west corner of the church was suggested as a site, and it was thought by Mr. J. Oldrid Scott that a most magnificent group of towers and steeples could be formed. It was proposed that there should be competitive plans, and a committee of architects and lay assessors to make a selection; but at present nothing whatever had been decided. A long and discursive discussion took place, and a resolution in favour of a new bell-tower, and of accepting Mr. Woodcock's generous offer, was unanimously passed.

**DORSTONE.**—The parish church of Dorstone was reopened on Friday last after thorough restoration. The new building comprises nave, chancel, chancel aisle, tower, and porch. The stone of the old wallings has been re-employed, eked out with new stone of the country. For the dressed work Bromsgrove stone has been employed. The chancel roof over the sacristy is under-vaulted after the fashion of a baldacchino, and is panelled with moulded ribs, encircled with carved-oak bosses at the intersections. The south porch is constructed of oak, for which some of the timbers saved from the modern roofs were utilised, and the same material was converted for making up the chancel stalls, choir desks, and doors. The designs were prepared and the works superintended by Messrs. Nicholson and Son,

architects, Hereford, and the operative work has been carried out by Mr. Price, builder, of Hay.

**GATESHEAD.**—On Wednesday the new baths at Gateshead were opened. The building consists of the large bath and office, and manager's house. The large bath is 80ft. by 30ft., and varies from 3ft. 6in. to 6ft. in depth. On each side there are dressing rooms, 42 in number. There are eight warm baths, and also two shower baths. The other compartments are an office where money will be taken and tickets given, the manager's house, and the boiler-house. Externally, the bath building has been constructed of brick, with brick piers and stone cornices, with balustrade over. The office and house are constructed of brick, with stone dressings, and carved caps and columns. The building has been erected from designs by Mr. Bower, borough surveyor, and Mr. Mackenzie and Mr. Smith have carried out the work under the instructions of Mr. Bower.

**HUYTON.**—The new Congregational church at Huyton, Liverpool, was opened on Tuesday. The total cost of the new building, which accommodates over 500 people, will be £9,000. The general character of the building is English Gothic of the 13th century. Sandstone throughout, red without and a warm yellow within, treated with wide joints, varying courses, and a strongly-tooled surface. The structure has a nave consisting of three aisles of nearly equal height, divided by stone arcades. On the north side is a transept. The top of the spire is about 130ft. from the ground. The contractors were Messrs. Hughes and Stirling, of Bootle; the clerk of the works, Mr. Clydesdale; and the heating was carried out by Mr. John Grundy, of London and Tyldesley. Mr. W. D. Carroll, of London, is the architect.

**LEEDS.**—On Saturday afternoon the foundation and memorial stones of new Wesleyan Methodist Sunday Schools, to be built in connection with Hanover-place Chapel, Leeds, were laid. In addition to the Hanover-place Sunday schools, the project includes the provision of a new chapel at Cardigan-road. The total cost of the whole project has been approximately estimated at £6,450. The Sunday schools will be of brick, with stone dressings. The large schoolroom will be 70ft. in length by 35ft. wide, and capable of accommodating 500 adults. Further accommodation will also be provided by seven classrooms, an apparatus-room, kitchen, and store-rooms for tables, &c. The schools are being erected from the designs of Mr. George F. Danby, architect, Leeds, selected in a limited competition. The cost of the buildings will be about £1,700. Mr. P. Stather, builder, is carrying out the work, and Mr. J. Ledgerd will execute the joiner's work. The new school which has been erected at Richmond-hill by the Leeds School Board was formally opened on the 12th inst. The structure, built with red bricks with stone dressings, occupies an elevated site, and has a frontage to Accommodation-road. Classical in style, it is of two stories. The accommodation for the infants and junior scholars, on the ground floor, comprises four large classrooms 45ft. by 22ft., divided by glazed sliding partitions, and four classrooms 24ft. by 16ft. Accommodation is provided for 345 infants, 329 junior boys and girls, and 732 senior boys and girls, or a total of 1,406, exclusive of the central halls. In the centre of the front of the building there is a tower, with an illuminated clock, and bell. The roofs are covered with dark Westmoreland slates. The classrooms and central hall on the ground floor have wood-block paving. The architects were Messrs. Kelly and Birchall, of Leeds and London.

**PRESCOT, NEAR LIVERPOOL.**—Designs prepared by Mr. Thomas W. Cubbon, architect, of Birkenhead, have been adopted for a new congregational memorial church and schools about to be erected in memory of the late Mr. Richard Evans, Colliery Proprietor, of Haydock, by his daughter, Miss Ruth Evans, of Briar's Hey, Rainhill. The buildings will be erected at the Holt, Prescott, on a site containing about 3,000 square yards fronting the main road to Rainhill, and will include a church providing seating accommodation for about 650 on the ground floor, having organ chamber, vestry, cloak-room accommodation, &c., in connection therewith; also school buildings, including large assembly-room for about 300 children, having four classrooms at the rear, each for about eighteen scholars. The buildings are Decorated Gothic in character, the church being cruciform,

having transepts and chancel, the latter being fitted with rostrum and communion. Three main entrances are provided. The clerestory will be carried upon handsomely moulded arches and octagon pillars having richly moulded caps and bases, which, together with chancel and other internal arches, will be of Cefn stone. The whole of the buildings will be faced externally with local red sandstone. A handsome tower and spire occupies the south-west angle of the building, and reaches an altitude of over 120ft. The schools, which harmonise with the larger building, have an octagon bell turret to the right of the main gable, from which it is corbelled out and carried upon red granite shafts. A contract has been entered into with Messrs. Hughes and Stirling, of Bootle and Liverpool, whose tender was the lowest submitted in a limited competition. —A new public swimming-bath, designed by Mr. Thomas W. Cubbon, architect, of Birkenhead, is now in course of erection at Prescott for Miss Ruth Evans, proprietor of Haydock Collieries, and consists of swimming-bathroom 50ft. by 23ft., having 11 dressing-boxes, all being fitted up in the best style and with all modern conveniences and fittings. The design is Gothic, all the external walls being faced with local red sandstone, the internal walls faced with selected bricks, the sides of bath lined with white glazed bricks, and the bottom laid on concrete bed with heavy white tiles all set in cement. The internal woodwork is of pitch-pine varnished, roof lights glazed with Hartley's rolled plate and slated with Vellenhilli slates. Louvred ventilators are provided in roof, which may be opened and closed at will. The contract is being carried out by Messrs. Hughes and Stirling, of Bootle and Liverpool, under the architect's superintendence. —A new gymnasium, club house, and coffee tavern are about to be erected at Prescott from the designs of Mr. Thomas W. Cubbon, architect, of Birkenhead, for Miss Ruth Evans, of Rainhill and Rhyl. The buildings will include public gymnasium, 51ft. by 21ft., having dressing-room and all necessary conveniences attached; billiard and reading rooms with lavatories and cloakrooms, &c.; coffee tavern consisting of large refreshment-room, handsomely fitted with serving-bar, seats and tables, bicycle shed, verandahs, &c. The buildings, which are Gothic in character, are of two stories, and are faced externally with red sandstone from local quarries. All internal woodwork is of pitch-pine varnished. The whole of the buildings are being erected by Messrs. Hughes and Stirling, contractors, of Bootle-cum-Linacre, and under the supervision of the architect.

### COMPETITIONS.

**SHEFFIELD MUNICIPAL BUILDINGS.**—The design submitted in this competition by Mr. E. W. Mountford, A.R.I.B.A., of 22, Buckingham-street, has been selected by Mr. Alfred Waterhouse, R.A., the arbitrator, and will be recommended for adoption to the Town Council. The other competitors were Mr. James Lindsay, A.R.I.B.A., 246, West George-street, Glasgow; Messrs. W. Harvey, F.R.I.B.A., and Bernard Smith, of Whitehall-place, S.W.; Messrs. Flockton and Gibbs, St. James-row, Sheffield; Mr. Henry T. Hare, A.R.I.B.A., of 3, Lombard-court, E.C.; and Mr. F. H. Tullock, A.R.I.B.A., 5, Lancaster-place, Strand. We shall illustrate the selected design next week.

### CHIPS.

The town council of Sheffield, having decided to adopt the Technical Instruction Act, have allotted to the Firth College a sum of £1,700 on account of annual expenditure for the year ending March 25, 1891, and £2,100 on capital account for extensions and providing fittings and apparatus.

The first sod of the Kelvin-side section of the new Central Glasgow Railway was publicly cut on Wednesday week at Kirklee-road, Kelvin-side. Mr. A. H. Boyle, of Banknock, N.B., is the contractor.

The work of canalising the Seine, which has been in progress for fifteen years, is still being actively pushed forward. According to the engineer, M. Bouquet de la Grye, the cost will not exceed £5,150,000 sterling. The object of the work is to deepen the river another 10ft., so that vessels of 2,000 to 2,500 tons, which at present have to stop at Rouen, may go to Paris. It is intended to reconstruct an arch of each of the bridges across the Seine to allow of the passage of the vessels.



## TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

## NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., L., LI., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—R. P. W.—G. J. and Co.—B. of T.—H. L. B.—J. T.—R. L. and Co.—M. M.—J. L. B.—S. S. and Co.—T. W. W. and Co.—R. Bros.

JOHN BROOKE (That is a matter for your own architect and solicitor. It is impossible for us, for obvious reasons, to undertake the responsibility of advising how close you can build to an ancient light, especially from such rough data, and in total ignorance of the surroundings.)

## Correspondence.

## WESTMINSTER ABBEY.

To the Editor of the BUILDING NEWS.

SIR,—The new round window of Westminster Abbey is so similar in principle, or in its leading lines, to the celebrated one in the south transept of Chartres that one can hardly help comparing them. Photographs and pictures of it are so common that we may assume its general construction to be known. The first striking resemblance is the peculiarity (for this country) of the outer ring consisting of semi-circles instead of circles or pointed arches. The next ring consists of circles at both Chartres and Westminster; and again within that is a wheel with the same number of spokes. But at C. the central member is a large cusped circle, while at W. it is another wheel of spokes. The number of elements in all the several rings is 12 at C. and 16 at W., though the C. window is considerably larger. Thus far they are all but identical in structure. But there comes in a striking difference in details towards the outside. At C. the 12 circles touch each other, and so do the 12 semicircles of larger radius, which surround them radially—i.e., the centres of every circle and semicircle beyond it lie on the same radius of the whole window. Consequently the "eye" between them lies between four touching circles, and is a fairly large one—large enough to form a strong feature and to have four cusps. At W. the 16 circles do not touch each other, but leave small gaps between. Nor do the semicircles touch, which also lie not radially, but each touching two circles, and, therefore, they are much smaller

relatively than the C. ones, besides the smallness due to the greater number.

The consequence of all this is that the features of the C. window expand nobly outwards, whereas those of W. are more and more crowded together. Also, against the 12 large and cusped "eyes" at C. there are two sets of 16 small square ones at W.; and what detracts further from their effect, they do not lie diamondwise, but square to the radii and the rim of the window. Or, to sum it up, there are 88 lights in W. (omitting smaller eyes) against only 49 in the much larger window of C. The C. window was designed mathematically, or the size of every member, except the central circle, is absolutely fixed by the size of the window and the number 12. The W. one may be said to have been designed arbitrarily, or the gaps between the circles and the semicircles might as well be anything else. And yet it is difficult to see what has been gained by that escape from mathematical rules, while much has been lost by the smallness and crowding of the outer members through leaving those gaps. Moreover, there is always something unconsciously pleasing to the eye in the appearance of mathematical relations in such structures, and especially in windows of the Geometrical Decorated style—the essentially mathematical one. The new arcading above the window is pretty and well done; but it has the same defect of being crowded or filled with too many members, and therein is an unpleasant contrast to the beautiful and bold Early English arcades inside both transepts. It is no use complaining now; but if criticism is worth writing, these are plain matters of fact for critics to reflect upon.—I am, &c., X.

## CHIPS.

The designs and estimate of Mr. Benjamin Johnson, manufacturer of portable steam cranes, Mill-lane Works, Bramley, near Leeds, have been accepted by Mr. Harry Hems, Ecclesiastical Art Works, Exeter, for the erection of a 10-ton Goliath overhead crane in his statutory yard. The space covered will be 207ft. by 25ft., with 26ft. clear lift.

The tender of Messrs. Treasure and Son, of Shrewsbury and London, has been accepted for the erection of the Government Telegraph Factories and Water Tower, Mount Pleasant, Clerkenwell, E.C. The architect is Mr. Henry Tanner, 12, Whitehall-place, S.W.

Extensions to the Industrial School, Shustoke, for the Corporation of Birmingham are now being carried out by Mr. Daniel Arkell, architect, Birmingham. The builder is Mr. William Hopkins, of Latimer-street, Birmingham. The work will cost between £3,000 and £4,000.

At the Workhouse, East Preston Union, Sussex, additions have been made to the infirmary, with a covered way and improved drainage to the block, from plans and under the superintendence of Mr. H. Howard, surveyor. The foregoing have been carried out by Messrs. Snewin Bros., builders, of Littlehampton, at a cost of about £900.

A two-light window was unveiled at the Charles-town Congregational Church, Broughton Road, Pendleton, on the 12th inst., in memory of the late pastor of the church, the Rev. Neal Jordan, B.A. The subjects represented are "Our Lord as the sower," and "The angels reaping." The subjects are without canopies or other ornament, with the exception of a base of ornamental character. The work has been carried out by Mr. A. O. Hemming, of London, under the superintendence of Messrs. E. and F. Hewitt, architects, of Manchester. Below the window is placed a memorial brass, lettered in black and vermilion.

On Wednesday week the foundation-stone of the public offices now in course of erection by the New Swindon Local Board in York-place, New Swindon, was laid by the chairman of the board. The building will cost about £10,000. Mr. J. Reed, of Plymouth, is the contractor, the architect being Mr. Brightwen Binyon, of Ipswich. The building will be in the Renaissance style, and will be built of brick, relieved with stone, and the roof slated. There will be a tower 102ft. high. The two principal rooms will be a board-room, 52ft. by 28ft., and a public hall, 70ft. by 33ft.

The Tottenham Local Board of Health were summoned before the magistrates at Edmonton on the 12th inst. by the Lea Conservancy Board for neglecting to discontinue the flow of sewage matter into the river. The defendants denied their liability, alleging that the responsibility had been transferred to a Joint Committee of their Board and the Wood Green Local Board. The magistrates held that the Joint Committee was responsible, and therefore dismissed the summons.

## Intercommunication.

## QUESTIONS.

[10300.]—Camp Shedding.—Will any reader be so kind as to give me a description of camp shedding and its uses?—F. B.

[10301.]—Concrete.—Would some reader kindly inform me how to obtain the necessary thickness of a concrete foundation to resist a certain weight, and would concrete, say, 2ft. thick take twice the weight of that borne by concrete 1ft. thick? Also, taking bricks as tested by Mr. Kircaldy, which required 120 tons to crush 1ft. super., the bricks being bedded between pieces of pine 1in. thick, and allowing a factor of safety of one-tenth, would it be safe in practice to load brickwork built of these bricks till the weight reached was, say, 12 tons on the foot super.?—W. H. E.

[10302.]—Schools.—Will any of your readers kindly inform me the best books on school buildings, and where there are first class examples of schools to be seen or illustrated? In a school to hold 200, what would be the area for each child? This, with any further information, will oblige.—EVANS.

## PARLIAMENTARY NOTES.

THE SEWAGE IN THE THAMES ESTUARY.—Major Rasch asked the President of the Board of Trade last Friday whether, as owing to the deposit of London sewage in the vicinity of the Nore Sand the fishing grounds of the Thames estuary were being injured, he would arrange for the station of a Government ship in the neighbourhood, in order that the sludge might be deposited according to agreement east of, and no higher up the river than, Knock Buoy. Sir M. Hicks-Beach: No agreement such as is suggested by the hon. member has come officially to my knowledge, and there seems some difficulty in taking any action in the matter until it has been under the consideration of the committee of the recently created Kent and Essex Sea Fisheries district, who will have power to deal with it.

HANKEY MANSIONS AND HIGH BUILDINGS.—Viscount Hardinge, on Tuesday, called attention to the excessive height of the Hankey Mansions, which seriously disfigure the adjacent public buildings, and asked whether some amendment of the law might not be practicable to meet such cases. The noble lord recalled what had happened with reference to buildings at Albert-gate, which were carried up to an enormous and quite unnecessary height. He also referred to buildings at the corner of Piccadilly and Arlington-street, which shut out light from adjoining houses. Again, on the Thames Embankment there were houses that were unnecessarily high, and dwarfed public buildings. The evil had even extended to the designs for the new War Office. The time had arrived when something ought to be done by legislation to stop these enormously high buildings. Lord Henniker warmly sympathised with the noble viscount in what he had said about the hideous buildings that were now defacing the metropolis. But at the same time the Office of Works had no power to deal with the evil. The question was not one for the Office of Works at all, but no one would welcome the initiation and carrying through of legislation to prevent the defacing of London and the buildings and parks under the Office of Works by the erection of those monster buildings than the First Commissioner and those who acted with him.

THE LADIES' GALLERY.—Mr. T. Healy, on Tuesday, asked the First Commissioner of Works what was the height from the ground floor of the House to the Committee Rooms and the Ladies' Gallery, and would it be possible to put up a lift or lifts for the convenience of members and of ladies visiting the House. Mr. Plunket: I find that the height of this building, from the ground floor to the Committee Rooms, is 39ft. 3in. It would be possible to introduce a small lift to contain three people, but it would be an expensive undertaking. Sir G. Campbell asked whether there did not already exist a lift which was used for the coals; and whether the ladies could not be substituted for the coals. Mr. Plunket: Such a lift does exist, and it certainly could be used either for the ladies or the coals, but it would be very difficult to combine the two. Mr. T. Healy asked whether the right hon. gentleman would examine into the matter in the recess. Mr. Plunket: I have no objection to examining into the question.

Alterations have been made to the Withington Workhouse, Manchester, embracing the improvement of the ventilation, for which Boyle's latest improved self-acting air-pump ventilators have been used.

Mr. Edwin J. White, F.A.I., of 145, Holborn Bars, London, E.C., who has been established upwards of a third of a century for the supply of goods at lowest trade prices for cash, has just opened a new department at 46, Gray's Inn-road, W.C. (opposite Gray's Inn-gateway), for marble, enamelled slate, wood and iron chimney pieces, marble and tile hearths, &c.



## LEGAL INTELLIGENCE.

**"GOLD" MEDALS.—AN INTERESTING CASE.**—At the Leeds County Court last Friday, Messrs. Powell Brothers, artists in stained glass, Park-square, Leeds, sued Mr. Joseph Davis, who is manager of the Leeds Exhibition, and who was also manager of an exhibition held at York last year, to recover a gold medal, or £21, its value, together with damages amounting to £5, for non-delivery. Mr. Davis sent out a circular in connection with the York Exhibition which stated that special gold medals, of the value of 20 guineas each, would be given in various classes, including one for the best specimen of stained glass for ecclesiastical purposes. Upon that the plaintiffs took space at the York Exhibition, for which they paid £9, and incurred considerable expenses for preparing glass for exhibition. Towards the close of the exhibition they received a circular from the defendant informing them that a diploma for a gold medal had been awarded them. As the plaintiffs had not received a gold medal last December, they wrote to the defendant asking when they might expect to receive it. The reply was, "If you will kindly read the award, you will note that a diploma for a gold medal was sent you, which is equivalent to a gold medal award." Messrs. Powell then consulted their solicitor, and in answer to a letter threatening proceedings, Mr. Davis wrote stating that no unnecessary delay had taken place in awarding the medals, and added that he had had them in his possession for five months. He further stated that in the course of the following week he would have the medals engraved and issued to those entitled to them. After a month had elapsed a medal was sent to the plaintiffs, who had it tested by Messrs. Pearce and Sons, Mr. John Dyson, and Messrs. Bell, who found that the gold was of a low quality. Its intrinsic value was less than £4, and the cost of the die, amounting to £25, divided amongst eleven medals, would bring the cost of the one received by the plaintiffs to about £6. Mr. John Pearce stated that the medal was composed of pure gold and pure silver in such proportions that the quality was not more than 9 carat. He would, he said, be prepared to supply eleven such medals at £10 each. Further evidence of a similar kind was adduced as to the value of the medals. On behalf of the defendant it was submitted that for exhibition purposes the medal was worth £20. It might not realise that sum if placed on the market, but it must be borne in mind that only three medals were struck from the die, and the jury had no right to take the metal received by the plaintiffs at its melting-pot value. Witnesses were called, who stated that the medal was worth £20 for exhibition purposes. One of them stated that its intrinsic value was £10. The jury found that the value of the medal was £10, and his Honour gave judgment for the plaintiffs for £11, with costs, in addition to the medal.

**NEGLECT TO GIVE NOTICE.**—North London Police Court, June 12, 1890, before Mr. Montague Williams.—District Surveyor for East Hackney, North, v. Anthony and Co., Limited.—The defendants were summoned for neglect of giving notice. They had erected, on the front of the old Town Hall, Hackney, a wooden advertisement framing in two parts, each part measuring about 18ft. by 12ft., supported on wooden brackets driven into the walls and fixed with iron holdfasts, some with and some without screws. The district surveyor relied on sections 9 and 14, and section 26 rule 1. The defendants contended that the Building Act was only intended to apply to what was a part of a building and not to such things as advertisement boards and brewers' signs. The defendants, who were represented by counsel, were ordered to pay a penalty of 10s. and 12s. 6d. costs. The magistrate refused to grant a case.

**THE REREDOS IN ST. PAUL'S.**—In a Divisional Court of Queen's Bench on Tuesday, before the Lord Chief Justice and Mr. Justice Wills, Mr. Moulton, Q.C., on behalf of Sir Christopher Robert Leighton, Bart., and others, moved for a rule calling upon the Bishop of London to show cause why he should not forward and proceed with a representation presented to him regarding the idolatrous character of the images of the Crucifixion and of the Virgin Mary on the reredos of St. Paul's Cathedral. Counsel said a mandamus had been granted by the Court on this very subject, and the matter had gone up to the House of Lords on appeal. This was a fresh representation by different people, and in addition to the allegations in the previous representation that the images tended to induce superstition and idolatrous reverence, the present representation said that they had, as a matter of fact, produced such idolatrous reverence. The Bishop declined to proceed, on the ground that the other representation was before the House of Lords, and the promoters wanted the rule in order that both points should be before the House of Lords at once.—Their Lordships granted a rule nisi.

The Smethwick Burial Board have sealed a contract with Mr. Hurley for erecting the cemetery chapels for £1,217.

## Our Office Table.

The steady progress made by the plumbing classes is one of the most satisfactory features of the movement for the registration and training of plumbers. Among the latest and most successful classes is that established last session at Greenock in connection with the District Council for Glasgow and the West of Scotland. This class, which commenced in October last, and has just terminated for the session, was held in the Mearns-street Public School. A report which the teacher of the class has furnished to the District Council shows that out of the total number of 36 students the average attendance was 30. The happiest results of the work done by the class have been apparent in the increased intelligence manifested by the rising generation of plumbers in executing their work. During the preceding session many of the Greenock students received elementary instruction in the plumbing class connected with the Glasgow Technical College, and they have, therefore, been given advanced instruction in the Greenock class during the past session. The result of the examinations held at the close of the session were eminently satisfactory, the students taking the 2nd and 5th prizes out of five prizes with medals offered to plumbing students in the United Kingdom.

The annual meeting of the Association of Municipal and Sanitary Engineers and Surveyors will be held at Liverpool on Thursday, Friday, and Saturday next, 26th, 27th, and 28th June, 1890. The members will assemble at 11.30 o'clock on Thursday, the 26th June, in the Council Chamber of the Town Hall, when the annual meeting of members will be held, and a reception by the Mayor (Mr. Thomas Hughes, J.P.) will follow. The president's address will be delivered, followed by paper and discussion on "The London Sewage Question," by Crawford Barlow, B.A., M.Inst.C.E. At 1.30 p.m. there will be an adjournment for luncheon in the Town Hall, to which the members are invited by the Mayor. At 2.30 p.m. papers and discussions will follow on "The Mersey," by W. Spinks, Assoc.M.Inst.C.E.; "The County Management and Maintenance of Main Roads," by E. P. Hooley, Assoc.M.Inst.C.E.; "Traction Engines and their effect on Roads and Buildings," by J. H. Burton. The annual dinner will take place at Eberle's Restaurant, Eberle-street, Dale-street, at 6.30 p.m. for 7 p.m. On Friday and Saturday visits will be paid to various surrounding places and objects of interest.

The paper by Prof. W. C. Roberts-Austen, C.B., F.R.S., on the "Use of Alloys in Art-Metal work," read before the Society of Arts and printed in the journal of that Society, is of particular interest to those interested in metal-work. Professor Austen pointed out how the Japanese used their alloys to produce relief, colour, and texture. Many beautiful specimens were shown in which the effect of texture in metal is given. The alternate layers of copper and shaku-do produce the appearance of wood grain. Two particular alloys which the lecturer named as worthy of admiration were those to which the names of moku-me (wood grain) and miyu-nagashi (marbled) are given. The Japanese art consists in taking thin sheets of these and other alloys soldered together in alternate layers, and then by drilling conical holes, hammering and cutting off prominences, beating and other processes, to obtain the effect of strata or variegated bands of colour. Sometimes the thin sheets or layers are beaten up from behind, and the surface filed flat, and the most varied and ornamental designs are produced. The Japanese are truly wonderful artists in metal, and their artistic employment of alloys is worth study. Their chief object is to produce decorative relief and colour—not to imitate other textures for the mere sake of imitation.

The "emergency door," for use in theatres and other public buildings in case of fire, invented by Mr. F. J. Lancaster and Mr. Edwin Nixon, appears to be designed on the right principle. The door is constructed in two halves, one overlapping the other, held by a spring at the foot operating a catch. Another spring forces the doors open directly the bottom catch is withdrawn, which is done by the pressure of the foot of a person who approaches the door from within. For this purpose a small platform, which can be

depressed by the weight of any one, is sufficient. Thus a panic-stricken crowd rushing out of a building would find every emergency door fly open directly they got near the doors. The idea is a good one—the two halves of the door slide, as they always should in doors fitted up for public buildings.

Zinc and spelter are following the boom in copper, zinc having advanced £3 a ton during the past fortnight—from £24 to £27 delivered in Birmingham. Spelter has risen about 30s. The advance in both zinc and copper has largely increased the cost of brass, whilst the enhanced value of spelter is seriously checking the recent improvement in the galvanising industry, large orders for galvanised sheets having been withdrawn. The rise in spelter is attributable to the operations of a Belgian syndicate, who are gambling in this metal.

## MEETINGS FOR THE ENSUING WEEK.

**SATURDAY (TO-MORROW).**—St. Paul's Ecclesiastical Society. Visit to Waltham Abbey, under guidance of J. Arthur Reeve. Train leaves Liverpool-street 2.50 p.m., returning from Waltham Abbey 6.52 p.m.

**THURSDAY.**—Annual meeting of the Association of Municipal and Sanitary Engineers and Surveyors at the Town Hall, Liverpool. 11.30 a.m.

**FRIDAY.**—Visit of Association of Municipal and Sanitary Engineers and Surveyors to the Docks at Liverpool. Assemble at Harbour-Master's Office, 9.30 a.m.

**SATURDAY.**—Visit of Association of Municipal and Sanitary Engineers and Surveyors to various places of interest in and near Liverpool. Assemble at Municipal Offices, Dale-street, 9.30 a.m.

**Architectural Association, 9, Conduit-street, W.**—The Special Business Meeting of June 18 has been adjourned by resolution till Friday, June 20, at 7 p.m.

FRED. R. FARROW. } Hon. Secs.  
ERNEST S. GALE. }

## Trade News.

## WAGES MOVEMENTS.

**LIVERPOOL PLUMBERS' STRIKE.**—At a representative meeting of master plumbers, held at the rooms of the association on Friday last, the question of the demand made by the operatives was fully discussed. It was stated that the reports spread by the men that a large number of employers had granted the advance was inaccurate, as only a very small number, employing one or two men, have given way, which they say they have been forced to do under special circumstances. The following resolution was passed:—"That this meeting considers the employers' offer of 3d. per hour advance is ample, and pledges itself not to increase the offer, but to take every legitimate means to fill the shops with men from outside sources, unless the men return to work."

**STATE OF THE BUILDING TRADE.**—According to the *Board of Trade Journal*, during the past month the building trades continued to show improvement, and the percentage of unemployed was but 1.6 as against 2 during the previous month. The cabinet-making trade is reported good; but the number of unemployed has been very largely increased by strikes at Manchester and at Beith.

**WOULDHAM.**—After a lock-out of a fortnight, which arose from a dispute with the Bargemen's Union, the hands employed at Messrs. Peter's Cement Works at Wouldham, on the Medway, resumed work on Monday.

The successful design in the competition for the Great Tower for London embodies a scheme of lifting machinery specially prepared by Messrs. Archibald Smith and Stevens in accordance with the requirements of the designers. It is of a somewhat elaborate character, and comprises some novel features.

The extensive Seamen's Barracks which have just been erected at Portsmouth by Her Majesty's Government are warmed and ventilated throughout by means of over 30 of Shorland's warm-air ventilating patent Manchester stoves with open fires, supplied by Mr. E. H. Shorland, of Manchester, who is constantly supplying his stoves for similar Government and other public buildings throughout the country.

A company has been formed for the purpose of erecting a suitable town-hall at Crickhowell, and at a meeting of the directors, Mr. E. A. Johnson, of Abergavenny and Newport, was appointed architect for the new buildings.









*G. H. Hunt*

G. H. HUNT  
ARCHITECT OF THE GLOUCESTER MUNICIPAL BUILDINGS



COLONEL  
ARCHITECT OF THE BIF



*Hugh Roumieu Gough*

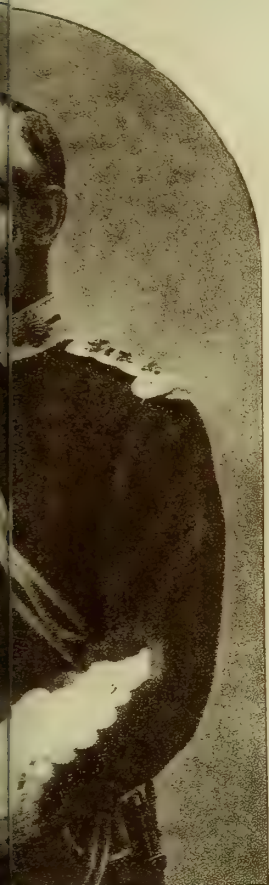
HUGH ROUMIEU GOUGH FRIBA  
ARCHITECT OF PARISH CHURCH HAMMERSMITH



WALTER  
ARCHITECT OF THE TIVO



JUNE 20, 1890.



*C. Ellison*

ELLISON  
GREENHEAD TOWN HALL



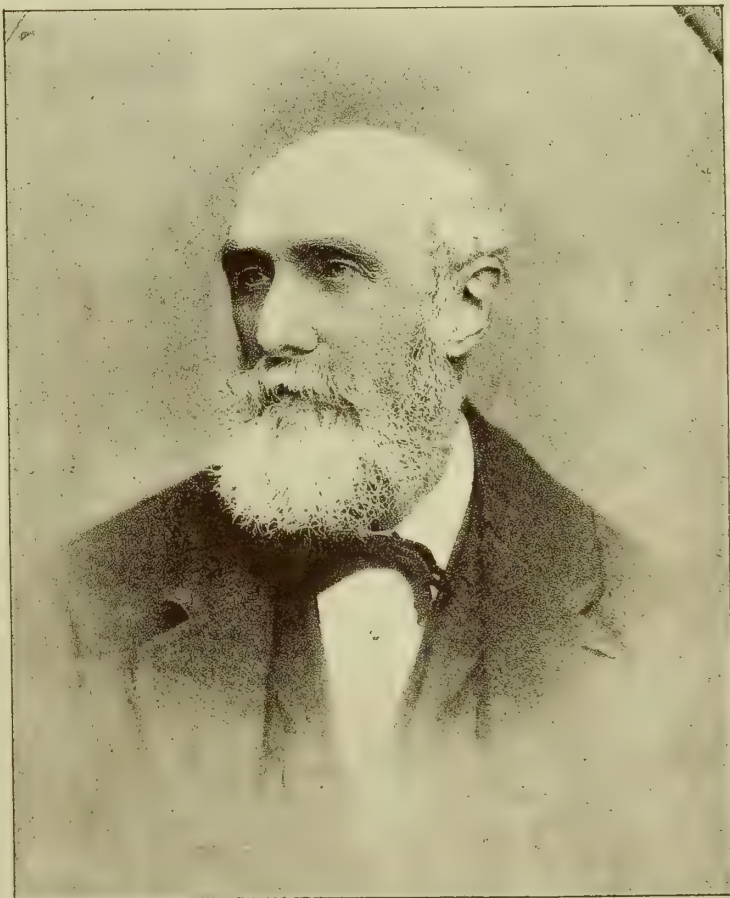
*J. H. Finch Noyes*

FINCH NOYES FRIBA  
ARCHITECT OF GREEN PARK RESIDENTIAL CHAMBERS PICCADILLY W



*Walter Emde*

EMDEN  
THEATRE & RESTAURANT

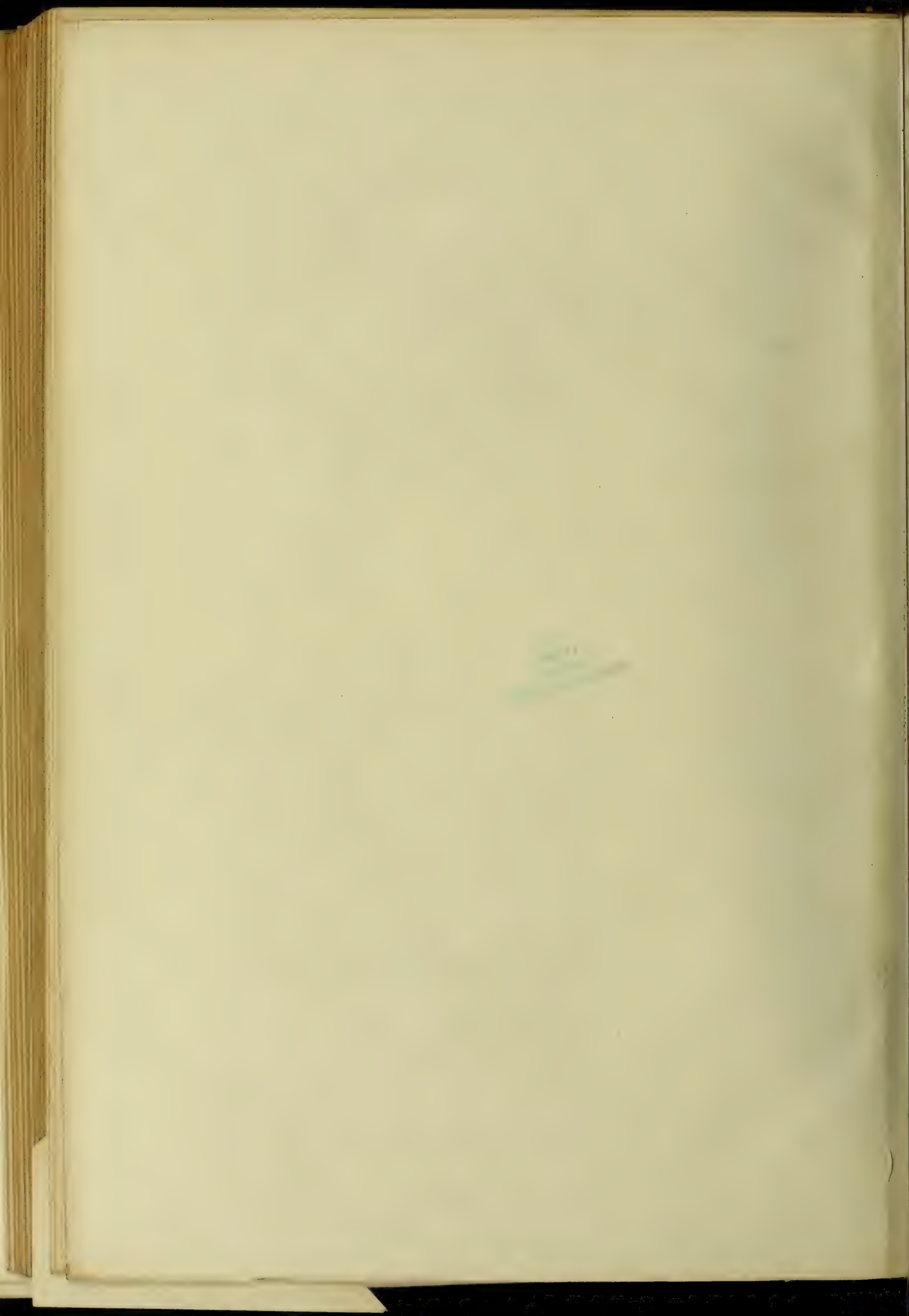


*Arthur Billing*

ARTHUR BILLING FRIBA  
ARCHITECT TO GUYS HOSPITAL

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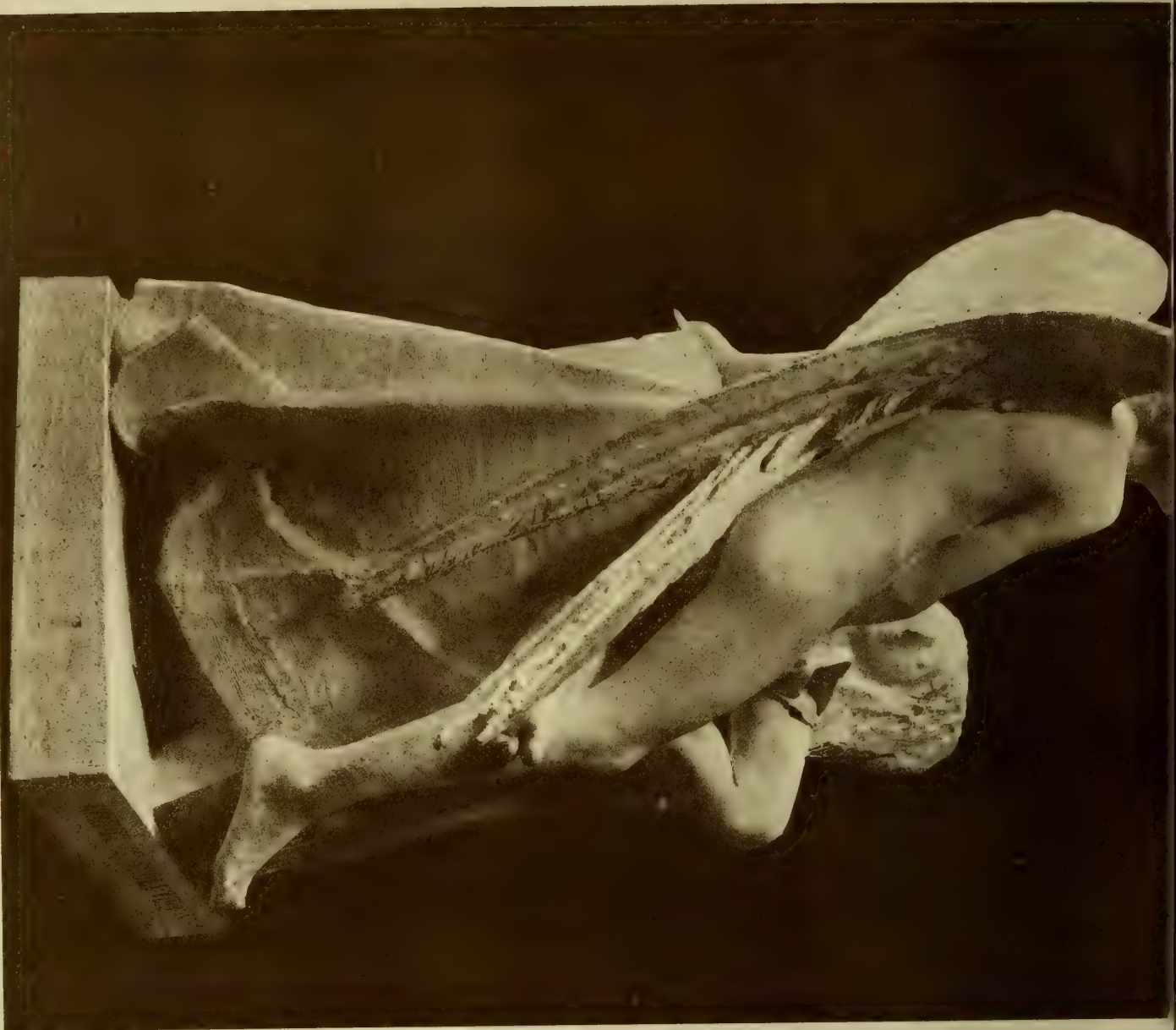


PHOTO-TINT, BY JAMES AKERMAN, LONDON, W.C.

"THE GENIUS OF SCULPTURE" BY WILLIAM A. DAVIS.

SCULPTURE AT THE ROYAL ACADEMY, 1890



"HYPATIA" F. J. WILLIAMSON.

"OLD MARJORIE" BY GEO. A. LAWSON.





"THE MIRROR" BY HAMO THORNYCROFT, R.A.









CHIPS.

Plans for extensive alterations of the Royal Trade Restaurant, Regent-street, Weston-super-mare, have been accepted by the local board. Mr. Addicott is the contractor, and the architects are Messrs. Price and Wooler.

Mr. S. E. Burgess, A.M.Inst.C.E., assistant borough surveyor of Stockton-on-Tees, was last week appointed to the position of borough surveyor of Banbury, Oxon. There were 93 applicants for the post.

**Holloway's Ointment.**—Go where you may, persons will be found who have a ready word of praise for this Ointment. For chaps, chafes, scalds, bruises, and sprains, it is an invaluable remedy; for bad legs, bad breasts, and piles, it may be confidently relied upon for effecting a sound and permanent cure.

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TENDERS.

Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ALLCANNINGS.—For building Wesleyan chapel a Allcannings, Wilts. Mr. J. A. Randall, M.S.A., architect:—

Hoskins, H., Hungerford	...	£499	8	0
Ash, H., junr., Devizes	...	420	0	0
Brown, G., Devizes	...	416	0	0
Mullings, R. B., Devizes	...	409	0	0
Stevens, J., Allcannings	...	405	0	0

BARKING.—For rebuilding three shops at the Broadway, for Messrs. Pelling and Hart. Mr. E. Clark, 432, West Strand, W.C., architect:—

Argent, D., Barking	...	£3,371	0	0
Falman and Fotheringham	...	3,140	0	0
Green, T. L.	...	3,070	0	0
Grover and Co.	...	3,050	0	0
Rist, G., Barking	...	3,049	0	0
Adecock, W. J., Dover	...	2,967	0	0
Smith, J., Barking	...	2,746	0	0

BERKHAMPTSTEAD.—For the erection of a villa residence at Berkhamptstead, for Mr. S. R. Timson. Mr. J. F. Goodey, 2, Victoria-chambers, Colchester, architect:—

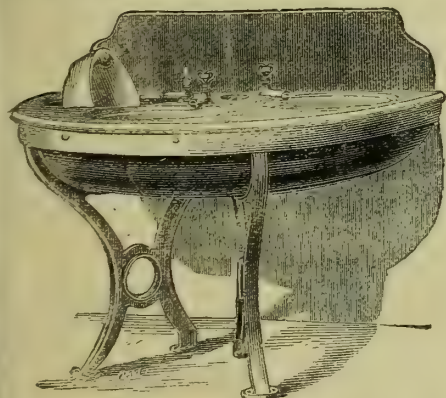
Miskin, C., St. Alban's	...	£2,138	0	0
Mathew, H. & J., Berkhamptstead	...	2,072	0	0
Smith, W., Tring	...	1,878	0	0
Co-operative Builders, Brixton	...	1,790	0	0
Dobson, G., Colchester	...	1,748	0	0
Dupont, F., Colchester (accepted)	...	1,672	0	0

BIRMINGHAM.—For new Ear and Throat Hospital, Edmund-street, Birmingham, for the building committee. Messrs. J. A. Cossins and Peacock, 83, Colmore-row, Birmingham, architects. Quantities by Mr. G. Kenwick:—

Surman, S., and Sons	...	£5,902	0	0
Moffat, J.	...	5,862	0	0
Lovatt, H.	...	5,584	0	0
Taylor, S.	...	5,280	0	0
Smith, T.	...	5,249	0	0
Bowen, J.	...	5,220	0	0
Sapote, W., and Sons	...	5,138	0	0
Webb, W. and J.	...	5,042	0	0
Barnsley, J., and Sons	...	5,033	0	0
Smith, J., and Sons	...	5,010	0	0
Gowing and Ingram	...	4,829	0	0

\* Accepted subject to modification in the works.

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**BOURNEMOUTH.**—For proposed stable, Denbigh Lodge, for Mr. A. Jones. Messrs. Lawson and Donkin, Bournemouth, architects and surveyors:—

Hoare, F., and Son	£497	0	0
Barrow and Entwistle	495	0	0
Scott	451	0	0
Rigler and Crome	450	0	0
Lucas (accepted)	445	0	0

**BOURNEMOUTH.**—For proposed alterations to Linden Vale, Christchurch-road, Bournemouth, for Mr. J. T. Exton. Messrs. Lawson and Donkin, Bournemouth, architects and surveyors. Quantities supplied:—

McWilliam and Son	£1,775	0	0
Hoare, W.	1,750	0	0
George and Harding	1,650	0	0
Hoare, F., and Son	1,645	0	0
Barrow and Entwistle	1,642	0	0
Kingerlee	1,625	0	0
White, J.	1,550	0	0
Shears, G. (accepted)	1,500	0	0

**BOURNEMOUTH.**—For painting and decorating at the Hotel Mont Dore, Bournemouth. Mr. C. T. Miles, architect:—

Cutler, F. T., Bournemouth	£912	10	0
Jenkins and Sons, Bournemouth*	882	0	0

\* Accepted.

**BOWDON.**—For Richardson House, Bowden. Mr. Edgar Wood, Oldham, architect:—

Wood, E.	£4,295	0	0
Winstanley, J.	4,100	0	0
Southern, W., and Sons	3,995	0	0
Brundrett, J.	3,980	0	0
Peters and Son	3,946	0	0
Hamilton, J.	3,937	0	0
Fox, A. F.	3,886	0	0
Stone, M. (accepted)	3,870	0	0

**BRISTOL.**—For alterations to the Cumberland-street Mission Hall, for the Bristol City Mission Society. Messrs. Foster and La Trobe, architects:—

Griffiths, W.	£481	0	0
Walters, E.	429	0	0
Vickery, T.	412	16	0
Cowlin and Son	407	10	0
Bale and Westlake	393	0	0
Church, W.	368	0	0
Eastbrook and Sons	355	0	0
Rossiter, H. J.	354	0	0
Davis, J. E. (accepted)	347	0	0

**DARTFORD.**—For drainage work at pair villas, Miskin-road. Mr. G. H. Tait, M.Inst.C.E., engineer:—

Kemp, G., Dartford	£85	0	0
Miller, P., Dartford (accepted)	54	0	0

**DUNDY, SOMERSET.**—For the restoration of the pinnacles and battlements at Dundy Tower. Messrs. H. Crisp and Oatley, Bristol, architects:—

Cowlin and Son, Bristol (accepted)	£500	0	0
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**EAST PRESTON.**—For drainage work at the workhouse, East Preston, Sussex, for the guardians. Mr. H. Howard, surveyor:—

Hall, T. R., Southsea	£104	0	0
Sawle, W. H., Worthing	102	0	0
Snawin Bros., Littlehampton*	80	0	0

\* Accepted.

**EYNSFORD.**—For additional coach-house and public room at the Malt Shovel, p.h., for Mr. C. N. Kidd, Steam Brewery, Dartford. Mr. G. H. Tait, M.Inst.C.E., architect:—

Glover, H., Eynsford (accepted)	£224	0	0
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**GLANBRYDAN.**—For repairs to the Cottage at Glanbrydan, for Mr. J. C. Richardson. Mr. D. Jenkins, A.R.I.B.A., M.S.A., Llandilo, South Wales, architect:—

Williams, J. D.	£175	0	0
Evans, D.	160	0	0
Thomas, L.	125	0	0
Jenkins, B., Brecon (accepted)	125	0	0

Alterations to servants' offices:—

Jenkins, B. (accepted) account work.			
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**GLANCOTHI.**—For repairs to billiard-room and gardener's cottage at Glancothi, for Col. Gwynne-Hughes. Mr. D. Jenkins, A.R.I.B.A., M.S.A., architect:—

Perkins, J. A. (accepted)	£291	7	6
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Gardener's cottage:—

Perkins, J. A. (accepted)	198	0	0
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**GREENWICH.**—For the erection of new shed at Greenwich, for Messrs. Wood and Co. Mr. W. J. Wood, 1, Finsbury-circus, E.C., and Southend, architect:—

Edmunds, Poplar	£87	10	0
Parlow, W., Kingston (accepted)	84	0	0

**LEE-ON-THE-SOLENT, HANTS.**—For residence on Marine Parade, for Miss M. R. Jenkins. Mr. H. A. Alexander, 72, Cannon-street, E.C., architect:—

Blackman, Fareham (accepted)	£768	0	0
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**LONDON, W.**—For alterations, &c., to the Lord Elgin Hotel, Elgin-avenue, Maida Vale, W., for Messrs. Rolls and Co. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Todd, Hackney	£1,296	0	0
Tyerman, J., Walworth	1,256	0	0
Godden, S., Bryanston-square	1,225	0	0
Mark, F., Edgware-road	1,194	0	0
Leslie and Co., Kensington	1,079	0	0
Beale, J., Westminster Bridge-road	980	0	0

**LONDON.**—For the erection of a detached house on the Frogmal Mansion Estate, Hampstead. Mr. J. Neale, F.S.A., F.R.I.B.A., 10, Bloomsbury-square, London, W.C., architect and surveyor. No quantities supplied:—

Allison and Fokett, Hampstead (accepted) at ... £2,000 (But exclusive of stoves, mantelpieces, painted glass, mosaic, painting, papering, and decoration.)

**LONDON.**—For rebuilding the Primrose, No. 53, Oxford-street, W., for Mr. W. G. Dickinson. Mr. E. Clark, 432, West Strand, W.C., architect:—

Drew and Cadman	£2,428	0	0
Kearley, C. F.	2,318	0	0
Toms, E.	2,221	0	0
Gould and Brand	2,146	0	0
Grover and Co.	2,106	0	0
Patman and Fotheringham	2,073	0	0
Spencer and Co.	2,050	0	0
Green, T. L.	2,059	0	0
Anley, J. (accepted)	2,046	0	0

**LONDON.**—For internal fittings, &c., to the Anchor and Hope, Fore-street, E.C. Mr. C. J. C. Pawley, 66, Victoria-street, Westminster, architect:—

Stephenson, G.	£1,375	0	0
Turtle and Appleton	1,595	0	0
Gill, F.	1,397	0	0

**LONDON, S.W.**—For alterations and additions to the Red Lion, Walham Green, S.W., for Mr. I. H. Squires. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Turtle and Appleton, Clapham Junction	£2,485	0	0
Mark, F., Edgware-road	2,355	0	0
Lamble, S. R., Kentish Town	2,353	0	0
Burman, H., & Sons, Kennington Park	2,326	0	0
Smith, W. H., Walham Green	2,300	0	0
Beale, J., Westminster Bridge-road	1,999	0	0

**LONDON, S.W.**—For alterations and additions to the Salisbury Hotel, Fulham, S.W., for Mr. I. H. Squires. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect:—

Kirk and Randall, Woolwich	£7,950	0	0
Patman and Fotheringham, Holborn	7,699	0	0
Smith, W. H., Walham Green	7,230	0	0
Higgs, J., Upper Park-lane	6,973	0	0
Turtle and Appleton, Clapham Junction	6,895	0	0
Lamble, S. R., Kentish Town	6,769	0	0
Mark, F., Edgware-road	6,715	0	0
Godden, S., Bryanston-square	6,700	0	0
Burman, H., & Sons, Kennington Park	6,680	0	0
Beale, J., Westminster Bridge-road	5,999	0	0

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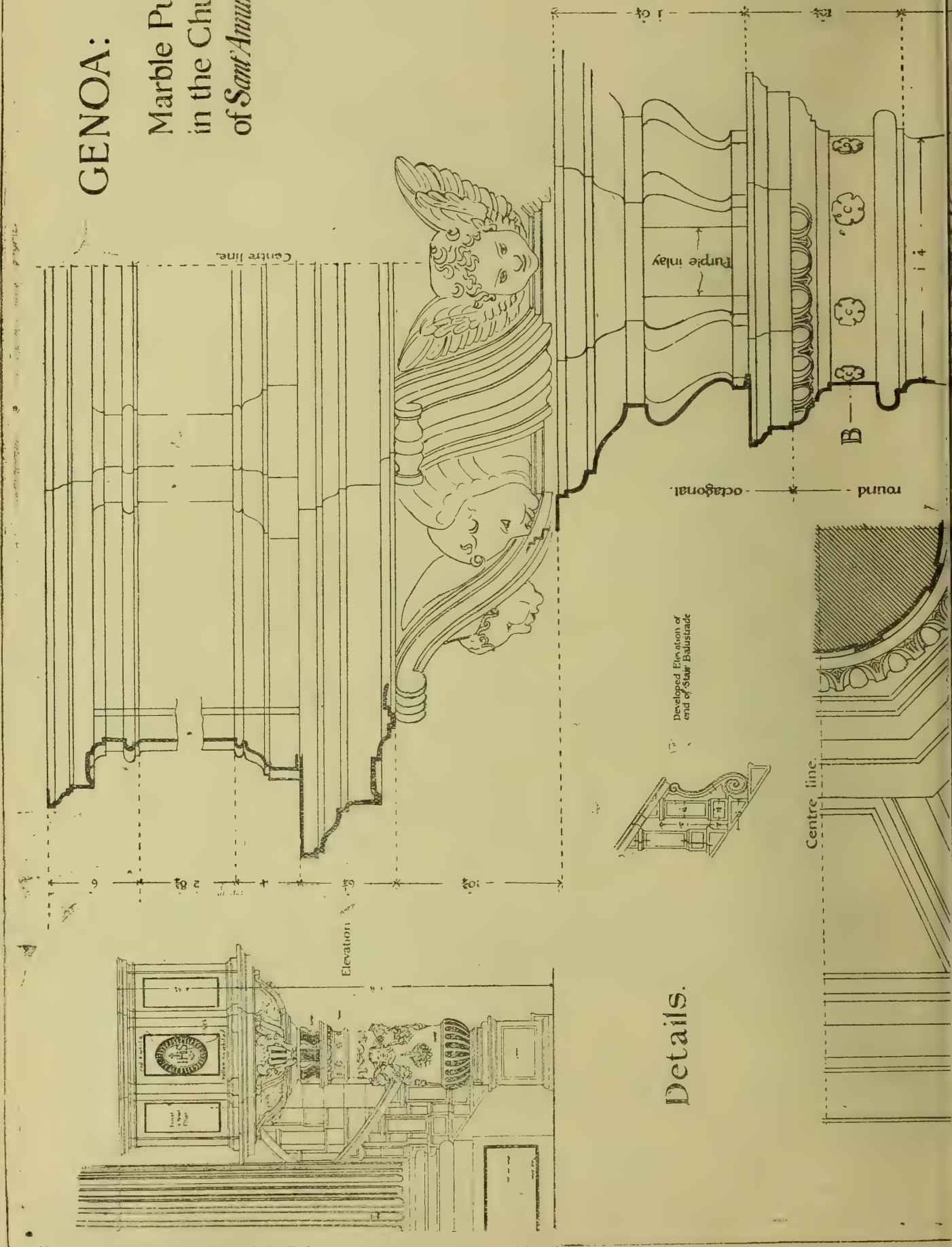




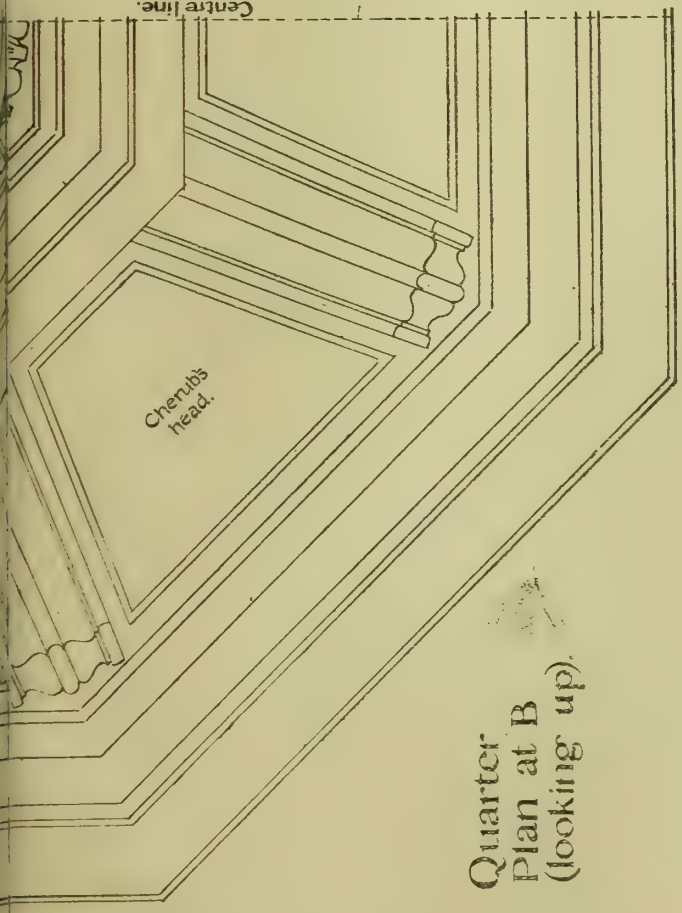
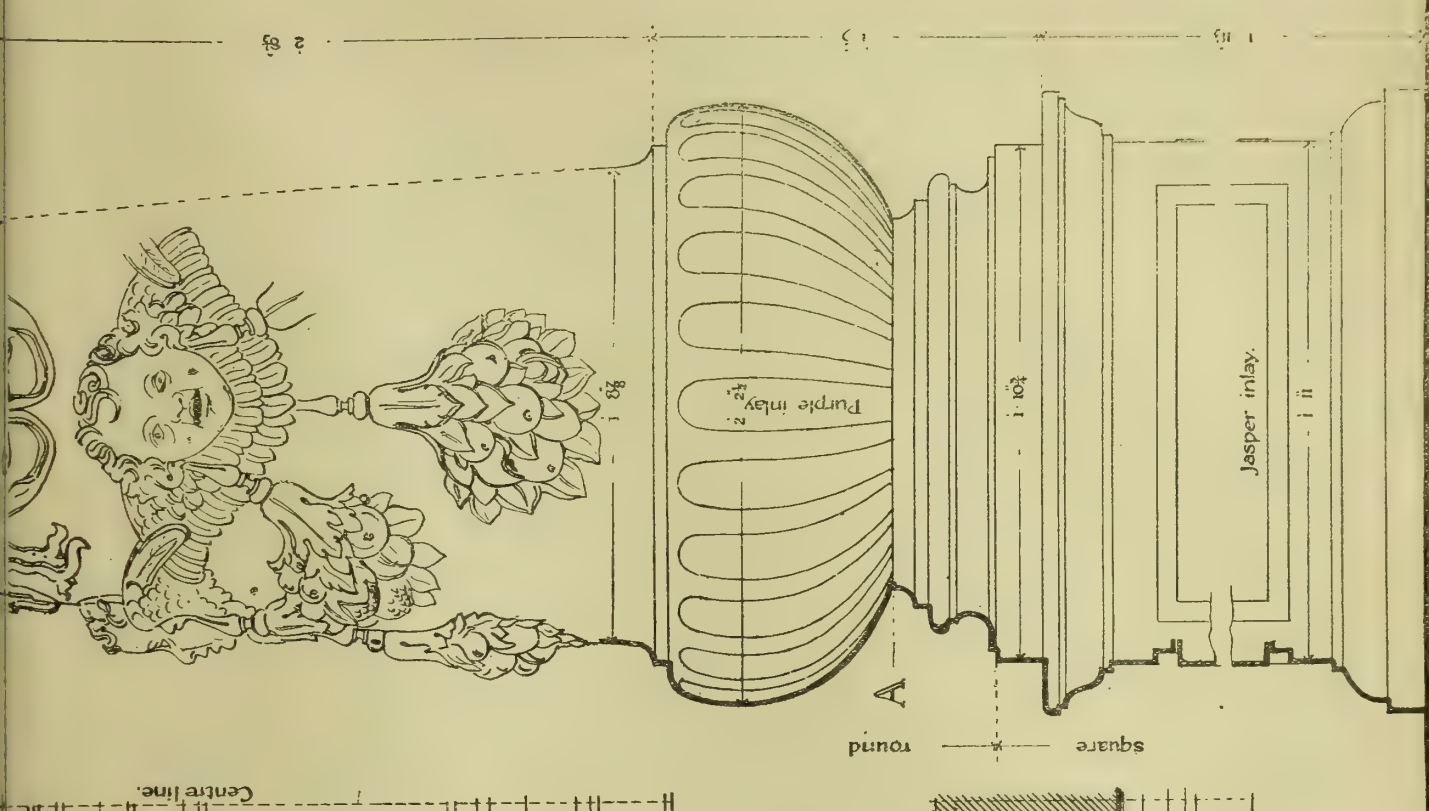


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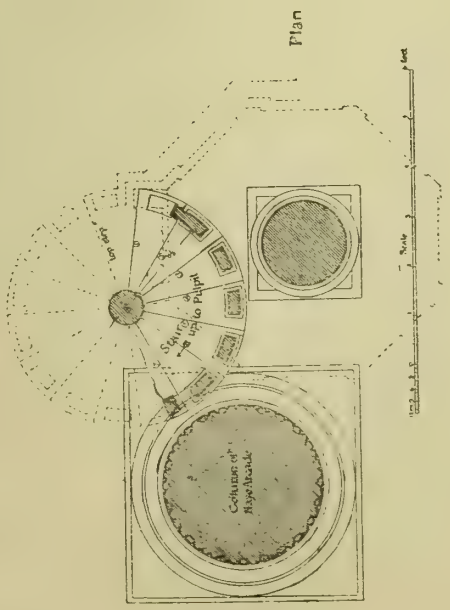
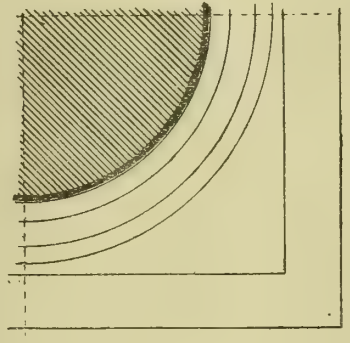
Marble Pulpit  
in the Church  
of *Sant'Annunziata*.







Quarter Plan at A



Scale  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 inches

William J. Anderson del.











THE BUILDING NEWS, JUNE 20, 1890.

Paignton Church. Devon.

Organ the gift of

Paris Singer Esq<sup>r</sup>

opened on

Oct 15<sup>th</sup> 1889.

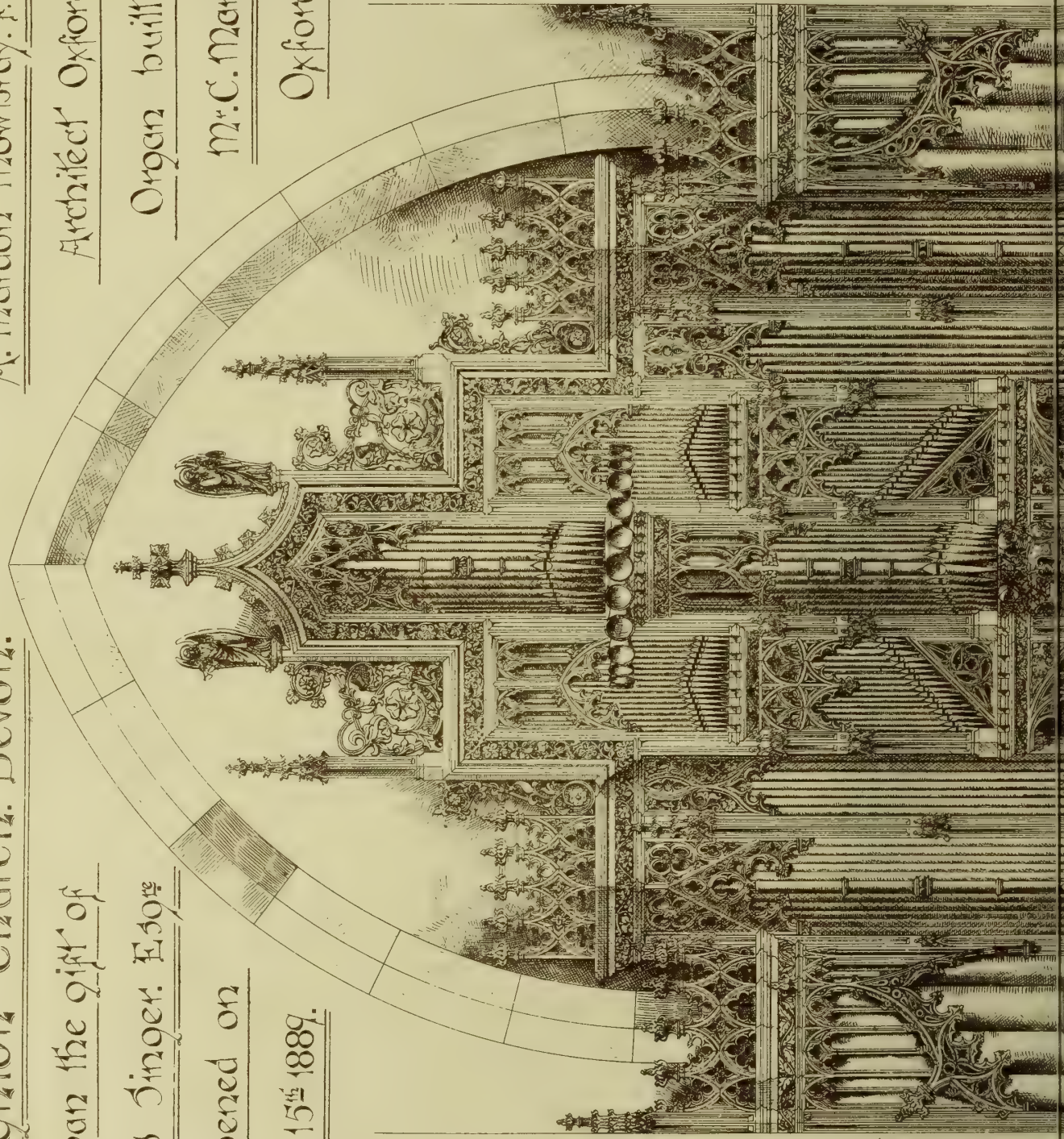
A. Mardon Mowbray. FRIBA.

Architect Oxford.

Organ built by

M<sup>r</sup>. C. Martin.

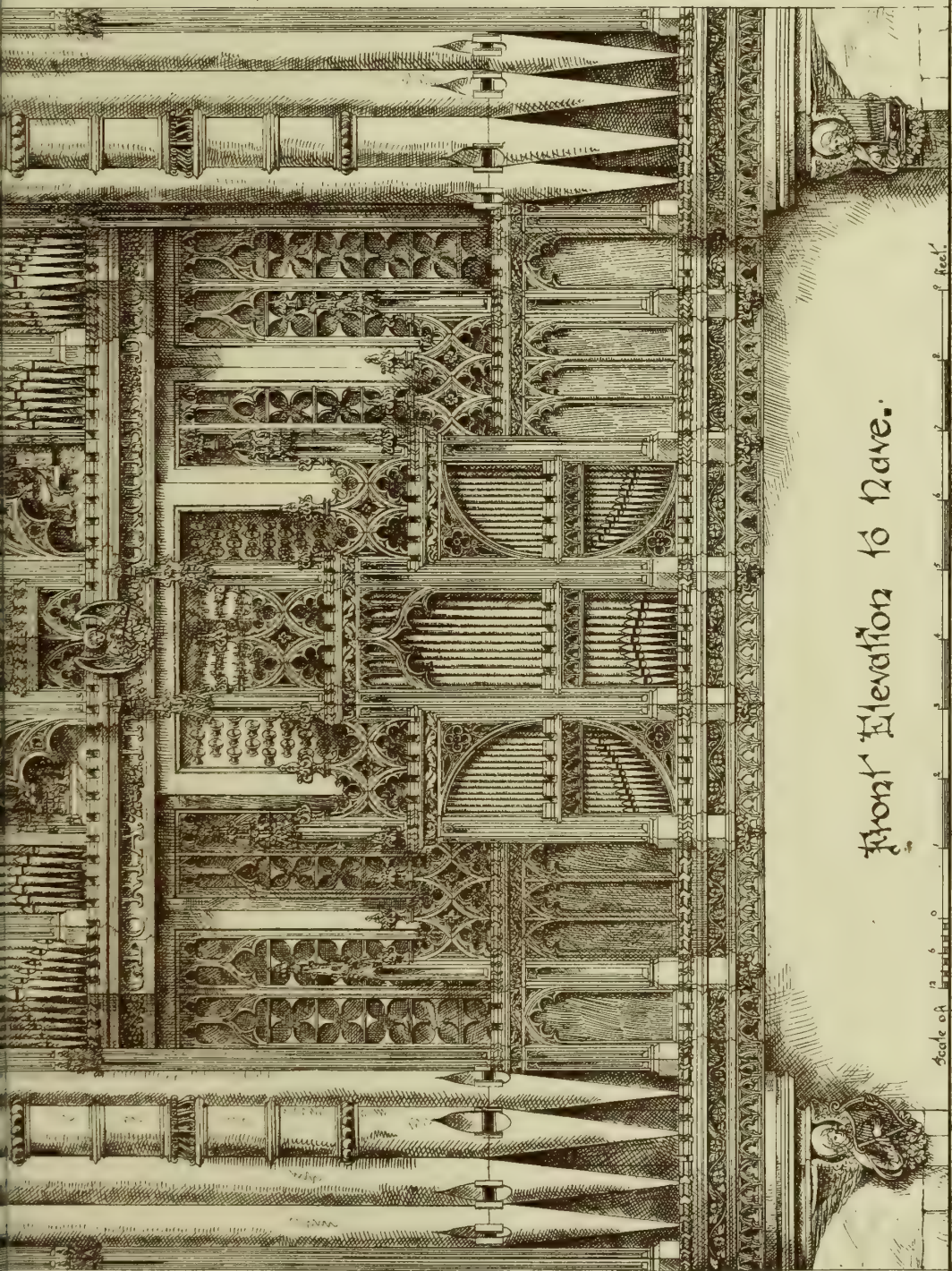
Oxford.





B. —

— B.



Front Elevation to have.

Scale of 12 6 0 8 feet.



Plan through A.A.

Plan through B.B.

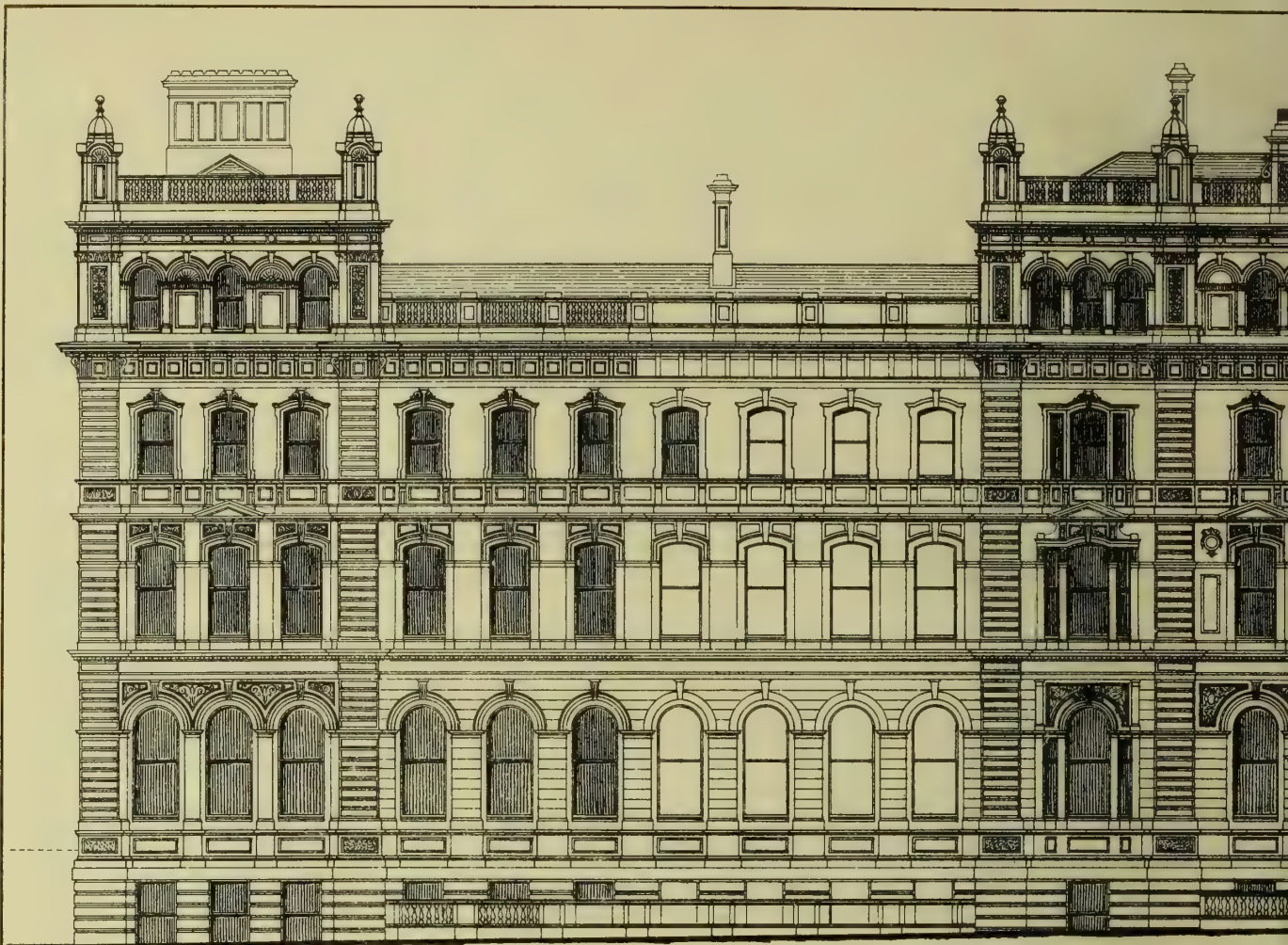




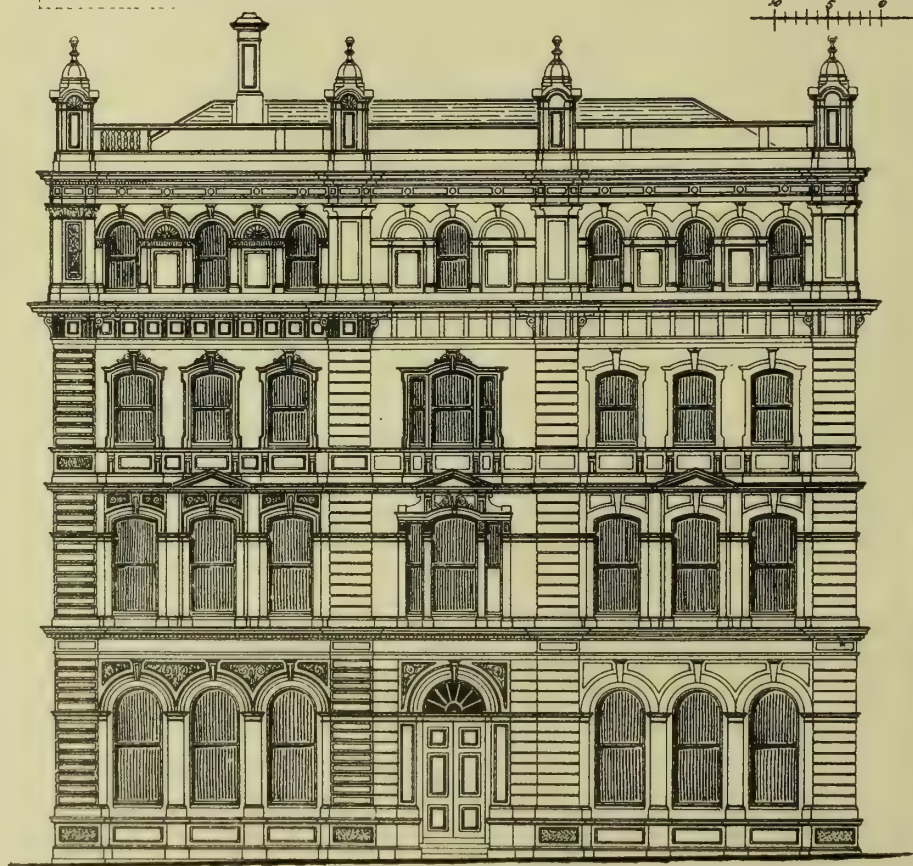




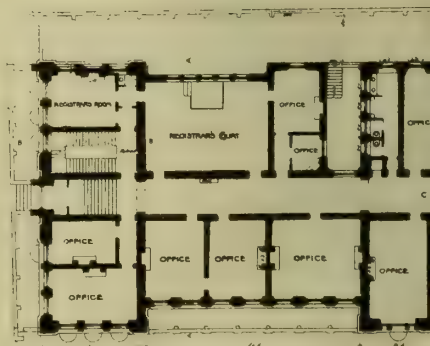




FRONT

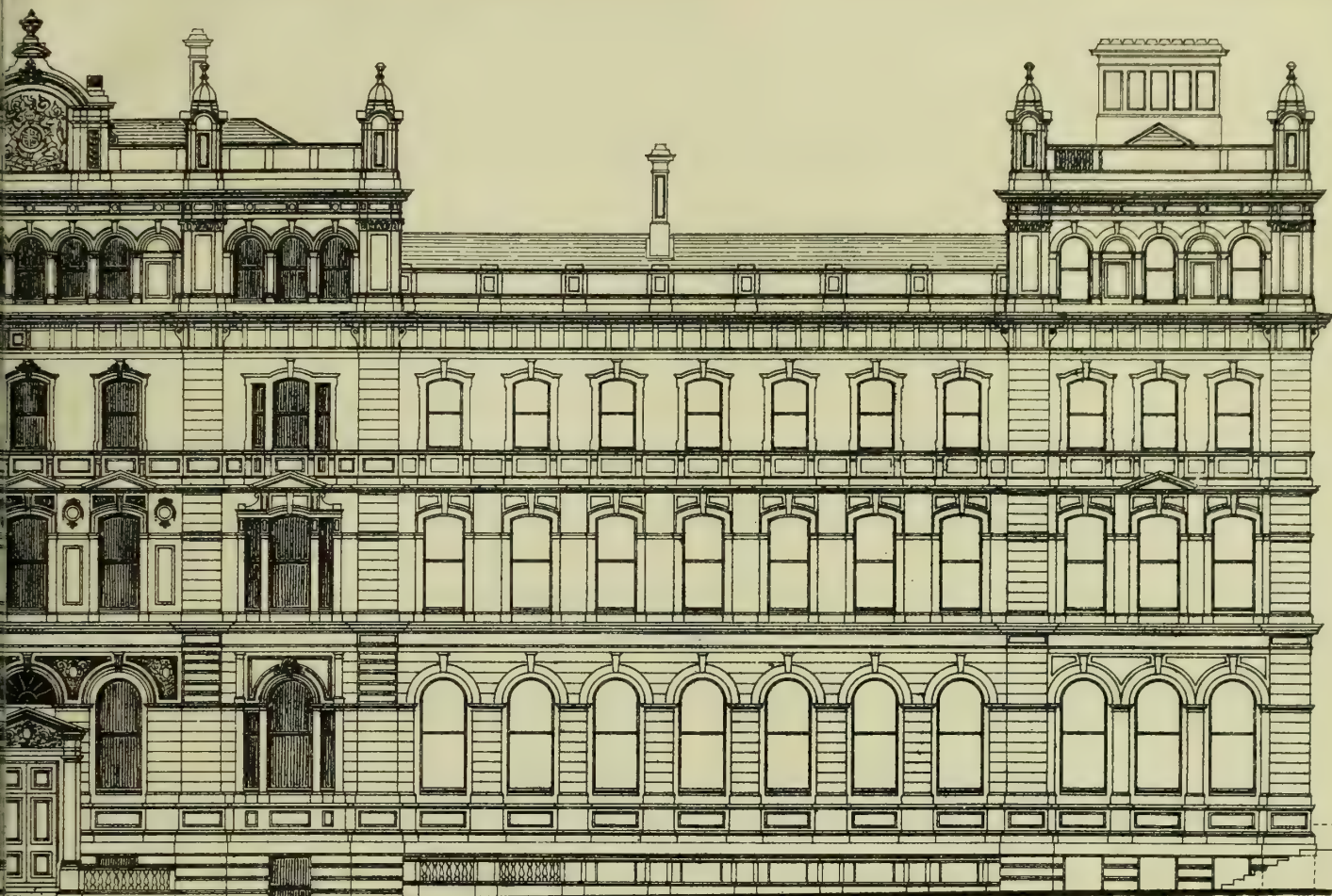


ELEVATION CAREY STREET



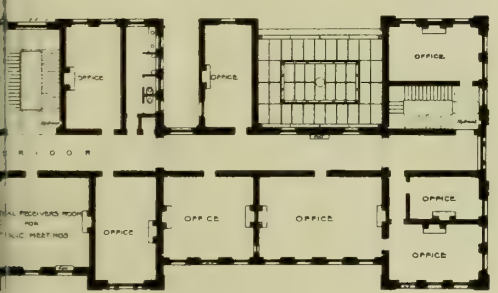
NEW BANKR  
LINC



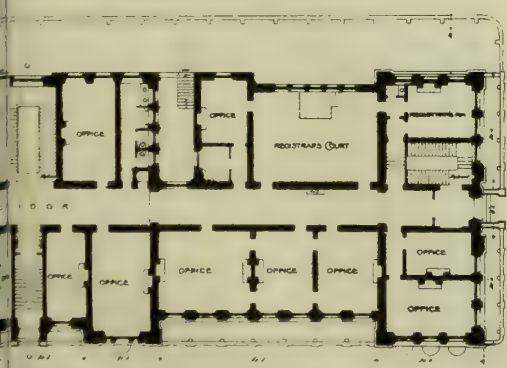


ELEVATION.

50 60 70 80 90 100 FEET.

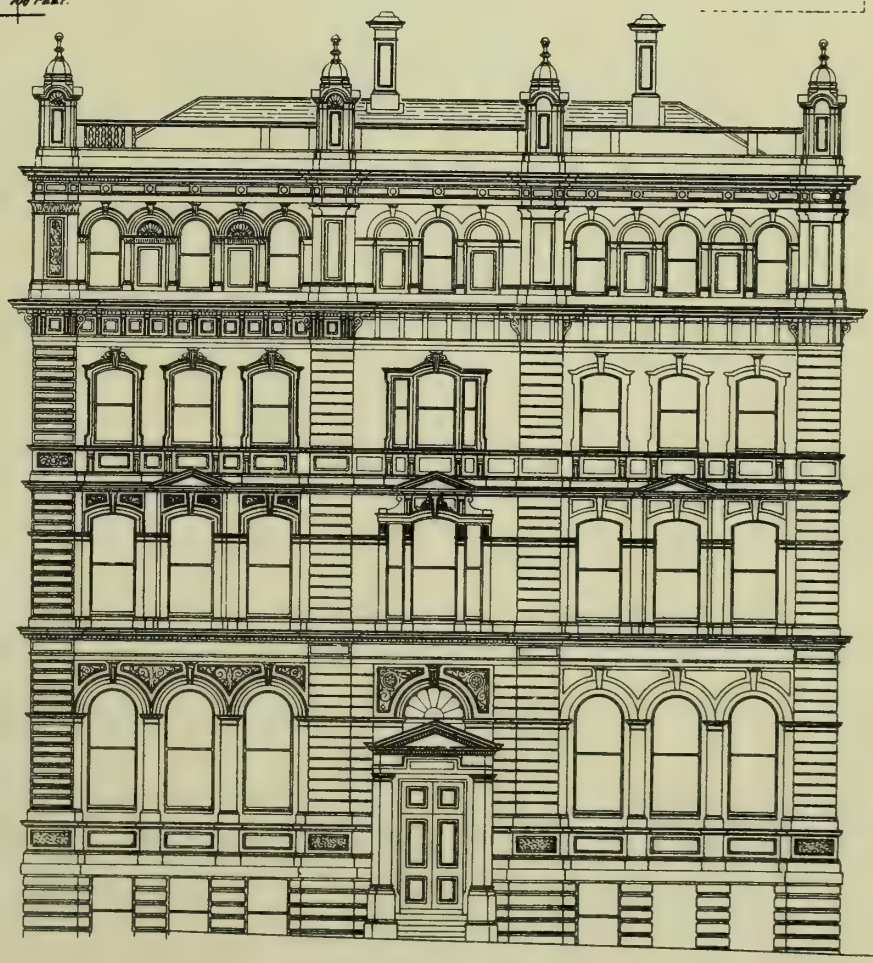


FLOOR PLAN



GROUND PLAN

PTCY. COURTS.  
ON'S INN. W.C.  
JHN TAYLOR. FRIBA. ARCHITECT.  
H.M. OFFICE. OF WORKS.



ELEVATION CLEMENTS INN.







# THE BUILDING NEWS AND ENGINEERING JOURNAL.

VOL. LVIII.—No. 1851.

FRIDAY, JUNE 27, 1890.

## SHEFFIELD MUNICIPAL BUILDINGS COMPETITION.

THIS week we commence our series of illustrations of the six designs sent in for the final competition, by publishing the perspective view and plans of the selected design, of which Mr. E. W. Mountford, F.R.I.B.A., is the architect. Next week we shall give other illustrations. All the drawings have been on view this week in the Jappin Art Gallery at Sheffield, and naturally have attracted considerable interest. A new feature in the history of competitions has resulted from the contest for which we do not remember any precedent, and, at this juncture, it is not quite easy to foresee what will exactly follow as a consequence. Anyway, Messrs. Flockton and Gibbs, one of the unsuccessful firms who competed, have notified to the Corporation, since the publication of the award, that they patented that portion of the original design, submitted in the primary contest, by which, in the words of the author's patent specification, "Each set of offices for a department is made complete in itself, the entrance for the public being into, and by way of, the general or enquiry office, from which access is easy and direct to a corridor in which are the private offices. These corridors give the officers the means of communication with each other without entering the general office, and also with the general office at different points." Messrs. Flockton and Gibbs further say: "The advantages of this plan over the usual arrangements of public corridors consist not merely in the feature that no facilities are given for the public to seek admittance where they are not wanted, but that the private offices are rendered more quiet and undisturbed, the intercommunication more easy, and the control by the heads of the departments more perfect," and add: "The arrangement has, so far as it is known to us, never been adopted in municipal buildings where there is a combination of such departments; so that our design, as originally submitted, was entirely novel in this respect." They then, in their letter of claim to which we refer, express their opinion that the self-evident advantages of this novel arrangement of plan led to its being made a condition of the final competition, and its consequent incorporation in Mr. Mountford's final designs, which were modified in accordance with the "supplemental instructions" issued to competitors. Thus it will be seen that the Corporation, if this allegation be correct, have already adopted Messrs. Flockton and Gibbs's patent plan in preparing the official conditions, and, therefore, these two gentlemen have intimated their intention of once completing their patent, after which they express a willingness to make "arrangements for its incorporation in Mr. Mountford's design." The dispute clearly, whatever its merits, lies between the Sheffield authorities and Messrs. Flockton and Gibbs. Mr. Mountford simply followed his instructions, and right well has he realised the intentions of the promoters. The whole of the six designs are unquestionably of considerable merit, and Mr. Waterhouse must have had no little difficulty in deciding which of them deserved the palm, seeing that no one design exhibits exceptional architectural ability. Five, at least, out of the six would have formed an imposing addition to the municipal buildings of any city, and the Sheffield Corporation are to be congratulated upon

their good fortune in having chosen so admirable a plan for their new offices as Mr. Mountford has supplied. We print in another place his description of the salient points of his scheme, which follows on plan the frontages of the site bounded by Pinstone-street, Surrey-street, Norfolk-street, and Cheney-row. His tower, decidedly the chief and most successful feature of his composition externally, boldly marks the angle at the junction of the two main thoroughfares. The simplicity implied by the three main gables of the principal front, divided as they are by a plain breadth of unbroken roof line, is another great advantage; but the excessively pronounced effect of vertical lineation, chiefly due to the ugly proportioned and elongated pilasters which cut up the façade from basement to parapet, is much to be regretted. In execution no doubt the undue prominence given to them in the drawings will be lost, though the flutings in the upper stages and the panels below necessarily exaggerate the excess of line. The composition fails in general terms from a want of breadth, and we cannot say we think the winter-garden looking building and the staircase turret lean-to at the base of the tower add either to the merit of the building or the dignity of its leading feature. The detail throughout is in accord with the type of style adopted. The report of the referee mentions no design as second in order of merit; but the marked originality of Messrs. Flockton and Gibbs' treatment leaves little doubt as to which of the remaining designs is likely to attract the most attention. By compacting their plan considerably within the confines of the site, and by disposing of the chief front almost diagonally with the present frontages, these architects were obliged to greatly increase the height of their building, thereby rendering staircases a great feature. The ability of the design no one can question; but the great central tower is the least satisfactory part of the composition, overlaid, as it is, with windows and other details, though we do not agree with a local description of the design as the "Jubilee monolith." The great feature of the plan is embodied in the subject of the patent, already referred to, with the several official departments ranging round a great central hall, "combining all the features of separate buildings embraced into one." The cost was estimated at £77,571, cubed at one shilling per foot. Mr. F. H. Tulloch's design has an exceedingly clever and dignified plan combined with well balanced and broadly-conceived elevations, having a big tower at the end of the Surrey-street front. The council chamber is situated in the centre of the site, with wide areas on both sides for lighting the offices on the ground floor. Architecturally, this is one of the best designs, clever rather in detail than in general outline; though it is not wanting in breadth. The absence of a base or plinth is a marked fault, which the perspective only intensifies. We prefer the Surrey-street front to that facing Pinstone-street. Viewed from Fargate, this design would have been very imposing, and the main gables would look better when seen in sharp perspective. Mr. H. T. Hare's design also has a dignity and breadth about it which we find wanting in the front elevation of Mr. Mountford's composition; and although we much prefer the tower of the chosen design, we must confess a preference architecturally for the loggia treatment for the main façade adopted by Mr. Hare. The entrance, too, is more pleasing, and the value of plain wall space is more fully recognised. The central turret is ugly, perhaps, and no doubt the plans in detail are somewhat crude, leaving, for instance, great spaces to be cut up at will. The author of this design, with more attention to detail, should find himself on the road which leads to fame. Messrs. Harvey and Smith trust less than the other competitors to the im-

portance of a tower, a feature which was made optional, if we remember rightly in the original conditions. They place theirs on the Surrey-street front in the centre, and thus mark the entrance to the Water Departmental Offices. The chief feature of the Pinstone-street façade is comprised of three arches inclosing the reception-room windows, loggia-like in treatment, and excellent in their detail, which is of a rich Renaissance character. The lofty roofs and crowning flèche surmounting the whole add greatly to its imposing effect. The remaining design is by Mr. James Lindsay, of Glasgow. It is essentially Classical in spirit, with a rusticated plinth, and enriched with columns of the Corinthian order, masking the arched windows of the chief apartments. The columniated centre is flanked by pedimented wings, and a well-proportioned massive tower stands at the angle of the chief fronts. The leading features of this design are not sacrificed to details, though these are well studied and suitable. The practical air of the drawings, too, attracted many admirers, though it was evident from the first that the want of concentration in the plans would tell against an ultimate chance of success. The offices of the accountant and waterworks departments are too scattered. The council chamber is situated in the centre, and the approaches are conveniently arranged. In the exhibition all the original competition designs sent in by the six final competitors are exhibited by the side of their completed plans; thus all alterations and deviations are readily noted.

## THE OWNERSHIP OF PLANS.

THE value which an architect sets on his plans ought to be that of their actual use to him. When a building has been executed from a set of drawings, their use has, it is thought, been fulfilled, and they have served their purpose. They can be of little further use to the architect except as documents of reference in the case of alteration or additions. These are the arguments that may reasonably be expected to come from a building owner who wishes to retain the plans of his own building; but the architect attaches another value to his design besides their actual use to him in carrying out the building. The design is a kind of prescription of what might be done under similar circumstances, the plans are records of thought and experience, the elevations artistic expressions of these ideas. Apart from the actual value of these records, whatever it may be, there are two other considerations which weigh heavily in the minds of the architect. First, the retention of the plans by the owner enables him or any of his friends to make use of them without employing their author; second, they yield up evidence to the owner that may be prejudicial to the architect. That these are considerations of weight cannot be denied, hence the legal decree which vests in the owner the property of plans has always been a bitter one among the profession, and its objections are valid. We may suppose the plan is for a house detached: the same arrangement can be adopted in a similar site elsewhere. If it is the plan of a house in a street, a similar use can be made of it. Perhaps the design may be for a labourer's cottage, a school, or a model farm, in which case the drawings would be of value to anyone who contemplated erecting any of these buildings. Slight alterations only would be required to make the same plan suit another site. Why should an architect part with the instruments of his calling, if they can be used a second or third time, or the same plan multiplied indefinitely? He was paid a commission for designing and carrying out a building for a certain individual. Is it fair that the same plans should be made use of without payment in other cases, either by



the same individual or by others? In reply it may be said that the architect is paid to prepare a design, and if this design be repeated it does not follow he should receive another commission. The payment he receives covers the design, which becomes the property of the owner who employed him, and who is at liberty to utilise the idea. There are thus two ways of looking at a set of plans: the architect regards them as embodying his own ideas or invention, which he prescribes for a particular purpose, and to which prescription he has an individual right, and that therefore he is entitled to charge for every time they are used, just as a patentee of an invention has a right to compel everyone who uses his invention to pay a royalty. The lawyer's view is that of the public generally. The design or plans are considered to be a marketable commodity, and once being paid for, belong entirely to the employer, who can thus repeat the design as often as he pleases, or lend it to others to use. Which of these views is the right one?

The sooner the question of ownership of plans is settled, the better it will be for the peace of mind of the profession and the public. The decision in the case of the plans made for the Houses of Parliament, and the reported case of "Ebdy v. M'Gowan," represent the legal mind on the question, and have indeed made it illegal for an architect to refuse to give up the plans that he has made and been paid for. But though, in the face of these decisions, it would be difficult for an architect to refuse to give these documents up, he is not obliged to agree to such an arrangement. The custom of retaining them has been pronounced not to be reasonable; but that is no argument why architects should submit to the ruling of the Courts, and make no special provision on the subject. Every now and then we hear of a disagreement between a professional man and building owner on some question of contract, or as to the carrying out of the work in some particular; sometimes it is a question for arbitration, and the owner to support his case has to produce evidence. The plans and specifications are all important witnesses to prove the owner's contention, but the architect refuses to render up documents that may weaken his own case. The owner thereupon says he has paid for the plans: they are his property, and he ought to have them. How is the architect to act under these circumstances? Is he compelled to part with documents which may be as valuable to him as to the owner? Can he destroy them without making himself amenable to the law, as an architect did the other day, and which was the subject of a case ("Clarke v. Macnamara") heard at the Altrincham County Court? The decision of the judge in this case was to the effect that the architect had a very mistaken view as to his rights, and that the plaintiff might have claimed vindictive damages if the action had been one of trespass, because to destroy the property of another person was a very serious offence which the law visited with ample damages. The architect, at the suggestion of the judge, agreed to make tracings of the duplicate plans deposited with the local board, and to meet the plaintiff in all that was required. The points of the particular case to which we are referring were reported in these pages June 13 (p. 854). The plaintiff employed defendant to prepare plans and specifications and superintend the erection of two villas. Litigation arose about something in the work, and the defendant architect was applied to for the plans and specifications, they being necessary to have the work checked. The architect refused to give them up until he was paid his charges, which was one of the points in dispute. The result of the litigation was favourable to the plaintiff, who was awarded £25 damages

by reason of breach of contract, and he thereupon renewed his application for the plans, the defendant replying that they were destroyed. The architect, however, paid three guineas into court, which was thought insufficient by the plaintiff, who valued the plans at ten guineas. The payment into court was an admission of liability. These facts only support the decisions hitherto given as to the building owner's right to the plans; they also indicate the value set by owners on these documents. The intrinsic value of the plans was a point raised. The plaintiff sued defendant for £10, which he estimated their value to be to him, and £5 for detention. The judge said their value could be appraised by calling in an architect or builder! A very commercial way of looking at the matter, certainly. Apart altogether from the merits of the case decided, the architectural profession has some cause for complaining of the circumstances. That an architect should be called upon to give up his drawings to enable his employers to substantiate a claim against him is certainly a proceeding which is rather aggravating. A number of disagreements might arise during the erection of a building, and at each juncture it might be argued that the architect ought to deliver up the plans to the owner. A point might be raised as to the dimensions of a certain room or the thickness of a wall. It would be preposterous for the client to demand the plans at such a stage, as the architect is the only and proper judge of what he intended. Demands of this kind are often made by clients when they happen to quarrel with their architect about the execution of a part of the work or some detail. We remember one instance where an architect in good practice, A., received a letter from a brother professional, B., saying that Mr. A.'s client had placed the matter in dispute between himself and A. in his hands, and requesting him to hand over the plans and specifications to enable him to check the work about which the dispute had arisen. Mr. A. was astonished at so unprofessional and unbusiness-like a proceeding, and, of course, declined to adopt this mode of settling the dispute, which by the terms of the contract he alone could do.

If these documents are by law held to be the property of the building owner, what is there to prevent him demanding the plans whenever he is so disposed?—a course of action that would subject the architect to an immense amount of trouble and inconvenience unless duplicates were prepared in each case. Every architect would resent such a claim during the performance of the work and before he had given his final certificate. The client, if of a cantankerous disposition, might be continually comparing the executed work with that described in the plans and specification, and be finding out all manner of trivial and fancied discrepancies. It would be preposterous and detrimental to imagine such interference during the time of carrying out a contract; the architect would no longer be the arbiter between the contracting parties if the client wished every now and again to pass his judgment on the work. Therefore we conclude that the ownership of plans ought not to be claimed, or the right to claim them ought at least not to take place till after the completion of the building, and the architect has discharged his obligations to client and builder. It is not, certainly, till after completion that the claim for plans is generally made, and as the architect's use of them has been then served, he can, with more magnanimity give them up to his client. Tracings of them at least can be made for the owner, having reference mainly to the drains or other matters required for examination or future alterations. Unfortunately, it is not often a voluntary act, but a compulsory rendering up of documents, generally made for getting some advantage,

and resisted on the same grounds. A more decided authority on the question is necessary in the interests of both parties. The profession can do something towards the matter by making it a stipulation in an agreement with their clients, that the plans are their property, and that if copies are required for reference as to drains, &c., they may be had on payment of a small fee. The matter would then be made one of contract, and no possible difference could arise. If a client expressly makes it a condition that he should have copies of the plans after the work is completed, it ought to be stipulated that they are not to be used for any other building without the architect's consent, but only for reference. If stipulations of this nature were more generally adopted, there would be fewer disagreements between architects and their clients. As the custom of ownership of plans stands, there is some uncertainty as to its prevalence. Cases in the law reports are not to be found, and the only decision that is of any value is that in which it was held that the custom referred to is not a reasonable custom—namely, that plans prepared by an architect whose services are not required, should remain his property after being paid for. The profession would be strengthening its position if it can show a more united opinion on the question.

#### FREE PUBLIC LIBRARIES.—II.

IN our first article we described a few of the buildings which have been erected in the Metropolis under the Free Public Libraries Act, and we now propose to enter a little more fully into the design of libraries, and have selected a few typical arrangements to illustrate our remarks. The design of a library is so directly related to plan that it is not too much to say that an ill-planned library will be a source of continual vexation and expense, as no architectural exterior will atone for an arrangement that cannot be altered without a radical reconstruction. As we have hinted, the main departments of a public library, the news-room and lending room, ought to be easily accessible, and, if possible, on the ground floor. The news-room ought at least to be so situated. When the library forms a part of a municipal building, as it does at Leeds, it is often necessary to devote one wing of the building to the purpose. In the Leeds Municipal Offices, by Mr. Geo. Corson, the news-room, lending library, and reference library form one wing of the main building, and have a separate entrance from the side street, quite distinct from the official department. The news-room, on the ground floor, is 80ft. by 40ft., or a double square, and is divided into a centre nave and aisles by arcades of six arches, carried upon polished granite pillars. The ceiling consists of a series of segmental vaults, transversely placed, their springings resting on transverse wrought-iron girders. The vaults are finished underneath by a kind of mosaic of hexagonal-shaped bricks, as described in our former article. The tables in the news-room are placed transversely under each vault, the central division having tables about 16ft. long, and the side aisle tables about 6ft. long. The light comes from one side, each of the six bays having a window, and between each column and window-pier there is a bookcase. The lending library over has these transverse bookcases arranged in the same manner between the shafts and window piers, forming a series of bays or alcoves on each side. The centre, or nave, is open, and forms a large space, or lobby, for the public, a counter being fixed all round before the arcades, thus inclosing the aisles which contain the books, only accessible to the staff. The reference library, on the top floor, has a semicircular roof, divided into bays by iron principals carried on stone corbels. In the Belfast Free Library the









*Alfred E. W. Darby*

MR ALFRED E. W. DARBY (THE COALBROOKDALE COY.)



MR HARRY



*John Grundy*

MR JOHN GRUNDY (CITY ROAD N.)



MR CHAS. CAMPBELL

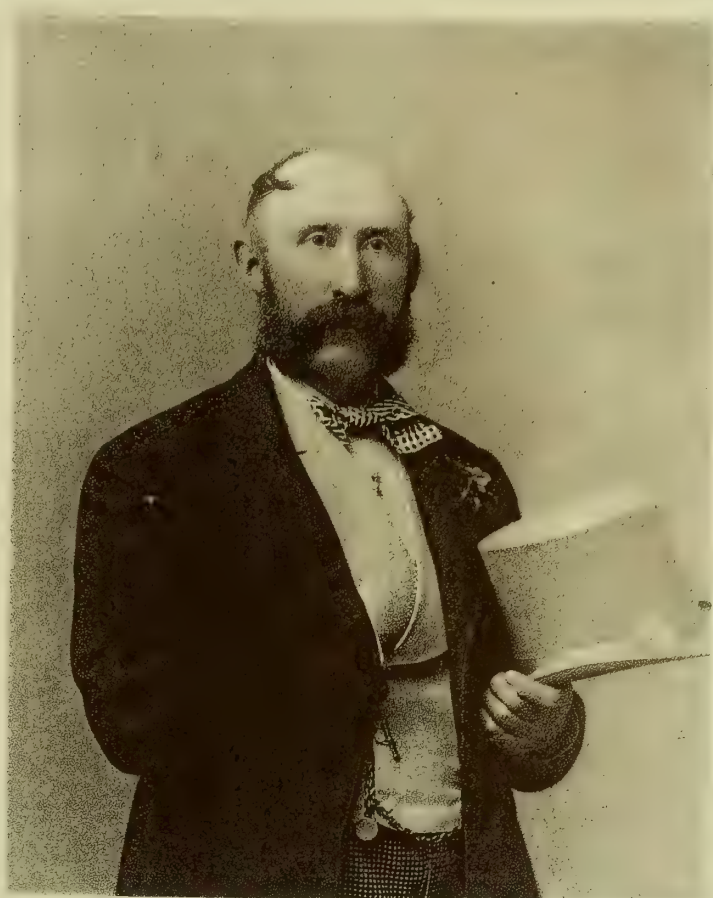


June 27, 1890.



*Harry Hemm.*

EM5 (EXETER)



*P. Stuart*

MR P. STUART (STUART'S GRANOLITHIC-PAVING COY.)



*Campbell Smith & Campbell*

CAMPBELL SMITH & CAMPBELL



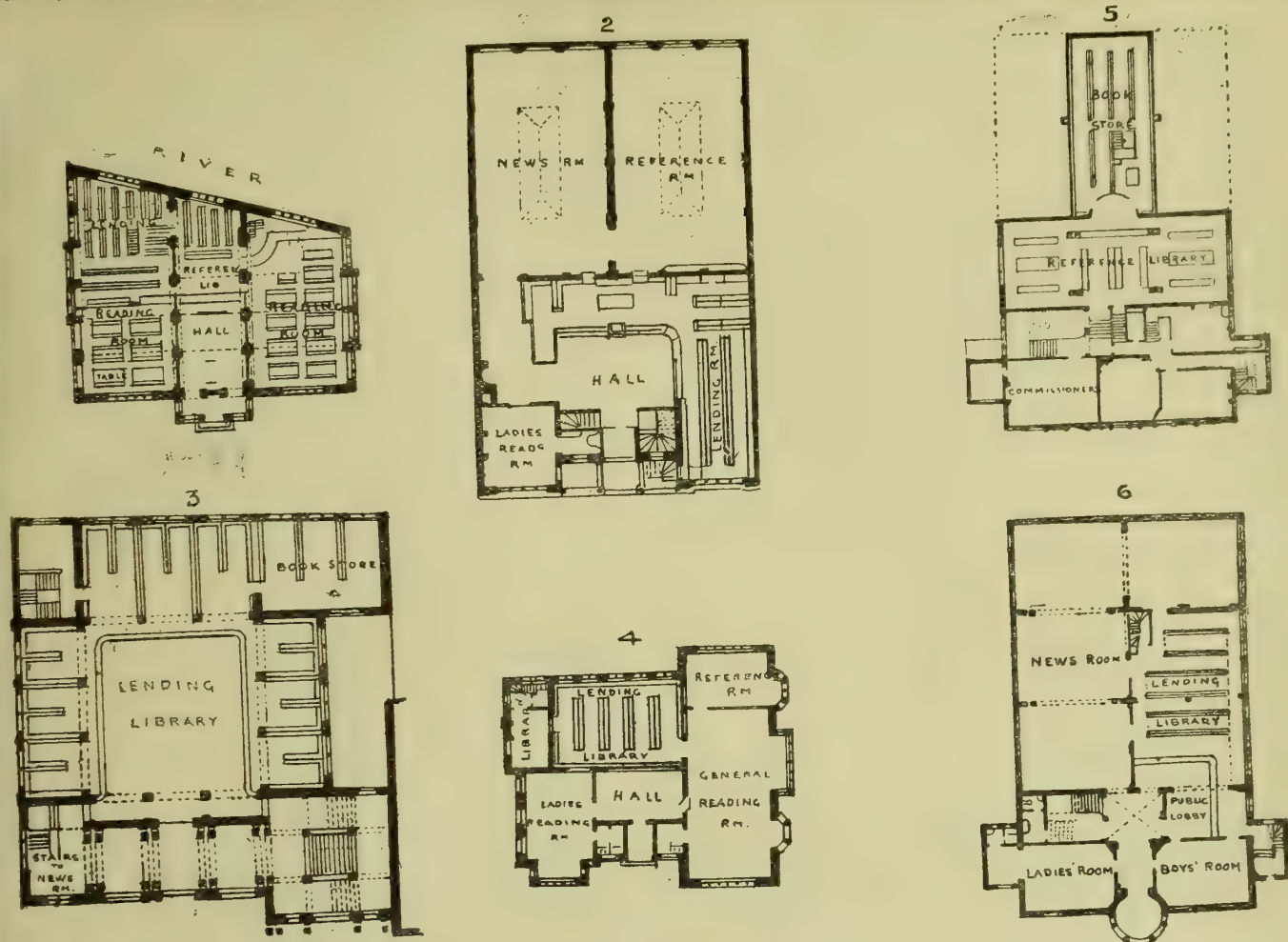
*Alfred O. Hemming*

MR ALFRED O. HEMMING









ground floor is entirely devoted to the libraries and reading-rooms. The reading-room measures 52ft. by 36ft.; next, on the right, is the lending library, 37ft. by 29ft. 6in.; a ladies' reading-room, 28ft. by 25ft., and committee room in front. On the left side is the general library, 50ft. by 34ft., and in front the select library and librarian's room. The upper floor is devoted to art picture galleries. The plan is an economical distribution, no space being wasted in corridors. We recommend this arrangement where a large site can be acquired, and where picture galleries form a portion of the building.

On the smaller sites, which are more frequent in towns, especially in the Metropolis, two floors, at least, are necessary for the accommodation. First, we may take an area in which the building may be isolated and lighted all round. The plan of the Rochdale Free Library (Fig. 1) is an example of a very simple and effective plan. It is divided into three bays—a central hall with reading-rooms on each side; the lending and reference departments behind. The reading-room on the right hand is used as a general reading and reference room, with two rows of tables and a counter at end. On the left-hand side the front portion of the room is devoted to a ladies' reading-room during the day and a boys' room in the evening, one plan of making the most of a small area. The back portion of this room and the centre bay are filled with bookcases. The counter across the hall is convenient. The basement is utilised partly for storage for the specifications of patents under the general reading-room; a committee and librarian's room is below the centre bay, and under the other reading-room are repairing and attendants' rooms and heating apparatus. Fig. 2 represents the new Free Library at Norwood, which we have generally described, p. 789. Here the building forms one of a

row of buildings in a road. The hall and counter occupy the space within the entrance; the librarian has supervision of the news and reference rooms behind by two small openings or desks, also the lending library in front. The two former rooms are top-lighted. The plan is a good example of compactness, the public rooms being entirely on the ground floor and the librarian's private rooms above, access to which is gained by a staircase in front. The Chelsea Free Library (plans 5 and 6) we have also described, p. 789; it occupies a similarly shaped piece of ground, but open on its sides. A similar general arrangement is adopted, a central hall giving access to the news and lending departments. The space for the public is inclosed by a counter at one corner of the lending library, is conveniently situated for the supervision of the librarian, whose room has access to it, also to the boys' reading-room in front. Doorways communicate between the news-room and library. The arrangement of tables, seats, and bookcases is shown in the plans. The upper plan shows the reference library, 63ft. by 24ft. 6in. Side windows for the lower rooms and a domical roof and end lights for the upper room are provided. Boyle's air-pump ventilators are placed over the reference library; the lower rooms are ventilated through apertures in coves of ceiling leading to an extract shaft passing through book stores above, with an air-pump ventilator at the top. Air inlets are provided at the corners of rooms. The provision for receiving and lending books is worth notice; the counter round the space for the public at the end of lending library has two small desks, one for receiving and one for issuing, the intervening spaces being fitted with indicators to show whether any book be in circulation or not.

A noticeable type of plan for a square isolated site, to which we have referred, is the Edinburgh Public Library, opened last week

by the Earl of Rosebery (on plan 3). The plan is based on a Greek cross, the arms of which form recesses or bays for bookshelves, the square area in the centre being occupied with tables and chairs. Each of the recesses or bays is set apart for a special department of literature. The news-room is on the third floor, well lighted on its four sides by three-light windows, with panelled roof carried on eight Ionic columns. The walls are lined for 8ft. high with faience tiles; opening from the news-room is a reading-room for juveniles. The stands are of ash, stained, 50 in number. The lending library (on plan 3) is on the George IV. bridge level, the counter, of oak, 110ft. in length, inclosing the three sides of the hall, which provides for 48,000 volumes. The reference library is on the top floor, with a dome in centre carried on arches on each side of room. The library is to be lighted by electricity, and the installation is intrusted to Mr. A. Miller, of Glasgow, both arc and incandescent lights being used—the former of the Thomson-Houston type, for lighting the large halls, each of 2,000 candle-power. We shall refer in more detail to this library and its heating, lighting, and decoration. The plan is ingenious and economical. The architect is Mr. George Washington Browne.

A small, commodious, and compact plan is shown in Fig. 4, the Gilstrap Free Library, Newark-upon-Trent, Mr. W. Henman architect. All the accommodation is on one floor, consisting of a borrowers' hall, general, reference, and ladies' reading-rooms, lending library, and librarian's room, &c. Between the hall and library is a borrowers' counter, with indicator. The hall is central between the main rooms, and well arranged for supervision. The rooms are well lighted, and the bay windows in the reading-rooms afford the retirement for students so essential to sustained reading and thought. The cost was £8,000. These plans, espe-



cially the more compact ones, serve to illustrate the principles of arrangement necessary in library buildings on town sites. The accommodation on three of them is obtained on the ground floor; the principal public departments are grouped round a central hall, which forms a borrowers' lobby. The rooms have easy access and are generally lighted on one side, if not top-lighted. The librarian and his assistants are in three of them—Nos. 2, 4, 5—situated so as to command the chief departments of the library. The three functions of administration, control, and supervision ought, if possible, to be concentrated in one portion of the building. When there is more than one floor it becomes necessary to have an assistant on each floor, and a readily accessible staircase in communication with the librarian's room. At Chelsea a staff staircase shown affords easy communication between the lending library and reference library, and stories above. There is a gallery round the reference library, half-way up the walls, to afford access to the upper shelves, and a small spiral stair is provided to reach this gallery. The lending library has also a gallery round it and a stair near the librarian's room. Alcoves for reading are, we consider, valuable aids to quiet research and study in connection with a reference library at least. At the Edinburgh library these are afforded easily by the plan adopted; in other cases, one or more bay windows could be utilised, and the projections can be made the most of architecturally. A library may also be made to include separate rooms, as lecture or classrooms, and we probably one day, when free libraries have developed their capabilities as public educational buildings, shall see them not only united to museums and picture galleries, but to schools for the free education of the people.

#### LIMITS AS TO HEIGHT OF BUILDINGS.

THE absolute necessity there exists for restricting the height to which buildings are carried in the Metropolis was again adverted to in the remarks made by Viscount Hardinge, in the House of Lords on Tuesday week, respecting the serious disfigurement of adjacent public buildings by the Hankey Mansions and other erections, at Albert-gate, and at the corner of Piccadilly and Arlington-street, the Thames Embankment, and other parts. On a former occasion we have dwelt on the injury inflicted on the public by the erection of monster buildings in our streets. Not only do those who have property adjacent to these buildings suffer from the interruption of light and the injurious dwarfing of their premises, but dwellers in the immediate neighbourhood are deprived of that necessary amount of space and sunlight which are essential to health and occupation. The erection of seven and ten-storied blocks in a street, the houses of which are not more than five stories in height on the average, must cause a considerable deterioration in property. In a street of private houses the grievance would be intolerable, and have the result of destroying the street for residential or letting purposes. Very few people like to live near a large block of business premises or monster clubs, residential chambers, and hotels, and we may point to Victoria-street, Westminster, as a proof of the falling-off in the number of private tenants. The ever-present danger of fire in blocks of these unmanageable proportions is a cause of well-merited alarm. Capt. Shaw has pointed out the outside limits of buildings that can be safely controlled during a fire. These dimensions would be greatly exceeded by buildings of the altitude reached by many of recent construction—in fact, of the three dimensions, that of height is the most un-

controllable by the ordinary fire brigade appliances, and the next dangerous dimension is that of depth. The small distance between the backs of houses and warehouses of recent erection is a source of extreme danger and unhealthiness, and calls for immediate legislative action. Section 14 of the Building Act Amendment Act, 1882, leaves a space behind which is positively useless to check the spread of fire, and of little benefit from a health point of view. As we have pointed out, instead of the frontage being the rule of area it should be height, so that the higher the building is, the more space it should have in the rear. The area at least should equal in depth the height of the building, so that a warehouse or block of shops 60ft. in height should have a back area of the same dimension in depth.

Indeed, as far as it can be legitimately applied, the basis of height, rather than frontage, should become the leading principle of determining area in front and in the rear of buildings; therefore it is of chief importance to determine a schedule of maximum heights for buildings in towns. In Paris the heights of all structures are regulated by the width of the street, or in proportion thereto. The Imperial decree of 1859 defines the heights of façades abutting on the boulevards according to this rule. Thus for streets under 25.58ft. in width, the height is 38.37ft.; for streets above that width up to 31.98ft. in width, 47.88ft.; and for streets above 31.98ft., a height of 57.56ft. Those 65.6ft., or 20 metres, in width, the height may be carried to the same dimension, the condition being that, including the entresol, there are not more than five square stories above the ground floor. These refer to the vertical walls of buildings; above the façade the roof is not to exceed a height equal to half the depth of building in those carried up to the full extent, and the profile of it must be within an angle of 45°. In Germany the width of street is also made the governing limit of height. No building may exceed 22 metres, or about 72ft. These rules prevail in Munich. A similarly constructed schedule is certainly called for in the Metropolis, where the heights of new buildings are often far in excess of the limit above described. The statutory heights of buildings in new streets does not touch the majority of erections in London, and in this way the Act has been of very little practical benefit, as the loftiest buildings are generally erected in old streets. What is required is a rule for old as well as new streets, and one that is flexible enough to take into account particular situations. Indeed, it would appear, taking varying circumstances into consideration, that a hard and fast rule would not be so desirable as one that would admit of variation to suit the site and existing buildings around it, and perhaps the discretionary powers of a committee of the County Council would be the best course to avoid monotony. The design of the building, its form of roof, the proximity of other buildings, the requirements of light to particular premises, and the architectural surroundings generally, should be taken into consideration. At present buildings of the most undesirable elevation and character are allowed to be erected before or at the side of structures of an architectural character, which need plenty of light. For instance, a block of workmen's tenements of great height is erected close to a vestry-hall or a church, or near a row of high-class residences, or a huge warehouse may completely overshadow a line of shops or business premises for which ample light is required. The instances referred to by Viscount Hardinge, in which lofty blocks of mansions and chambers have been allowed to dwarf public buildings and obstruct light, as at Albert Gate, Oxford-street, the Embankment, are conspicuous examples of a total disregard of these conditions. The hideous and deforming skylines of some of those new erections which appear as blots on

the sky are, apart from other objections, fatal to any street architecture.

Those who have remarked the recent building in Oxford-street, Piccadilly, and other main thoroughfares, must have seen the spoliation caused by huge flanking walls and roofs of certain structures. Of what use is it to make regulations for lines of frontage and party-walls, if monster buildings are allowed to be erected that completely destroy the perspective? The new block of buildings in Arlington-street, for example, throws into the shade the premises on the eastern side. It would be different if the design of these lofty structures were in harmony with the buildings they abut against, or if their contour of roofs were designed to gradually lead up to a central feature; but they are generally designed with abrupt party-walls, in total disregard of the premises on either side. It is time the Legislature interfered to prevent the Metropolis being ruined by these monster erections, and the sooner the County of London amend the Building Act by introducing a limit as to height the better.

#### THE ARCHITECTURAL ASSOCIATION.

THE special meeting of the Association to consider the changes in the rules, necessitated by the adoption of the Special Committee's recommendations, was resumed, by adjournment from the previous week, on Friday evening; the President, Mr. Leonard Stokes, in the chair. Letters were read by Mr. Farrow, hon. secretary, from Messrs. W. L. T. Browning, H. L. Florence, J. A. Gotch, F. G. Hooper, W. S. Jackson, H. Lovegrove, and William White, who were unable to attend, chiefly with reference to the reasons for the resumption and the issue of voting papers. Mr. C. H. Brodie, who reopened the discussion, proposed that consideration of the proposed alteration to Rule 43 be postponed till an early date next session, as the present time was most inopportune for the change. He deprecated the issue of voting papers to members. Mr. H. O. Cresswell thought that if the postponement of consideration of this rule were adopted, it would necessitate the leaving over of all the other changes till next session. Mr. M. Garbutt proposed, as an amendment, that Rule 43 read thus: "That all voting be by show of hands, but in the case of alteration of rules or change in the constitution of the Association, a majority of two-thirds of the whole members voting at a meeting be required." This was seconded by Mr. T. E. Pryce, and supported by Mr. Hugh Stannus. Mr. A. Needham Wilson objected to allowing the small proportion of members present at any meeting to have the power to alter the rules; but even if voting papers were issued, he feared many members would be too indifferent to return them. Mr. Cole Adams believed that a vote ought not to be given without hearing the arguments on both sides, and if voting papers were issued an abstract of the discussion ought to be sent with them to each member. Were they prepared to meet the expense this would involve? He suggested that the question should be postponed for a year for further consideration. Mr. H. Sirr, believing that adjourned meetings continued after the session was ended were a mistake, supported Mr. Adams's suggestion. Mr. A. Beresford Pite would go further than Mr. Adams. Many of the rules needed altering, and as they had not been revised for fourteen years, he proposed that a special committee be appointed to consider and revise the rules. Mr. Stannus appealed to Mr. Garbutt to withdraw his amendment in favour of a plan he was about to propose, but he declined. Mr. A. Earle hoped all would oppose any alteration whatever to rule 43. Mr. Douglass Mathews said he was surprised to hear Mr. Cole Adams hold such unconstitutional views. The extra expense of sending out printed *pros* and *cons*. could easily be met, as there were many ways open for cutting down outlay. Mr. Farrow said the Association had at various times modified its mode of working, and whenever this had been done the method of taking a show of hands had been adopted, and this had been successfully carried out. Those who were actively engaged in the working of the Association, and who attended the meetings, were naturally unwilling that the voting should be by papers issued to retired members.



He thought Mr. Garbutt's amendment the best solution of the problem, and believed that on a question of raising the subscriptions no change should be made except by a two-thirds majority. Mr. Hudson said some who were well posted up in the proceedings could not always attend the meetings. Those who wished, like himself, to alter Rule 43 would vote for part, and, perhaps, the whole, of the scheme proposed. Mr. Owen Fleming remarked that though in favour of the amendment, he wished the whole scheme sent round to the members. Their business was to convince the general body. Mr. A. B. Pite appealed to Mr. Garbutt not to press his amendment, for if it were carried the voting by two-thirds would come into operation that evening, and as they had not a two-thirds majority, the scheme would be wrecked. Mr. Garbutt, having declined to withdraw, the President put the amendment to the meeting, when it was defeated by a very large majority. Mr. Stannus expressed a hope that a *modus vivendi* would be discovered, and moved as an amendment:—"That a special committee be appointed by this meeting to revise the whole body of the rules, and that all suggested alterations be referred to it, and that it shall report at an early date next session." Mr. Cole Adams seconded the amendment, expressing at the same time a hope that no further amendments would be proposed, whatever the fate of this one might be. Mr. John Slater intimated that as the mover of the original resolution he should offer no objection to the amendment. Mr. Farrow pointed out that the adoption of the amendment would involve delay in the starting of the new scheme, and would afford an opportunity for other bodies to step in and do the work. The Association must not hesitate to become the educating body for England. After some remarks by Messrs. Brodie, Mathews, and Slater, the President put the amendment, which was carried with but one or two dissentients. Mr. Pite proposed and Mr. A. N. Wilson seconded that "It is desirable that printed voting papers should be sent out to all members." The President pointed out that the three first words would certainly prevent such a resolution from being binding, and, on being put, the voting was: For, 36; Against, 36, a large number remaining neutral. The result was greeted with laughter. Mr. Bernard Dicksee moved and Mr. Stannus seconded, that the special committee consist of nine members, five to form a quorum, and, after some discussion, the President and Messrs. Cole Adams, F. R. Farrow, A. B. Pite, W. H. Pratt, H. Sirr, J. Slater, R. Phené Spiers, and H. Stannus were appointed on the committee. A vote of thanks to the President and Committee brought the proceedings of the session to a close, after a meeting of two and a half hours.

#### ARCHITECTURAL ANTIQUITIES.\*

THIS volume comprises a number of surveys of old buildings and protests against their destruction, printed anonymously in the *Gentleman's Magazine* during many years, and the authorship of which was announced in that periodical after the death of the author, John Carter, in 1817. In the majority of cases, of course, the contents are purely of antiquarian interest; in some, however, a practical value attaches to the descriptions of buildings about which time or the restorer has since been busy. Mr. Gomme has wisely left out much of Carter's matter, and has the advantage of Mr. J. T. Micklethwaite's assistance in the inspection of his labours and the contribution of various notes. John Carter, who was born in 1748, was principally known in his day as the illustrator of the *Builders' Magazine*, a long-defunct architectural periodical which was carried on by Newbery, the St. Paul's Churchyard bookseller, from 1774 to 1786. Carter also illustrated and originated other architectural works of some importance, many of which are familiar to some of our readers. He was a man of inferior education, and of no regular architectural apprenticeship, but his love for architecture seems to have been considerable. A curious instance of architectural piracy is related in connection with Carter's *Builders' Magazine* illustrations. It seems competition scandals were as rife a hundred and fifty years

ago as now. When it was determined to build the present Clerkenwell Sessions House on the site of the old "Hicks's Hall," designs were advertised for, and Carter himself competed. His design was rejected, but he had the mortification of seeing a design accepted which was sent in by some person who copied it from one Carter had himself contributed to the *Builders' Magazine* for a sessions-house. The architect who got the job was a clever adapter in his day and generation no doubt; but the Clerkenwell Sessions House certainly remains, as Mr. Gomme says, "a further proof of Carter's talents as an architect," which perhaps, after all, is not saying much. It is a mercy, no doubt, in these days, bearing in mind the curious competition designs which editors of some architectural publications depict in their own pages, that architects are more honest—possibly because hopeless of winning by means of any such assistance.

#### CONTEMPORARY BRITISH MANUFACTURERS AND ART-WORKERS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS double page is the third sheet of portraits given in our series under this head. It commences with a photograph of Mr. Alfred W. Darby, the senior partner of the Coalbrook Dale Co.

Mr. Alfred E. W. Darby, the principal partner of the Coalbrookdale Company, is the present representative of the family of that name, and he is the lineal successor of the first Abraham Darby who originated the business of the Company, which has continued in the family in unbroken succession since that time, which dates from about two centuries ago, when the successful manufacture of "three-legged pots" first attracted attention to this metallurgical industry. Coming down to modern times, the works and business of the Coalbrookdale Company are found to have greatly expanded, and the variety of their productions become enormously varied, ranging as they do from a tenpenny three-legged pot, or a humble matter-of-fact frying-pan, to a powerful motor, a superbly-artistic gateway, or a metallic Venus de Medici. The Company have three brick and tile works, located at different points in the Dale, producing quantities of ordinary bricks and tiles, "Broseley" roofing tiles, ridge tiles, flooring tiles in a great variety of patterns in red, blue, brown, and buff, boiler seating, grate bricks, &c. The Coalbrookdale fire-bricks have a reputation for their ability to withstand the actions of fire and acids. Much of the ornamental tile work produced is largely used in connection with the Company's chimney-pieces, grates, and stoves. At International Exhibitions, from the first great World's Fair of 1851 onwards, they have been uniformly successful as exhibitors, particularly at the Paris and Vienna Exhibitions.

Mr. Harry Hems is a native of Islington. He was born in 1842, and was educated in that parish. At 14 he went to Sheffield, and was apprenticed to the late Mr. Arthur Hayball, a carver, who was awarded a medal at the 1851 Great Exhibition. As an apprentice and working for his master under Messrs. Weightman, Hatfield, and Goldie, architects (now Hatfield and Son), of Sheffield, he restored all the fine 15th century oak miserere stalls, screens, &c., at St. Mary's, Ecclesfield, Yorkshire. This, in 1860, was the first church he worked at. In 1863 he left Sheffield for London to seek work, and arrived in the Metropolis with less than ten shillings in his pocket. Trade was depressed at the time, and at length he procured work at a furniture carver's named Lambert, in Worship-street, E.C. Everything was done by piecework, and he was given some rosewood piano brackets to do at 4½d. each. After a short stay there he left, and went with the late Mr. Conquest, of Kempston, Bedford (now Foster), at that time largely engaged in church renovation. In this employ he quickly became foreman of carvers at Higham Ferrers Church, Northamptonshire, then being restored, under Messrs. Slater and Carpenter, architects (now Carpenter and Ingelow). The next year (1864) he went to Italy to study the antique, and worked in Florence, Carrara, and Milan. But wages were poor, and at last his stock of money being exhausted, he walked the best part of the way home to England, tramping over Mont Cenis, in the depth of winter. The first work Mr. Harry Hems carried out on his own account was early

in 1866, when he executed sculpture and carving at Bramley Hill House, Croydon, under the late Mr. Charles Henman, architect, of that town. Later in the same year he went to Exeter, and with that city his name has since been identified. Ten years afterwards he exhibited at the Philadelphia Centennial Exhibition of 1876, and was awarded medals for both sculpture and wood-carving. In 1881 he built his present works, one block of which, erected from the designs of Mr. R. Medley-Fulford, F.R.I.B.A., has been illustrated in these pages (March 30, 1883). During the last twenty-four years he has carried out works in, or for, something like a thousand different churches, and some cathedrals, in all parts. Amongst the most important of his undertakings may be mentioned the renovation of the high altar screen at St. Alban's Cathedral, under the direction of Sir Arthur W. Blomfield, A.R.A., and the filling of its seventy-eight niches with statuary (see illustrations in BUILDING NEWS, Nov. 19, 1886, and June 28, 1889); the colossal equestrian statue of King William III., carried out for the Orangemen of Ireland, and erected at Belfast; the restoration of St. Andrew's Church, Plymouth, under the late Sir Gilbert G. Scott, R.A. (1874); at the Church of St. John the Baptist at Bere Regis, Dorsetshire (1875), and Dunster Priory and parish church, Somersetshire (1876), both under the late Mr. Geo. E. Street, R.A.; at St. Andrew's, Fort William, N.B., perhaps the most beautiful church in Scotland (1880), under Mr. Alexander Ross, architect, of Inverness; at Lord Revelstoke's sumptuous Church of St. Peter the Fisherman, Noss Mayo, Devon (1882), under Mr. J. Piers St. Aubyn; at St. Denis' Church, Warminster, Wilts (1888), under Sir Arthur W. Blomfield, A.R.A., &c., &c. Mr. Hems' two eldest sons, Messrs. Greville C. and Harry T. Hems, are at present associated with their father in the business. Mr. Hems has been a collector, and his residence is filled with rare books, engravings, weapons, and interesting curios, besides a painting of himself, presented to him, together with an illuminated address, signed by the members of his staff, on Oct. 9, 1886. He was a member of the City Council at Exeter for six years. Mr. Harry Hems' portrait is by Mr. J. F. Long, of High-street, Exeter.

Mr. P. Stuart is the head of the well-known firm of Stuart and Co., Limited, granolithic manufacturers, of London, Liverpool, Dublin, Belfast, Glasgow, Dundee, and Edinburgh, with agencies in the States, Canada, and Europe. Mr. Stuart is the inventor and patentee of sixteen different patents in Great Britain, France, Spain, and the United States. One of the patents, the speciality of the firm, is Granolithic stone, which has revolutionised footpath paving, and become the paving of the world. The following are a few of the many important works carried out by the firm: City Hall Buildings, Philadelphia\* (largest buildings in the world); Oddfellows' Hall, California; Pennsylvania Avenue, Washington; City Park, New York; Hyde Park, the New Market, and the Corporation Buildings, all in Sydney; the Rue de Rivoli, Paris; Duisberg, Germany; Platforms of general station, Perth; Platforms of Exchange station and Edgell stations, Liverpool; Bold-street, Liverpool; St. George's landing stages, Liverpool; N. B. Ry stations, Glasgow; altar steps of graving dock Glasgow; great sheds of the Leith Dock Commission; Princes-street, Edinburgh; George-square, Glasgow; grand staircase, &c., Presbyterian College, Edinburgh; Carnegie Library, Edinburgh; Callender's model tan works; grand staircase, Conservative Club, Birmingham; fire-proof construction of large sheds at Bristol and Avonmouth; Technical Institute, London; Egham College, founded by the late Mr. Holloway; staircases, Queen Anne's-mansions, Westminster; Industrial-dwellings, for Lord Rothschild, London; Lyle's great sugar refineries, Silvertown; Esplanade, Brighton; Hotel Métropole, Brighton; Imperial Theatre, London; Cardiff Exchange; Barry Docks; Nottingham and Essex County Asylums; Corporations of Edinburgh, London, Dublin, Belfast, Londonderry, Liverpool, Worcester, Gloucester, Hereford, Maidstone, &c., and many local boards; the school boards of London, Birmingham, Liverpool, Edinburgh, Glasgow. Messrs. Stuart and Co. have an interesting display at their stand at the Edinburgh Exhibition, now open. In connection

\* Architectural Antiquities: Part I. The *Gentleman's Magazine* Library. Edited by GEORGE LAURENCE GOMME, F.S.A.

\* Illustrated in the BUILDING NEWS June 6th last.



with the operations of the firm, there are about 2,000 men employed—including their home business. The photo. is by Mr. Strauss, of St. Louis, United States.

Mr. John Grundy was born at Tyldesley, near Manchester, in the year 1844, and was educated at the Leigh Grammar School. His father was a corn merchant at Tyldesley, and it was about the year 1865 that he first conceived the notion of heating buildings with a diffusion of pure warm air by a system hitherto unknown to the public. Being one of the chief officers of the church, and superintendent of the Sunday-schools, both of which buildings were close to the house in which he resided, he sought and obtained permission to heat the church and schools at his own expense by way of experiment. The scheme proved a success, and Mr. Grundy forthwith patented the apparatus, and in the course of a few years gave the patent to his son, who is the subject of this portrait. By sheer pluck and indomitable perseverance, that patent, and the various and valuable improvements which his experience has from time to time enabled him to make, are well known and extensively used throughout the United Kingdom, and many foreign countries. At his native place, and for many miles round, Mr. John Grundy's name is a household word, for not only are the large heating furnaces and apparatus made at the Tyldesley Ironworks, of which he was the founder, and is the sole proprietor, but his well-appreciated patent warm-air ventilating fire-grates have found their way into many homes in the North of England. The testimonials for efficiency in warming and ventilating, which Mr. Grundy has received, number thousands, many of which are from the nobility, clergy, and most eminent architects of our time, and are mostly unsolicited. A hobby of Mr. Grundy's is to invite all the aged people of his native town who are 60 years old and upwards to an annual entertainment. About 700 to 800 persons assemble on these occasions. The portrait is by Mr. T. C. Turner, of 17, Upper-street, Islington, London, whose studio is also warmed by the "Grundy Patent."

Mr. Charles Campbell (of the firm of Messrs. Campbell, Smith, and Campbell) was apprenticed in the year 1857 to Messrs. Harland and Fisher, the then leading firm of ecclesiastical decorators. After serving seven years, he became their designer and manager, at the same time keeping up study at evening classes of the Lambeth School of Art, the Life Class of the Architectural Association (first governed by E. J. Poynter, R.A.), Hetherley's in Newman-street, and the Hogarth and Langham Art Clubs. He has carried out many important works, and also has had the opportunity of working under the superintendence of the late Wm. Burges, A.R.A., who eventually advised his starting in life as a decorative artist, and offered him cartoons to make for two churches then going on in Yorkshire, Cardiff Castle, &c. Mr. Campbell is glad to have the opportunity of acknowledging how much he owes to Mr. Burges at this period of his life, as he has found the training whilst employed upon this work invaluable since. Thus having the opportunity of starting as a decorator and stained-glass worker, Mr. Campbell joined Mr. F. G. Smith in partnership, and together they carried out many large orders, of which the following are a few of the most important:—Cardiff Castle, Mount Stuart, and Dumfries House; house for Wm. Burges, A.R.A., Melbury-road; Studley Royal Church, Ripon; Directors' Library, Bank of England; Council Chamber, Guildhall; decoration of Old London street, I.H.E.; Grand Hotel, Charing Cross; Holborn Restaurant, Constitutional Club, Portman Rooms; Irish Exhibition, Olympia; Town Hall, Dover; Town Hall, Hull; Grand Hotel, Brighton; Star and Garter, Richmond; St. Marylebone Church; Haileybury College Church; St. Paul's, Great Portland-street; St. Augustine's and St. Faith's, City; St. Stephen's, Gloucester-road; St. Nicholas Cole Abbey, E.C.; Dining Hall, Worcester College, Oxford; Albert Gate Mansions; Lyceum, Haymarket, Olympic, Gaiety, Grand, Criterion, St. James's, Lyric, Her Majesty's, Opera Comique, Alhambra, and Empire Theatres. Mr. Campbell's portrait is by Mr. Fall, of Baker-street.

Mr. Alfred Octavius Hemming was born at Merrywood Hall, Bristol, in 1843, and is the eighth son of the late Lieut. Samuel Hemming, Royal Engineers, H.E.I.C.S., afterwards Member of the Institute of Civil Engineers, and a contemporary of Brunel and Stephenson. Mr.

Alfred Hemming was educated in Edinburgh, and commenced life as an architect, but soon took up decorative art in preference. He entered the studios of Messrs. Clayton and Bell in 1868, where he remained till 1883, when he took studios of his own in Margaret-street, Cavendish-square, and has been most successful in his chosen career in the art of stained glass and mural decoration. In our issue of Oct. 5, 1888, we illustrated some work of his in Helmsore Church, Manchester, and his windows may be seen in many other parts of the kingdom, as well as in the United States, where he has executed large and important commissions. His design for the east window of St. Hilda's, Darlington, recently executed, is now being exhibited in the Royal Academy, as is also his design for the glass and mural decoration of the north wall of Folkestone parish church, the pictures illustrating the "Stations of the Cross." These are all 8ft. in height, and vary in length from 5ft. to 12ft., and are painted on mahogany panels; the object of this is two-fold, chiefly that they may be worked at in his own studio, and also that they may not be affected by the climate when let into the wall. A drawing of this work is now on view at the Royal Academy, and we illustrated it in the BUILDING NEWS for May 30 last. Mr. Hemming's photograph was specially taken for us by Messrs. Elliott and Fry, of Baker-street.

#### URBAN RATING.\*

THE important question of the proposals to assess the owners of ground-rents has been made the subject of a treatise by Mr. Charles Henry Sargent, M.A., Oxford, and of Lincoln's Inn, Barrister-at-Law. Mr. Sargent has studied the question from a legal point of view. His reasoning is sound in the main, and his experience on the questions of leasehold enfranchisement and ground-rents have made him well able to deal with the question of the rating of ground-rents. The chief grounds upon which the author rests his arguments are, that the measure involves a breach of contracts, and throws the burden on one class to secure benefits to another. The work before us enters into the subject in a methodical manner. It discusses the origin and nature of ground-rents, in which the principal systems of covering land with houses are described, the manner the price or rent of building land is fixed, how ground-rents have already paid rates, proposals to rate ground-rents, rating between building owner and occupier, the rating of vacant land. Into these several chapters we will not enter, but confine ourselves to the main reasons which are given by the author why the proposals to shift rates from the building owner to the owner of a fixed rent-charge or ground-rent are considered unjust. With respect to existing contracts, it is asserted (1) that upon the determination of existing rent charges and ground-rents rates have already been deducted to an extent far exceeding the rates on these charges or ground-rents themselves; (2) the building owners have, for good consideration, entered into an express contract with the landowners to defray all the rates; (3) this contract is reasonable, and not forced on the building owners, and it is impossible to say whether the rates actually existing are greater or less than those estimated; (4) the most prudent and deserving investors would be mulcted of a considerable part of the income and capital of their investments by the change; (5) the result of the change would be, especially in the poorest quarters, to benefit, not the occupier, but the middleman. As regards future contracts, it is said the change would result in a rise of rent-charges and ground-rents equal to the rates they would have to pay; the utmost difficulty and trouble would be caused by the various deductions and allowances that would have to be made between every payer and receiver of rent; consequently, all cheap and trust capital would be driven from investment in buildings, and rents would rise. Further, as regards both kinds of contract, it is affirmed that the owner of a building subject only to a fixed rent-charge or ground-rent, is the owner of the whole interest as if he held subject only to a mortgage, and that, as he takes the whole of every benefit to the building, he should discharge the whole, and

not a proportion, of every burden on it. Thus, as between building owners and the owners of fixed rent-charges and ground-rents, it is contended by Mr. Sargent, it is unjust in the case of existing contracts, and inexpedient in the case of future contracts, to relieve the former of any portion of the rates at the expense of the latter. Again, the author asserts that, apart from contract, the hardship in the reversion being benefited by the expenditure of rates in permanent improvements which falls on the building owner, is one of a very trifling nature, and applies only to an insignificant proportion of the rates. Any enactment casting certain parts of the rates on reversions would, it is continued, drive cheap or trust capital out of investment in houses. The author considers these aspects of the question. 1. How, independently of any covenant to pay rates, ought they to be adjusted between the building owner and the owner of fixed rent-charge or ground-rent? 2. Whether there is sufficient reason for prohibiting by legislation the ordinary covenant that the building owner is to pay the rates? 3. And if there is sufficient reason for setting aside existing covenants to this effect? Answering these questions, Mr. Sargent argues that, as the landowner does not receive a certain proportion of the rents and profits of the building, but a fixed sum which participates in no increase or decrease, therefore he is not the owner of any part of the house, and is in the same position as a mortgagee or annuitant only entitled to a fixed sum out of the income not entitled to any share in the profits. Since, in fact, "he does not share in the advantages or profits, he should be relieved from any share in the burdens of ownership." No doubt the popular idea is misleading in thinking that the man who *was* the landowner is still the landowner, for after the property is divided, the owner of the land becomes only entitled to a fixed ground-rent issuing out of ground and building alike. The ordinary contract which covenants that the building-owner is to pay rates is argued to be a proper and reasonable arrangement on the above ground. But it is needless to go farther. Mr. Sargent has made out a strong case; his arguments appear sound, and he bases them on the assumption that when land is let for building at a rent-charge, or ground-rent, the land and building become one—the man who builds the house becomes the owner of both, subject only to a fixed charge, or ground-rent; but the assumption that the building owner is the owner of land is a gratuitous one, and there seems to us no conclusive reason why an adjustment of rates between the two owners should not be made. Why the usual covenants as to rates should be allowed to remain is, we think, hardly made out; and certainly the ground landlord, or owner of ground-rent, who has a tangible reversion in the land and building, and improvements thereon, should share in the burdens. We have no space left for further examination. Mr. Sargent's treatise is well worth an attentive study by all those interested in land and the burning question which he deals with.

#### WOOD-CARVERS AND THE KENSINGTON SCHOOL.

THE third annual report of the Executive Committee of the Wood-Carvers of London states that, although the committee have not yet seen their way to getting up an exhibition of wood-carving, they have obtained from the Carpenters' Company the concession that their board of examiners in the annual exhibitions of carving and joinery in a competition for prizes under the Harbans Gift will be strengthened by the addition of three carvers appointed by the Institute of British Wood-Carvers. A more important work has been to demand that "all technical classes for wood-carvers supported or assisted by public funds shall be for the benefit only of persons already in the trade, and that the trade itself shall have a voice in choosing the instructors." The committee state that there had long been a very pronounced opinion that the influence exerted on the craft by the Kensington School of Wood-Carving, in connection with the City and Guilds of London Institute, was a baneful rather than a beneficent one, and they accordingly resolved to combat the evil. They point out that the Kensington School enjoys the advantages of the occupation of handsome and convenient premises, in which to carry on its work, free of rent, and with the addition of a

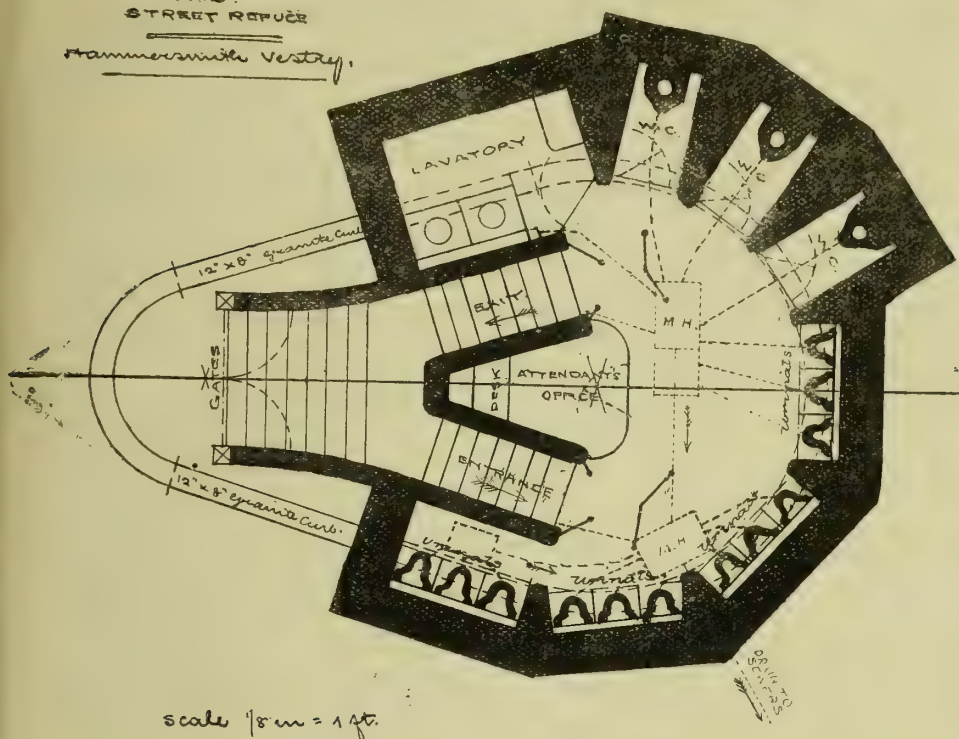
\* Urban Rating. By CHARLES HENRY SARGENT, of New College, Oxford, M.A., Barrister-at-Law. London: Longmans, Green, and Co.



## NEW SANITARY CONVENIENCE

AND  
STREET REFUGE

Hammersmith Vestry.



munificent annual money grant; and that those advantages are accorded to it for the ostensible purpose of furthering the technical education of London carvers—whereas, as a matter of fact, the benefits of the institution have practically not reached the trade at all, but the students have, almost without exception, been persons previously quite unacquainted with the craft. Further, it sends out instructors all over the country—themselves merely amateurs—thus monopolising the most lucrative portion of the carvers' calling; and, what is more important still, that it competes for orders in the ordinary way of business, thus taking the work out of the hands of the legitimate tradesman; in short, that it is in reality a subsidised competitive workshop instead of being, as it purports to be, an educational institution. "The effect of its action on our craft has been," the committee contend, "distinctly of a deteriorative rather than an elevating tendency, because instead of undertaking the higher training of the existing personnel of the trade, utilising for that purpose the workshop practice already acquired, its effect is that of foisting upon the trade persons with nothing but a dilettanti training; and after ten years' work the school has not turned out one student capable of commanding the average wage paid in the trade." Owing to the movement started by the committee, there has been a considerable reduction in the amount of the grant to the Kensington School, and a promise has been given that it will shortly be entirely withdrawn.

NEW SANITARY CONVENIENCE AND  
STREET REFUGE, HAMMERSMITH.

THE Vestry of the parish of Hammersmith have recently constructed a new sanitary convenience, with street refuge above, in the Broadway, Hammersmith, opposite the District Railway Station, and during the past week it has been thrown open to the public. The convenience is approached from the level of the street refuge by an artificial stone staircase, which is divided into an entrance and an exit, each of ample width. It has been faced throughout with white glazed bricks, relieved with a coloured dado. The accommodation includes twelve urinals, three water-closets, and a comfortably fitted lavatory, besides a convenient attendant's office in the centre of the structure. The urinals are of the latest approved lip pattern. The automatic flushing cisterns are formed of enamelled slate and are timed to discharge the water at regular intervals. The water-closets are inclosed by pitch-pine doors, with chamfered frames and lower panels. The sanitary fittings are of

Doulton's "Combination" flush-out pedestal pattern with trap, in white glazed ware, with polished mahogany balance weight seat. The attendant's office has a pitch-pine front, with plate-glass panels. The floor of the convenience is paved with grano-metallic stone. A service tap, nozzle, and hose are provided for the attendant's use in washing out, &c. The interior of the convenience is carefully protected from observation from the roadway above by screens fixed at the bottom of the two staircases; these insure privacy without interfering with free locomotion, or interrupting the attendant's view of the convenience. The roof, or that portion of it which forms the street refuge, is constructed of York landings and Hayward's patent pavement lights, affording perfect daylight, on substantial girders. The refuge is inclosed by 12 by 8 dressed Aberdeen curb, and protected by six guard posts. The staircase is fenced in with an ornamental wrought-iron railing, fixed upon a dressed coping of Aberdeen granite, and a pair of entrance gates. An ornamental lamp column, carrying a 5-light lamp, is attached to the centre of the refuge, thus affording light upon the three main thoroughfares upon which it shines. Ventilation is obtained by means of gratings inserted with the pavement lights of the refuge, and by the staircases. The foul and heated air will also be drawn up to the interior of the central lamp, where an upward current is formed by means of a gas jet which it is intended to keep burning at its base. The drains are laid on the separate system, and are disconnected from the sewer by an intercepting trap. The whole of the work has been carried out from designs by, and under the immediate supervision of, Mr. H. Mair, Assoc. M. Inst. C.E., Surveyor to the Vestry. Most of it, in fact the whole of the heaviest portion, has been executed by the Vestry's own men.

TAMWORTH TERRACOTTA AND  
GLAZED BRICKS.

THE strides made of late years in the manufacture of high-class English terracotta and clay ware, is a gratifying proof of the enterprise of manufacturers in obedience to the demand caused by recent developments of architectural style in England. Nowhere else, probably, has this demand been more energetically and intelligently responded to than at the old and well-known works of Messrs. Gibbs and Canning, of Tamworth, one of the very oldest potteries, we believe, in the kingdom.

Their products are many of them amongst the most beautiful and interesting specimens of what science and art applied to industrial manufactures

can accomplish. The out-put at Tamworth includes several specialities, but three deserve the attention of architects and builders generally, viz., architectural terracotta in buff and red, white glazed bricks, and cane-colour glazed sinks. In the first named material, Messrs. Gibbs and Canning have executed some of the largest and most important works in the United Kingdom, such, for instance, as the Natural History Museum, South Kensington (under Mr. Waterhouse), than which no better proof could be desired of the excellence of the firm's manufactures both in regard to material and workmanship. They are also at the present time busily engaged in the manufacture of the buff terracotta for the New Victoria Law Courts at Birmingham, now in course of erection, under Messrs. Webb and Bell, architects, Mr. Waterhouse being consulting architect for the building.

The white glazed bricks manufactured by the firm are also of admirable quality, and are very largely used; and a similar remark will apply to the cane-colour glazed sinks, which are made in sizes varying from 15in. in length up to 4ft. These are manufactured from their buff terracotta clay, which they believe is "without doubt, the finest in this country for richness of colour and extreme durability."

The "Tamworth" pipes made by Messrs. Gibbs and Canning are noted for their metallic hardness and durability as well as their capability of resisting extreme pressure both internal and external. Their brindled bricks are especially adapted for railway work, being also extremely hard and durable. Besides the Natural History Museum referred to above, fine examples of their work may be seen in the Technical Institute; the Prudential Insurance Office, Holborn; Kensington Court Mansions; St. Margaret's Mansions, Victoria-street, Westminster; the Royal Aquarium, Great Yarmouth; the Birmingham Theological College; the Dock Offices, Bristol; and many other places all over the country. Their works, which cover a large area, are situated at Glascote, about two miles from the Tamworth railway station, but they have direct communication with the Midland and London and North Western railways, as well as canal communication with all parts of the country, and are thus enabled to deliver their specialities at the earliest possible date after receipt of instructions.

## A PAINLESS, GREEN OLD AGE.\*

THIS extremely interesting and useful book is by Mr. Joseph Constantine, the senior member of the firm of J. Constantine and Son, of Manchester, whose work on "Hydropathy at Home" is well known to most readers, and whose experience in the designing and construction of heating apparatus has probably been utilised by many more. Some twelve years ago Mr. Constantine made the acquaintance of Mr. Isaac Holden, M.P., whose diet and general habits attracted his attention. Mr. Constantine says he found Mr. Holden knew how to live better than any man he had ever met, and so deemed it his duty to let the world know something about it. As far as diet is concerned, Mr. Holden evidently shares the views of Dr. de Lacy Evans, Dr. Densmore, and others, which are just now attracting some attention in the pages of the *Weekly Times* and *Echo* and elsewhere, and which, briefly summed up, are in favour of fruit as the best food for man on account of its richness in the alkaline salts which dissolve out of the body the lime which abounds in cereals, and ossifies and clogs up the fine capillary blood-vessels, and causes early death. There is much other matter in the book, however, than as regards diet, and we recommend all who value health and long life to read it.

The new church of St. Mary the Virgin, Davy-hulme, was consecrated on Monday by the Bishop of Manchester. The edifice is cruciform in shape, and has been erected from the designs of Mr. G. Truefitt, of London, the builders being Messrs. Southern and Sons, of Salford. The distinguishing feature of the church is an octagonal lantern open to the roof. The materials used are Yorkshire par-points, faced with Runcorn stone. The estimated cost is £4,000. We illustrated the church in our issue of May 3, 1889.

\* Health and Activity in Middle and Later Life. By JOSEPH CONSTANTINE. London: Sumpkin, Marshall and Co.



## WAYSIDE NOTES.

MR. HENRY TATE has made a munificent offer to the nation, and it is to be hoped that the conditions which the liberal donor imposes will not be found a barrier to the acceptance of the fifty odd gems of modern English painting. Some people think that the offer should have been made free of all restrictions; but it appears to me to be only natural that anyone making a gift of valuable works of art, to a country that for so many years stood by with cold indifference and saw a collection of national portraits wandering about without any permanent home, should be disposed to obtain some assurance that his gift will not be similarly treated. Whatever may be the objection to other stipulations in the proposal to establish this National Gallery of British Art, I see none to that which requires the establishment of a building or gallery that will insure the collection against a similar nomadic existence to that led by the national portraits.

If the Government accede to Mr. Tate's terms, it will become a question what position the gallery will take up. The energetic vicar of St. Jude's, Whitechapel, was early in the field, suggesting in Tuesday's *Times* that no part of the Metropolis is so suitable as his parish for the establishment of the gallery, while another correspondent demonstrates that the pictures might be well located in St. James's Palace, seeing that the Parisian Luxembourg Gallery, on the lines of which it is Mr. Tate's desire that the proposed gallery should be established, is founded in an old Royal Palace. Now, my own idea is that a new gallery should be erected neither in Whitechapel nor in St. James's Palace, but in some suitable central district, and be of such size as to be available for the exhibition of such other modern examples of English painting as the trustees may be able to obtain from time to time. This I believe is the intention of the donor. And although, as pointed out by a *Times* correspondent, Mr. Tate has been in a measure forestalled by the late Mr. Sheepshanks, in the founding of a gallery of British pictures, there is yet a vast field for good work in the same direction. The Sheepshanks gallery is only a fragment of what might be accomplished in this way. A national gallery for purely English works, and of modern schools only, would be a most interesting institution. If the Government think favourably of Mr. Tate's offer, there is now an opportunity for establishing such an institution. All artists will hope that the scheme may go through, and that the fifty-seven pictures will become the nucleus of a collection that may some day be the pride of the nation.

Mr. E. W. Mountford is to be congratulated for his success in the Sheffield Municipal Buildings competition. It has been a hard-earned fight, and he well deserves the honour and renown that will be inevitably his portion. A more severe, genuine, and taxing competition I think it would be difficult to instance. In the first or preliminary struggle a really formidable array of architects took part, and we may rest assured that the remaining five who participated in the final competition strained every nerve to make their designs as perfect as possible. Mr. Mountford's success, therefore, is more honourable than that which accrues in the ordinary run of competition. The matter has been throughout under the supervision of Mr. Waterhouse, whom everyone acknowledges to be our first assessor. Pure merit has decided the struggle, and complainants among competitors will not, in legal phraseology, "have a leg to stand on."

The announcement from the Stockport Corporation in reference to the proposed sewage-outfall scheme has the merit of a certain amount of originality. I suppose engineers must regard it as a sort of feeler preliminary to a competition—that is to say, if the corporation do not in the mean time decide to make other arrangements. As corporations rather like competitions, I would go as far as predicting that a competition will come off in this instance; so engineers of experience in sewage works may begin to sharpen their pencils in anticipation.

The Guildford Town Council have at last come to a decision with regard to the new sewerage scheme for their town, and I am glad to see that Mr. Laily, the engineer of the Acton Sewage

Works, is to have the work. Mr. Laily deserved to be appointed in this case, as all will think who remember my paragraph on the doings of the Guildford Town Council with reference to this matter. The system to be adopted in the Guildford drainage scheme is that known as the "International." This method of sewage disposal seems latterly to have grown in favour. It is a system whereby the sewage is purified, and what is commonly described as a wholly inoffensive liquid runs off from the last of the receptacles for purification, the solid particles being caused to subside in a proper tank by throwing in a chemical precipitate. Under this method of sewage disposal the picturesque county town of Surrey should greatly benefit from a sanitary point of view, as also would hundreds of other pretty country towns where at present the demon of typhoid lurks about the open, festering sewers. Sewage engineers, indeed, should do very good business in years to come. The sanitary rage has got well hold of the public, and is gradually improving the arrangements for sewage disposal, towns, small and large, becoming dissatisfied with happy-go-lucky methods, and adopting those based on scientific principles.

Among the most coveted of appointments for the architectural profession are the surveyorships to the various and "worshipful" City companies. They all prove nice comfortable berths, always something going on, either on the companies' premises, or their properties, or schools, &c. If there is not the "hall" to decorate in the City, there are some premises owned by the company to rebuild, or some enterprise or another to carry into execution, and be realised in bricks and mortar. Then there are, I believe, other engagements to occasionally fulfil of a prandial nature, and altogether an appointment of this description is calculated to produce changes in the physical development of the fortunate surveyor. From a lean, harassed-looking individual our architect is transformed, by virtue of an appointment as surveyor to a City company, into a sleek, contented citizen, and what looks like a small cupola begins to put in an appearance behind the lower portions of his waistcoat, forcibly reminding us of poor old Sir Horace Jones's style of architecture. He grows fat, and his hair curls—he is rid of many of the cares of an ordinary practice. Peace and contentment reign in his offices, and his staff (let us hope) take their share of the benefits that have accrued. Verily, a City company surveyorship is to be coveted overmuch.

There has lately been a chance for architects in this way, for those, at least, between the ages of thirty and forty years. The Worshipful Company of Leathersellers are in want of a surveyor, and they have offered a salary of £300 per annum for such a servant. Now the difference between this £300 salary and most other £300 salaries is that it does not preclude private work. Hence the desirability of the appointment.

A certain Mr. W. Cowling wrote to an evening contemporary last week as follows:—"Qualifications of an architect. Can anyone inform me what are the qualifications necessary to become an architect? Is good drawing absolutely necessary? Is there any school where to be taught? Must I understand building before I can become one?" This is very refreshing. It would be interesting to know more about Mr. C., who thus, at one and the same time is so desirous of becoming an architect, and so sweetly innocent of his work. If this should meet Mr. C.'s eye, I might suggest that a little drawing would be found no actual hindrance to his architectural practice, and that some slight knowledge of the rudiments of building construction would be no harm—it might, indeed, be beneficial.

The Architectural Association makes the venerable town of Oxford its head-quarters for this year's annual excursion. I hope by the time the month of August comes round that there will be a little of the ancient work left among the old colleges, &c.; but there is no knowing. I read an alarming account of "The Stones of Oxford." Mr. Thackeray Turner, the Secretary S.P.A.B., writes to the *Pall Mall Gazette* a doleful tale as to the proposed destruction of old buildings in Oxford, and I am really sorry to learn that it is intended to pull down some of the ancient houses in Holywell-street, and that the entire destruction of the old Mitre Hotel is con-

templated; and further, that an ancient house in the Corn Market is to make way for a new bank. This certainly seems doing things in a wholesale manner, and we shall all—except the architects of the new buildings—be glad if the S.P.A.B. can prove itself an effective body in this matter. It will come as a pleasing surprise.

Mr. Turner, in the same communication touching the "stones" of Oxford, runs full tilt against the architects who have been engaged on buildings in the town. He finds that they are guilty of erecting structures out of all harmony with the works of the old builders. Nothing that has been done in this way pleases him, and one red-brick and tile building would appear to have given him superlative offence. In fact, Mr. Turner forgets that old buildings didn't "grow," like the little negress in "Uncle Tom's Cabin." Contrast between old and new there has been in buildings from time immemorial—the new against the hoary old, and the tumble-down against the plumb and true. We can't stand still even in Oxford. There may be cases where "loud" buildings have been erected in the old university town, but it is preposterous for any one to bring a wholesale charge of want of taste against the architects who have lately been engaged there, for some of the most respected members of the profession have recently done work at Oxford—and excellent work too. A society for the protection of ancient buildings should be a most useful institution nowadays, and I cannot understand how it is that the S.P.A.B. invariably makes an unhappy muddle of things whenever it goes into action. Properly directed, its aims might be of great service to the community. As it is, it manages to alienate sympathies all round. I would advise the society to concentrate its attention on the saving of old buildings doomed to wanton destruction and to making public the nature of the restorations at St. Alban's. It can safely leave the modern works of modern architects to the critical faculties of other persons, more especially where well-known gentlemen are concerned. The *Pall Mall* letter is a good instance of the way in which the S.P.A.B. blunders along. Instead of selecting some town where evident injury has been done by vulgar and obtrusive building, it pitches upon Oxford, where much careful and painstaking work has recently been carried out, and thus instantly makes enemies of people who would be its best friends. Let the society take hold of the old buildings in Holywell-street, the old "Mitre" hotel, and the house in the Corn Market. It can safely save itself the trouble of running amuck against the architectural profession.

Work in connection with the restoration of St. Saviour's, Southwark, has commenced in earnest. A hoarding is being erected round the nave, and the attack upon the ignoble architecture has begun by pulling out two of the north windows. It is a good work, and will, I hope, prosper. GOTH.

## CHIPS.

The owner of ten houses in Tiger-yard, Denmark-hill, was summoned to Lambeth Police-Court on Saturday, at the instance of the Vestry, on account of the condition of the buildings. It was stated that the drains were stopped, there was no water, and the houses were in a dilapidated and filthy state, quite unfit for occupation. The magistrate made an order for the requisite repairs to be done.

The Bishop of Ely has caused all the ancient records of that diocese which have hitherto been scattered in various places to be removed to the episcopal palace, where they are deposited in a spacious muniment room, so as to be available for future historical research.

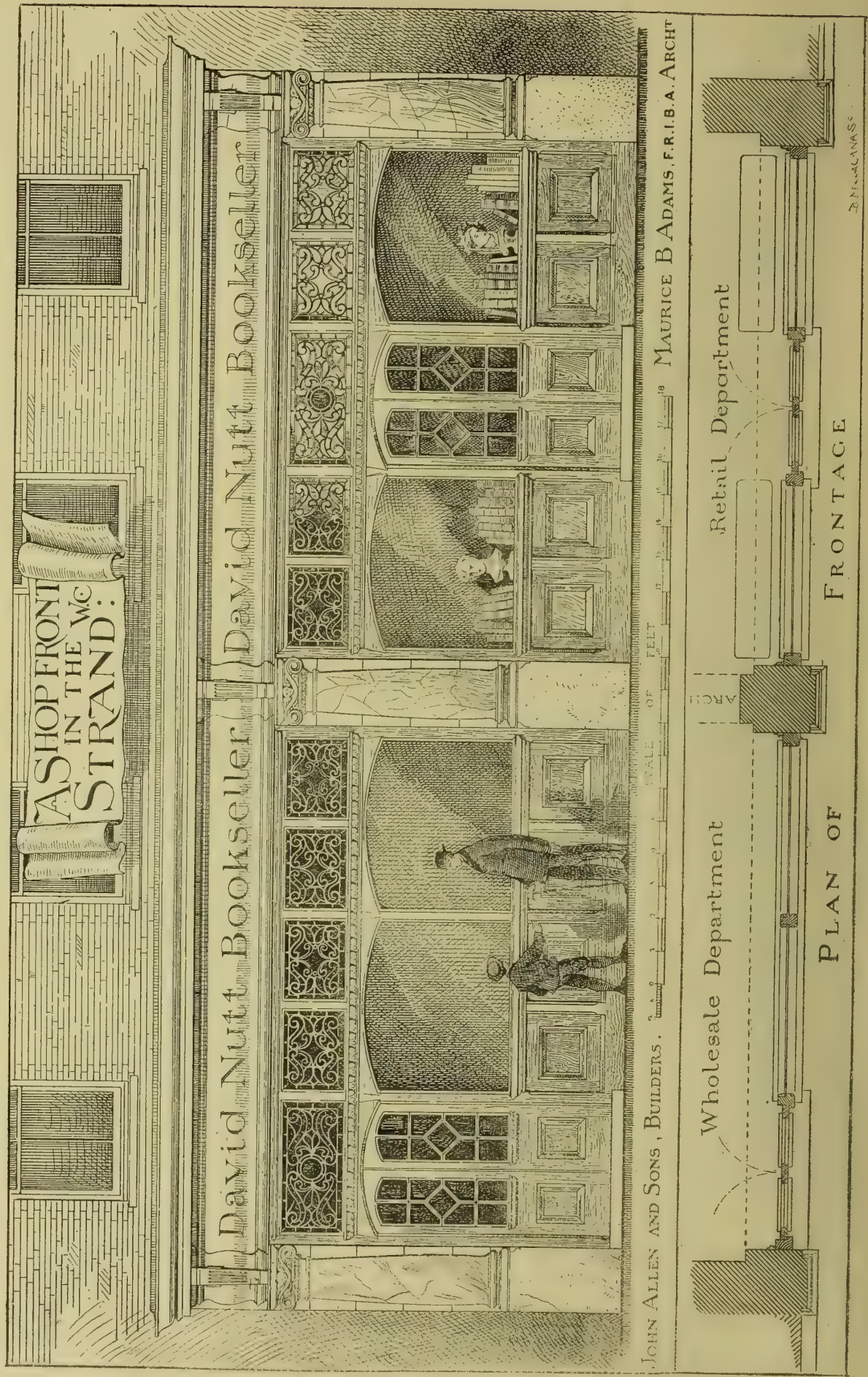
On Saturday week the foundation stones of a new Church Sunday school were laid at Kirkby Woodhouse, Notts. The school is situated between St. John's Church and the Board School. It will accommodate about 200 children, and will be of red brick with Mansfield stone dressings. The builder is Mr. Tate, of Annesley Woodhouse, and the plans are by Mr. Thomas Mart, Kirkby Folly.

Captain Oates, the borough surveyor and sanitary inspector of Helston, has left the town for upwards of a fortnight, unknown to his friends and the authorities, and his whereabouts, it would seem, cannot be ascertained. In consequence of this his situation was declared to be vacant by the town council at their meeting on Monday week. There are several candidates in the field for the post.







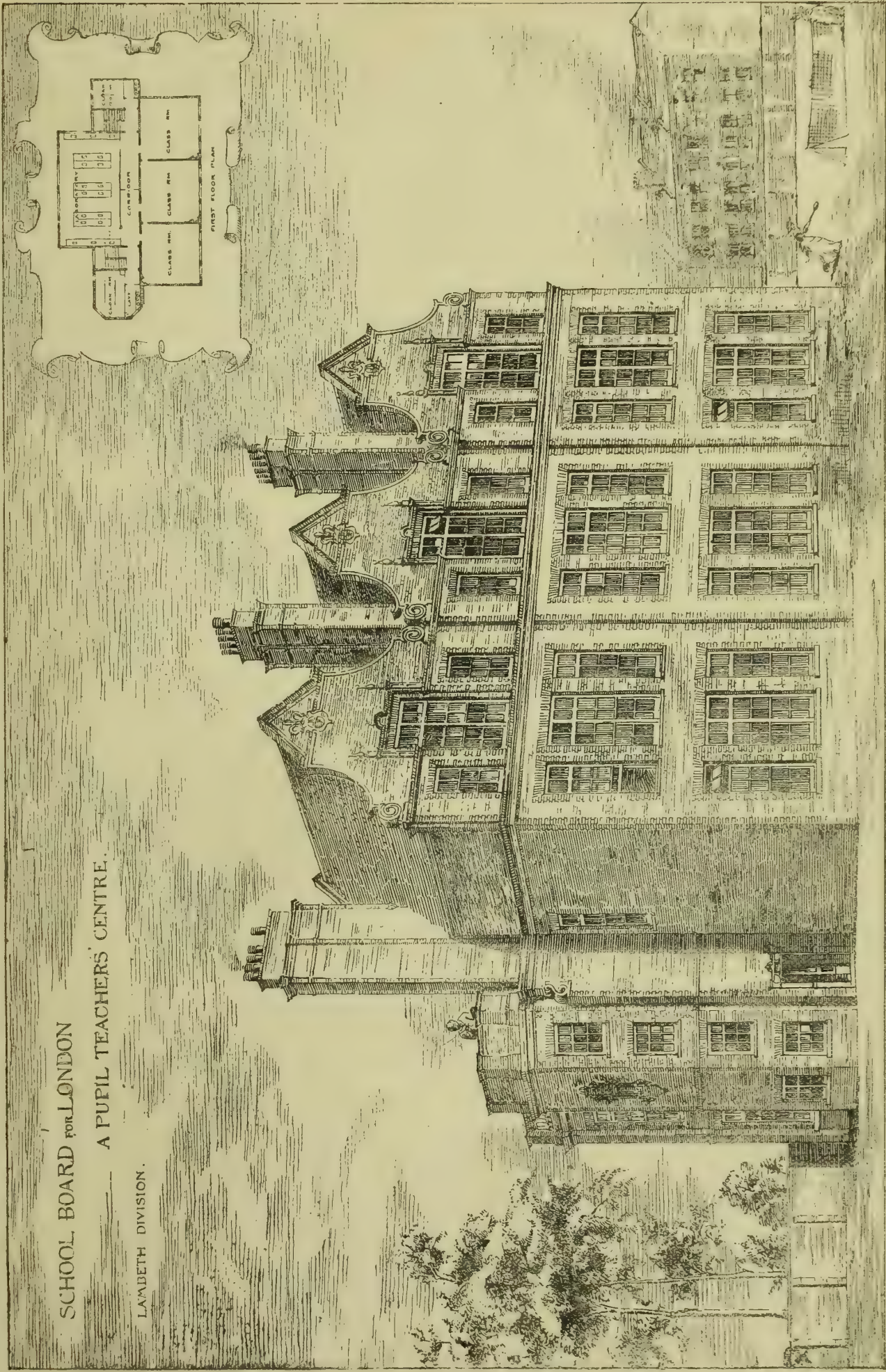




SCHOOL BOARD FOR LONDON

A PUPIL TEACHERS' CENTRE.

LAMBETH DIVISION.



J. D. B. 1890

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## ILLUSTRATIONS.

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## Our Illustrations.

CONTEMPORARY BRITISH MANUFACTURERS AND ART-WORKERS.

(See description on p. 899.)

BUSINESS PREMISES, DAVIES-STREET, GROSVENOR SQUARE.

THESE premises, now in course of erection as showrooms and factories, for Messrs. Bolding and Sons, plumbers and sanitary fittings makers, will form, when completed, an important block at this end of the Duke of Westminster’s estate. There is a scheme for widening the approach to Davies-street from Oxford-street, which will have the effect of making a great improvement in this quarter. The work has been divided into two parts, the lower portion having been built by Messrs. Wall, and the upper part, from the street level, is now in hand by Messrs. Pattinson, of Sleaford. The terracotta is by Messrs. Clark and Rea, and the constructional ironwork is in the hands of Messrs. Lindsay and Co., of Paddington, Messrs. J. T. Wimperis and Aber, of Sackville-street, Piccadilly, being the architects. Our illustration is taken from a drawing now being exhibited in the Royal Academy.

THE YOUNG SOPHOCLES LEADING THE CHORUS OF VICTORY.

THIS statue, by Mr. John Donoghue, is now on view at the Royal Academy. It represents the celebrated tragic poet of Athens, who was the rival of Euripides and the truest representative of the *καλοκαγαθός*, at the highest period of Athenian culture, trained in all gymnastic and warlike exercises, and in the lighter accomplishments of music and the dance. In the Lateran there is a famous life-size draped statue found in 1839 in Tarracina (Anxur), and presented by Count Antonelli to Gregory XVI., who placed it in the museum. Mr. Donoghue has represented his Sophocles leading the mimetic dance—the ancient art of gesture wherein, by the poetry of motion, the thoughts of the heart found adequate and appropriate expression. The artist has realised this ideal with considerable success.

SHEFFIELD MUNICIPAL BUILDINGS.—THE SELECTED DESIGN.

LAST week we announced the result of Mr. Alfred Waterhouse’s award in this competition. His report was read at the Town Council meeting on Monday last, when the award was confirmed, Mr. Edward W. Mountford being appointed for the work. The following is the referee’s report:—

Sheffield, 19th June, 1890.

To the Improvement Committee.—Gentlemen, —I have very carefully examined the six sets of

designs sent in for the final competition:—1st. As to their conformity to the instructions. These I find have been observed, with a few slight exceptions of a trivial character, and which I consider ought not to be viewed as substantial infringements. 2nd. As to their excellence of plan. This more especially (a) in the grouping of the various departments; (b) in facility of access to each department from the street, and intercommunication between the offices themselves; and (c) in the adequate lighting of rooms and corridors. 3rd. As to their architectural merit without and within. 4th. As to their costs; and—5th. As to the facilities they present for future extension. I recommend the design No. 4 (59 in the first competition) for your adoption, as in my opinion combining these varied excellences more fully than any of the others. I consider that all the other designs are of great merit in one or more of these particulars, if not in all, and that there is every reason why their authors should receive the premium of £100 for each design, which was to be awarded to them in the final competition.—I have the honour to be your obedient servant,

ALFRED WATERHOUSE.

Mr. Mountford’s design was accompanied by a full descriptive report from which we take the following particulars of his plan:—The points to which I would invite the attention of the Council and their assessor are as follows:—1. The various rooms of the respective departments, with the few exceptions specified in the “Instructions,” are invariably placed upon the floor therein assigned to them. 2. Each of the four fronts having a central entrance, with a closely adjacent staircase, direct access to every part of the building is obtainable from either of the surrounding streets. Moreover, each department, being contained wholly in the space between two of these entrances, or the stairs leading therefrom, may be reached without the necessity of traversing any other department. 3. The whole of the official or state apartments, including the three large committee rooms and the grand staircase, may be shut off and used independently of the remainder of the building without in the least degree interfering with the working of the business departments. 4. All rooms and corridors are thoroughly well-lighted throughout. I believe, as an absolute certainty, that there would not be a dark corner in the building, excepting in certain unimportant parts of the basement, and this without the necessity of using “borrowed” light. 5. Future extension is amply provided for, as is shown upon both plans and elevations, and, forming part of the general scheme, will be an absolute improvement to the building both internally and externally. Exclusive of corridors 2,270 square feet additional space is provided, upon each of four floors, equivalent to 28 new offices, each measuring 20ft. by 16ft. *Architectural Character.*—The style may most safely be described as Modern Renaissance, and as far as possible it is English in character and detail. So far as I know the design is as original as may be in the nineteenth century—that is to say, no existing building has been consciously copied either in whole or part, excepting, of course, in the matter of detail of doors, windows, &c. My idea has been to obtain the dignity essential for the municipal buildings of a great town, combined with the utmost convenience of internal arrangement and the largest possible amount of light for the interior. The first consideration has always been the convenience of plan, and in no case has this been sacrificed in order to improve the elevations. But these have not lost by this course of procedure, for, growing as they do naturally from the plan, they indicate externally the internal arrangements, and thus gain considerably in interest and variety. Throughout I have endeavoured to group the parts, so that they may look best in perspective, and upon this grouping, with its contrast of light and shade and general picturesqueness of skyline, I depend for my effect. My tower is 25ft. square externally, and rises to a height of 175ft. above the pavement; very moderate dimensions, but quite sufficient for the purpose. The lower part is kept plain and massive; higher up the design gradually becomes lighter and more picturesque. The clock has four dials, 8ft. in diameter, and would no doubt be an advantage to the neighbourhood. Beneath its shallow balconies are provided, giving ready access to the dials, of which they would not obscure the view. The upper story is open on all sides, and would

contain the bells, upon which the clock would chime the hours and quarters. The dome and surmounting fleche would be roofed with copper, and the whole crowned by a bronze statue representing Sheffield. I have suggested a figure of Vulcan as being very suitable. The small building and open gallery at foot of the tower is very useful in giving scale and apparent height to it, while the lightness and ornamentation of the gallery afford a pleasant contrast to the heavy masonry of the base of tower. *Principal or First Floor.*—This contains the mayor’s apartments and the rooms for town clerk, and is approached by four staircases, one from each entrance. The principal staircase (9ft. wide, with a rise of less than 6in. to each step) leads direct to the council-chamber and mayor’s reception-hall. The alteration in plan of this stair, in deference to your suggestion, is undoubtedly an improvement both to the staircase and hall, the latter being made much more open and dignified. The mayor’s apartments occupy the whole of the Pinstone-street front, the three state-rooms measuring together 157ft. by 35ft., exclusive of bays, with a clear height of 23ft. These can all be thrown into one grand hall when required, and, if desired, the openings between them may be made very much larger than shown in plans. A corridor, 11ft. wide, well lighted by windows and lantern-lights, as well as from the grand staircase, communicates with all these rooms, to facilitate the circulation of guests. An open gallery, entered from the mayor’s reception-room, is provided over principal entrance and another, opening out of dining-room, at the corner of the Pinstone and Surrey street fronts. These galleries, whilst adding considerably to the appearance of the principal front, would be extremely useful at elections or other similar occasions, as well as at large receptions or banquets. The council-chamber, approached directly from the grand staircase, occupies the centre of the site, measures 64ft. by 39ft., and is 30ft. in height. It is lighted by two large traceried windows at each end, and three upon the east side. The ceiling is flat, with moulded and enriched panels. The various committee and sub-committee rooms are placed in one corridor, close to the town clerk and council-chamber. The three large rooms adjoin the official or state apartments, and may be used *en suite* with them, while by closing the door across the corridor, near the head of the town clerk’s stairs, these, with the official apartments, are entirely severed from the departmental offices, and can then only be approached by the grand stairs. These committee rooms have, after the official rooms, the finest position in the building, and may, under ordinary circumstances, be readily approached from either of the four entrances. A business room for the mayor communicates with the suite of large committee rooms on the one side, and the town clerk’s office on the other, and is close to the council-chamber. The rooms are all close together, the town clerk’s own rooms being placed between his general office and the mayor’s business room, and at the same time close to the council-chamber and committee rooms. The department communicates, by means of the staircases, directly with the Surrey and Norfolk-street entrances, and is also accessible from the grand staircase, and that from Cheney-row. The committee rooms and town clerk’s offices are 14ft. in height. The engineer’s office, drawing office, and plan room, with lavatory, are placed on this floor as directed in the original instruction. They are close to the head of the stairs leading from the other offices of this department. *Ground Floor.*—The principal entrance from Pinstone-street is 20ft. in width, and 16ft. in height, having an inner glazed screen with swing doors in addition to the outer doors. Directly in front of entrance are the grand staircase and hall, the latter being 44ft. by 40ft., and 45ft. high. The domed ceiling of the hall is surmounted by an arcaded lantern light, having inner and outer skylights, the inner one panelled and filled with tinted glass. The borough accountant’s department extends from the left of the principal entrance to that from Surrey-street, being thus equally accessible from either. The general office is 62ft. by 47ft., exclusive of bay, and 16ft. high. The borough surveyor’s department is placed between the Surrey and Norfolk street entrances (approached from the latter by the stairs). The borough surveyor’s rooms now adjoin those of the district surveyor, having the clerk’s office upon the other side, with the drawing office beyond. All these rooms have a north light. Two strong rooms



are provided for this department, one in the basement (close to the foot of the stairs), and one on the ground floor. The sample room is amply lighted for use as an ordinary office. The water-works department occupies the space between the principal entrance and that from Cheney-row, the latter being useful for the workmen. The general office is 40ft. by 47ft., and 16ft. high. The rooms for general manager, assistant manager, and chief clerk all open directly out of it, as do also the strong room and telephone room, while the rooms for accountant and auditor adjoin each other, and are entered from the general office. *Materials.*—I have come to the conclusion that the most suitable stone for the outer walling is some one of the Huddersfield quarries. They have been well tested in Sheffield, and seem the best for resisting the influence of the smoke, while they have a very satisfactory appearance. In the internal courtyards I should like to face the walls with red brick and dressings of pink terracotta, but possibly a glazed brick of cream colour would be more suitable. The roofs I propose to cover with "brown" Broseley tiles, the fleche on upper part of tower as well as the smaller ones on roofs with copper, such of the wood framing as shows externally being of oak. Internally, the walls of entrance hall and grand staircase would be lined with stone, probably Bath and Doulting. The council chamber walls would be lined with oak panelling to a height of 13ft. from the floor, above that with stone ashlar. The traceried windows are proposed to be filled with coloured glass representing occurrences of local interest. The ceiling would be of fibrous plaster, panelled and enriched, and having an enriched cove. The floor would be of oak, and the fittings of the same material. In the principal fronts the lower parts of the windows would be filled with plate glass, the upper portions with leaded glass, the reception rooms having heraldic devices worked therein. *Heating and ventilating.*—I should heat this building on the low-pressure system of steam heating. The boilers, placed in the heating chamber shown on plan, would be of the Cornish type, with cross tubes and set in brickwork. Pipes would be carried in trenches under the basement floor, and thence in chases in the walls would rise to the radiators in the various corridors, staircases, and rooms to be heated. I should propose to use patent radiators, proportioned to the sizes of the room or space to be heated. *Drainage.*—The whole of the drainage would be arranged upon the most approved modern system. The pipes would be of glazed and socketed stoneware, jointed in cement, laid in a bed of concrete, and everywhere possible kept outside the building. At the principal junctions man-holes or inspection chambers would provide easy access to the drains, while there would be proper inlet and outlet ventilators, the latter carried above the roofs at all desirable points. *Cost.*—Foundations, £5,000; tower, £5,000; cubic contents of main buildings, 1,683,833ft. at 10d., £70,159—total, £80,159. Next week we shall illustrate other drawings, and thus continue until all the six competitive designs have been given.

#### MESSRS. DAVID NUTT'S NEW SHOP IN THE STRAND.

In consequence of the terms of a long lease and the requirements of increased business, it was found necessary last year to considerably alter and rearrange the two buildings which have so long been in the occupation of Messrs. David Nutt, the well-known foreign and archaeological booksellers in the Strand. The premises at the rear were entirely rebuilt, and a new staircase and lift were erected between the two houses. The old shop gave place to the new one, which we illustrate to-day. It is divided into two, one for retail and general business, the other for wholesale trade. The woodwork of the front is in dull polished oak. Above the transom the lights are in lead, quarry shaped patterned glazing in clear glass. An arrangement for sun blinds is specially contrived. Messrs. Allen and Sons, of Kilburn, were the builders. Messrs. Burt and Potts supplied the metal casements. Mr. Maurice B. Adams, F.R.I.B.A., was the architect.

#### NETHERALL.

This house was built a few years ago for Sir William Thomson, the eminent Professor of Natural Philosophy in Glasgow University, who is also well known for his discoveries and inventions connected with electricity. It is built near Largs, Ayrshire, on steep ground, commanding

an extensive view of that part of the Firth of Clyde. The walling is of a dark bluish grey whin, neatly dressed, and key drawn or pointed to the individual shape of each stone. The dressings are of dark red freestone, and the roofs are covered with green slates. The style is of that French character which was early seen in Scotland, in which the characteristic crow-steps are wanting; but their place is supplied by plain skews or water tables, and a roll at the apex of the gables. Not far off are the stable offices, about half-way between the house and the gate lodge. We give a view of the house from the south-east, showing the conservatory and the stair from the drawing-room down to the garden terrace; also a sketch plan, and a sketch of the entrance front of the gate lodge. The cost of the whole work was about £12,000, and it was carried out from the designs of Mr. Campbell Douglas, F.R.I.B.A., of Glasgow.

#### A PUPIL TEACHERS' CENTRE.

The drawing published this week is that of a pupil teachers' school, which has been erected by the School Board for London at Hackford-road, Brixton. It consists of three classrooms on the ground and first floors respectively, the classrooms being planned with left lighting, and being fitted with single desks, and containing accommodation for 216 pupils. On the ground floor the classrooms open into a hall 44ft. 6in. by 30ft., and on the first floor the space over the hall is occupied by a large chemical laboratory separated from the classrooms proper by a wide corridor. On the upper floor is a drawing classroom with an open and covered gymnasium. There are separate staircases for male and female students, with cloakrooms, lavatories, and rooms for instructors and general superintendent. The sexes are mixed in the classrooms, but are separated directly they get beyond the proper rooms for instruction. The building was erected from plans by the board's architect, Mr. Thos. J. Bailey, in 1887—8, at a cost of £6,325 10s. 4d.

#### CHIPS.

The foundation stone of the new town-hall for Cleckheaton was laid on Saturday. The building is being erected at the junction of Church-street and Tower-street, and will cost £8,120. It is of stone, Free Renaissance in style, and includes, besides municipal offices, a hall seated for 1,000 persons. It is being built from plans by Messrs. Mawson and Hudson, selected in competition, and was illustrated in our issue of the 25th April last.

On Monday week the memorial stones of a new Wesleyan mission hall were laid at Old Hednesford. The building is of red brick, with tiled roof, and will find accommodation for about 200 people. The estimated cost when completed is over £400. Mr. T. Mason, of Hednesford, is the builder, and Mr. F. W. Wheatley the architect.

Mr. T. R. Dickinson, A.M.I.C.E., deputy city surveyor of York, has been appointed borough surveyor, waterworks engineer, and inspector of nuisances to the Corporation of Hertford. Eighty-eight applications for the post were received.

Mr. Justice Mathew and a jury tried on Monday an action for slander brought by Mr. A. Millar, clerk to the vestry of St. George's, Southwark, against Mr. J. G. Tatum, who had been contractor to the vestry for smith's work. The defendant had made accusations against the plaintiff, arising out of the vestry ceasing to accept his tenders, and the jury gave a verdict for the plaintiff, with £20 damages.

A systematic investigation of the Roman city of Silchester, near Reading, the inclosed area of which is nearly a mile and a half in circumference, was commenced on Monday, under the direction of Mr. G. E. Fox, Mr. Mills Stevenson, and Mr. W. K. Foster, Fellows of the Society of Antiquaries of London. Mr. Walter Money, F.S.A., local secretary of the society for Berks, and a member of the executive committee, was also present.

On Wednesday week, at the Town-hall, Cardiff, Mr. Samuel Joseph Smith, of the Local Government Board, held an inquiry on the application of the Cardiff Town Council for powers to borrow £8,900 for purposes of street improvements and the reconstruction of sewers. Mr. Harpur, the borough engineer, gave evidence to the effect that the reconstruction and deepening of the sewers in Butetown was absolutely necessary, the present sewers being too congested, and the offensive smells which come from them highly injurious to health. While the streets are disturbed in reconstructing the sewers, the pebble roads will be repaved with macadam. The other improvement contemplated is the widening of Penylan-road.

#### COMPETITIONS.

**BRISTOL.**—At a meeting of the Finance Committee of the City Council held on Monday, the members had before them the subject of the municipal buildings, which came up upon the presentation of a ground plan of the Council House site, including the portions running into Small-street, where it is thought the sanitary section of the buildings might be placed, and all the property which the Corporation have in Broad-street. It was resolved to advertise for plans in open competition, and having in view the importance of the work, the committee further resolved to give substantial premiums. It is believed that plans will be invited for buildings to cost some £80,000.

**LEEK.**—The sub-committee appointed to deal with the erection of the new police station at Leek has reported to the Standing Joint Committee of the Magistrates and County Council upon the designs submitted by several leading Staffordshire architects in response to the Committee's invitation. We learn that the report, which was, we believe, adopted by the Joint Committee at its last meeting, recommends the engagement of Messrs. W. Sugden and Son as architects for the new buildings in Leonard-street, subject to certain modifications of details in their plans proposed by the Chief Constable and the County Surveyor, without increase in outlay beyond the original estimate. Besides a large administrative block, there will be superintendent's and married sergeant's houses, and stabling, &c.

**LINCOLN.**—The directors of the Lincoln Liberal Club Company recently offered premiums for the best plans for their proposed new club-house, and seventeen architects competed for the sums offered—viz., £20 for the best selection and £10 for the second, sending in all twenty sets of plans. On Tuesday week a general meeting of the members was held, when the choice of the directors was approved of. The mottoes accompanying the various plans were then opened, and it was found that No. 1 set had been sent by Messrs. T. Sington and B. W. Brameld, of Manchester, and No. 2 set by Mr. J. H. Cooper, of Lincoln, who was the only local architect competing. The first-named firm forwarded three sets of plans. The estimated cost of a club built to their selected plans is £2,000.

**WATFORD.**—Designs by Mr. C. P. Ayres, of Watford, architect, have been selected in a limited competition by the Watford School Board for new schools, which are to be erected at once.

New banking premises for the Bucks and Oxon Union Bank (Limited) were opened last week at Thame. Mr. C. P. Ayres, of Watford, was the architect; Mr. Kinglerlee, of Oxford, the contractor; and Mr. H. G. Rogers acted as clerk of works.

A reredos, which has been placed in St. Catherine's Church, Scholefield-street, Nethells, Birmingham, as a memorial of the first vicar of the parish, the late Rev. T. H. Nock, was dedicated on Saturday. The reredos is executed in wainscot oak, and has been erected by Messrs. Jeffery and Son, of Forster-street, Birmingham, from designs by Messrs. Osborn and Reading, architects, Bennett's-hill, in the same city, who were the architects of the church. It consists of an upper and a lower series of Gothic panels, in harmony with the style of the church, the upper panels having crocketed gables, terminating in foliated finials. On the largest four panels are inscribed the Ten Commandments, the Apostles' Creed, and the Lord's Prayer. On one of the lower panels there is a memorial brass bearing an inscription.

Messrs. C. Isler and Co., of Southwark, have recently completed artesian bored-tube wells for the following brewers:—Mr. J. A. Chadwick, Burton brewery, Wrexham, where the depth reached is 331ft., and the water rises 10ft. above the surface; at Mr. J. W. Wright's brewery, Leeds, an inexhaustible supply has been tapped a few yards deeper than the depth of the original well—formerly the supply could be exhausted after a few hours' pumping; at Messrs. Ridley, Cutter, and Firth's, Manor brewery, Newcastle-on-Tyne, an inexhaustible supply has been obtained; also at Messrs. Carter and Co.'s Mineral Water works, Bristol. At Watford, close to Messrs. Wells' brewery, a 120ft. tube well has been completed in a little over a week. Among the other works Messrs. Isler are engaged upon may be mentioned the Ely Brewery Company, Ely, near Cardiff; the Kelsterton Brewery Company, Kelsterton, Flint; Mr. Kops's brewery, Fulham, S.W.; at Sturry, near Canterbury; and at Northfleet, Kent.



## Building Intelligence.

**BRADFORD.**—On Saturday the new church of St. Chrysostom, Bolton-road, Bradford, was consecrated by the Bishop of Ripon. The new church, which has been erected at a cost of £2,000, from designs prepared by Messrs. T. H. and F. Healy, Bradford, is in the Perpendicular style. It occupies a prominent position on the valley side of Bolton-road, just above the junction with Wapping-road. The site being a disused quarry, there were special difficulties to contend with in forming the foundations, which extend to a depth of 40ft. below the floor of the nave. The interior arrangement is that of a nave of five bays, with a south aisle and shallow transepts, a chancel and side chapels, the organ being placed in the northern chapel. There is also a small clergy vestry, with stair which conducts to a larger vestry for the choir, and a parish room in the basement. Adjacent to the south chapel is a turret, hexagonal in form, battlemented and crowned with a slate spire. The church affords seating accommodation for 590 persons. The seats, which are open, are of pitch-pine, but the chancel stalls and fittings are of oak. The pulpit is of stone, traceried and carved in accordance with the style of the building. Mr. G. H. Elliott was the clerk of works.

**CHEPSTOW.**—The parish church of Chepstow is about to be re-seated and restored from plans prepared by Messrs. Seddon and Carter, of Westminster and Cardiff. The works will include the restoration of the 12th-century nave, and its lowering to the original level, the rebuilding and extension of the chancel, the restoration and rebuilding of the transepts, the building of new aisles on the old foundations, the removal of the organ from the west gallery, reopening of the tower arch and west window, and the external repair of the tower. The church is also to be re-seated. This will necessitate the loss of a few seats; but the accommodation at present being 1,156 in a population of 3,000, the reduction will be scarcely felt. The estimated cost is: Nave, £1,050; transept and chancel arches and roof, £1,200; and chancel £2,000—total, £4,250. Towards this amount £1,650 is in hand. It is proposed to proceed with the work as funds permit, beginning with the nave and continuing with the crossing of the transepts and chancel and the transepts and aisles. It is expected that the work will cover several years. A faculty for the works in the nave and chancel was granted by Mr. Chancellor Ollivant on Friday.

**EDINBURGH.**—The plans for the enlargement of Dalry Public School have now been approved by the Scottish Education Department, and the work is to be commenced at once. At present the building can accommodate 985 pupils, on the ten and eight square feet basis, but when the alterations are completed no fewer than 1833 pupils will be provided for. The enlargement, the plans for which have been prepared by Mr. Robert Wilson, the architect for the Edinburgh School Board, consists in the erection of an additional story, the present building being restricted to the ground flat. Though the area covered by the building will remain practically the same, a good deal of re-modelling will require to be carried out upon the existing walls and floor, the new plans including the introduction of a large central staircase. There will be in all twenty-one class-rooms—eleven on the ground-floor and ten upstairs. Messrs. Kinnear, Moodie and Co. have the contract for the entire alterations, which will involve an expenditure of £10,978.

**HERNE BAY.**—The new R.C. Church of "Our Lady of the Sacred Heart," Herne Bay, was opened on the 26th inst. The plan consists of nave, sanctuary, baptistery, and two aisles, and contains three altars and two confessionals. There is a priest's sacristy with organ chamber over. In addition there is a large refectory for the community, with choir over and a tribune opening on to sanctuary. The interior length is 90ft., the width 44ft., and the height to apex of ceiling 40ft. The spire is 97ft. high. The church is built of Purbeck stone, with Bath stone dressings, and the style of architecture adopted is Early English. The architect is Mr. Albert Vicars, of Somerset Chambers, 151, Strand; the contractor is Mr. Adams, of Herne Bay.

**LONDON COUNTY COUNCIL.**—At the weekly meeting of the County Council on Tuesday, the Main Drainage Committee reported that they hoped before this to have received the report of Sir Benjamin Baker and the chief engineer upon the sewerage system and upon the approximate cost of conveying the sewage to an outfall upon the coast. But the committee did not now expect that this report would be received before the recess, or that it could be in their possession in time to admit of Parliamentary notices being given in November if any scheme shall be recommended and accepted requiring such procedure. The committee, therefore, were forced to the conclusion that no alternative system, if such were constructed, could be in operation before the expiry of six years from the present time. Meanwhile they were assured that the Crossness works would be completed and in full operation next summer. This had led the committee to consider the provision of another sludge vessel, and they recommended, "That tenders be obtained for the construction of a sludge vessel upon the model of the older and less costly ship, with certain modifications to be described by the engineer." The recommendation was agreed to. It was decided that the salary to be paid to the Superintendent of Parks and Open Spaces should be £500 a year, and that it be not a necessary condition that he should be a professional landscape gardener. Lord Compton explained that the Housing of the Working Classes Committee had refused to sell a piece of land to the Guinness Trust without first seeing the plans for the dwellings to be erected thereon; and as the trustees declined to show the plans, the negotiations came to an end. The Council sustained the action of the committee.

**ST. ANNE'S.**—The new Catholic church at St. Anne-on-the-Sea was opened on the 15th inst. When completed the edifice will consist of chancel, nave, and two chantry chapels, baptistery, tower, and sacristies. The style is pure Early English, and the whole is designed on a massive scale. Up to the present the portions completed are chancel, chapels, chantries, five bays of nave, and sacristy, the latter being connected with the new presbytery by a covered corridor. The walls of the building are Haslingden shoddy with Longridge stone dressings, and the roof is of oak. The church accommodates about 250 worshippers. The work has been carried out by Mr. W. Eaves, of Blackpool (Messrs. Challoner and Sons being the sub-contractors for decorating and plumbing), from the designs of Messrs. Pugin and Pugin, of Westminster, under the personal direction of Mr. Paul Peter Pugin, K.S.S. It is estimated that the cost of the whole building will be over £7,000.

**SOUTH SHIELDS.**—The formal opening of the Marine Parks at South Shields took place on Wednesday. They cover a site of about thirty-one acres, divided in the centre by the pier promenade, thus affording the means of providing two distinct parks, known as the North and South Marine Parks respectively. The former has been laid out under the supervision of Mr. John Burns, and the latter under that of Mr. J. Peebles. When the work was commenced, the Corporation let the contract to the late Mr. Marshall for levelling and preparing the ground, and for this purpose a great quantity of ballast from the adjoining hills was removed. After this had been done the Corporation undertook the work, and were enabled to employ nearly 300 men who had been thrown idle during a serious trade depression. The outlay has been about £2,200. Between the parks is placed the memorial to William Wouldhave, the inventor of the lifeboat, designed by Mr. Morton and carved by Mr. J. F. Scott, of South Shields. It is three stages in height, and contains a clock with four dials, the work of Messrs. Potts and Sons, of Leeds. This memorial was also unveiled on Wednesday.

**SOUTH SHORE, BLACKPOOL.**—The new church of St. Cuthbert, in Lytham-road, was consecrated on Sunday. The church under notice has been erected to meet the wants of South Shore, a part of Blackpool which is rapidly growing. The building is Gothic in style, and consists of a lofty nave and chancel at one height, with aisles, divided off by polished granite columns with red-stone capitals; each aisle terminates in a side chapel. An organ gallery runs across the end. Yorkshire wall-stone has been used for the exterior, with Rainhill dressings and a plinth of Longridge stone. Mr. O'Byrne, of Liverpool,

was the architect, Messrs. Brown and Son, of Salford, being chief contractors, and Mr. Howarth, of Blackpool, clerk of works. The present accommodation is for about 500 worshippers, but the site will permit of a large extension southwards, and the addition of a tower. The outlay to date has been £6,500.

**SWANSEA.**—The memorial chancel and transepts just added to St. Thomas' Church were consecrated on Tuesday week by the Bishop of St. David's. The nave and aisles of this church were built in 1887, and the portions now added (which have been contributed entirely by Mrs. Llewellyn, of Baglan Hall, in memory of her father) consist of chancel, chancel aisles, south transept, tower, and spire. The chancel is 42ft. by 20ft. 6in., making the total length of the church 133ft. The chancel arch opening to the nave is 25ft. high and 17ft. wide. The tower is finished with a spire, and its total height from the ground is about 115ft. Erected within the tower is a set of Harrington's tubular bells and a public chiming clock with dials on each face of the tower. The style of architecture is that obtaining in the reign of Henry III. The architects were Messrs. Nicholson and Son, Hereford, and the builder Mr. John Wood, Malvern.

## ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

**ARCHÆOLOGICAL AND ARCHITECTURAL SOCIETY OF DURHAM AND NORTHUMBERLAND.**—The second meeting for the year 1890 was held on Friday last at Edlingham, in the uplands of Northumberland. The members assembled at Alnwick Station about noon, and drove from the White Swan Hotel to Edlingham. Here they examined the church and the castle, of which the president, the Rev. Canon Greenwell, gave a lucid account. Afterwards the party proceeded to Whittingham and inspected the church, where the lower portion of the tower still retains some characteristic pre-Conquest features. In the village is one of the fortified houses, usually called pele towers, so frequent on the Border. The party then drove back to Alnwick, and dined together at the White Swan Hotel.

**BRITISH ARCHÆOLOGICAL ASSOCIATION.**—At a meeting of the local committee of the 47th annual congress of this society, to be held at Oxford on Monday, the 7th of July next, the Mayor of Oxford in the chair, it was resolved that the mayor should invite the Earl of Jersey, as Lord-Lieutenant of the County and Lord High Steward of Oxford, to preside at the opening of the congress and deliver a short address, in the place of the Earl of Carnarvon, D.C.L., the president of the society, whose recent severe illness will prevent his lordship from undertaking the duty. The proposed programme of the ten days' doings was also settled.

**LINCOLNSHIRE AND NOTTINGHAMSHIRE ARCHITECTURAL SOCIETY.**—Holbeach was this year the head-quarters of the annual excursion of the Lincolnshire and Nottinghamshire Architectural and Archæological Society. The proceedings commenced on Wednesday week, and concluded yesterday (Thursday). On the morning of the first day a short service was held in Holbeach Church. After a brief inspection of the church the party proceeded by the 8.58 a.m. train to Luton Church. After a stay of ten minutes here the journey was resumed to Long Sutton. At the station there were conveyances waiting. A start was made, and in 25 minutes Tydd St. Mary was reached. A description of the church was given by the Bishop of Nottingham. The party then proceeded to Long Sutton, Gedney, Fleet, Whaplode, All Saints' (Moulton), and Weston St. Mary churches. The annual dinner was held in the evening at the Chequers Hotel, the Bishop of Nottingham presiding. The annual meeting was then held. Mr. Foster read a paper on "Moulton," and the Rev. G. W. Macdonald one on "Holbeach." A paper was also given on "Rood Screens." On Thursday the churches visited were Terrington, Walpole St. Peter's, West Walton, and Walsoken.

**SOUTH WALES ART SOCIETY.**—The members of this Society to the number of 60 had a field day on Saturday at Margam Abbey. The mansion adjoining the ruins is Tudor in style, and was built half a century since for the late Mr. R. C. M. Talbot; it contains some oak furniture of great interest, paintings by Paul Veronese,



Vandyck, and other masters, and the main staircase is hung with Flemish tapestries. Assembling in the roofless chapter-house of the abbey, the members were addressed by Mr. T. H. Thomas on the inscribed stones in the grounds, the largest group of early carved stones in the Principality. Mr. Edwin Seward, R.C.A., afterwards gave a short history of Margam Abbey. Margam was, he said, once one of the most important abbeys in the kingdom. The present church occupied the site of six or eight bays of the original edifice, of which the only relic now was the chapter-house in which the party were then standing. It was founded about 1147 to 1150, and probably occupied 20 to 25 years in building, the chapter-house being later work. Robert, Earl of Gloucester, was its founder, and it was occupied by the Cistercians. The building was an example of simple and chaste Early English in its purest style, and up to within a year of the present century the chapter-house made a picture such as imagination could now only suggest. In 1799 the whole mass of the vaulted roof fell in, and the place became a ruin, whereas the outlay of a small sum would have saved it. The abbey itself was of noble dimensions, having been 250ft. in length. It was purchased, at the Dissolution of the Monasteries, by Sir Rice Mansel, an ancestor of the present possessor, and he, in 1552, altered part into a dwelling-house; but in 1772, seventeen years before the chapter-house fell in, the dwelling-house was demolished. Unless something were done to prevent the ravages of the ivy and trees growing on the ruin, there would in fifteen or twenty years be very little left. Neglect in years long past had led to grievous loss of so much that was beautiful and valuable, and he thought it would be wrong of them to see the danger impending and yet to utter no warning.

#### CHIPS.

The parish church of Quinton, near Birmingham, was reopened on Thursday, the 19th inst., after partial restoration. The whole of the floor has been taken out and new substituted, that of the chancel being laid in Ruabon tiles, with steps of Hopton wood stone. The church has also been re-seated, and also other much-needed work executed. The architects were Messrs. Osborn and Reading, of Birmingham, and the contractors Messrs. James Smith and Sons, also of Birmingham.

The County Council of Perthshire have elected Mr. James S. Robertson as road surveyor for the western district.

A reredos has just been erected in St. Peter's Church, Westleigh, by Messrs. T. Brown and Son, of Manchester.

Mr. G. D. Leslie, R.A., has just completed a signboard for the Row-barge public-house in St. Leonard's-lane, Wallingford. The signboard represents an old State Barge rowed by six oarsmen; underneath the canopy in the stern are seated the Mayor and Corporation, and the mace-bearer is in the bows, while a large red flag, with a portcullis, the arms of Wallingford, identical with Westminster, flies behind.

The London and North-Western Railway Company have consented to pay £450 to Mr. Evan Griffith, contractor, Tanygrisiau, Festiniog, who, in October last, had his leg fractured, through the collapse of an omnibus belonging to the above railway company, and has since been unable to attend to his duties.

The old Golden Lion public-house at Plymouth has been reconstructed and converted into an hotel. Mr. J. H. Keats, architect, prepared the plans for the rebuilding of the premises. Messrs. A. R. Lethbridge and Son, builders, secured the contract for the sum of £3,200. The premises were pulled down and no less than 2,500 tons of rubble and shellert excavated for the purposes of constructing cellars. They are ventilated with special air shafts, and are 105ft. long, 23ft. wide, and 9ft. 6in. deep. The building is of four stories. The principal bar extends the width of the whole site, and is 64ft. long, is lit by means of a lantern and dome, and is furnished in mahogany and pitch-pine.

We understand that the Queen intends to build a State banquetting-hall at Osborne on a grand scale. This is believed to be on account of the great inconvenience which is experienced when Her Majesty entertains distinguished personages, and which was particularly felt at the time of the German Emperor's visit last year. We believe that operations have already commenced and that the site is on the west side of Osborne House, and that the building will almost form a quadrangle of the space in front of the Queen's private entrance.

#### TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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#### ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

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#### SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. All Situation Advertisements must be prepaid.

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

#### NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLII., XLVI., XLIX., LI., LI., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. W. and Son.—H. and Co.—T. H. S.—Y. and Co.—W. J. F.—A. de la Z.—S. A.—G. H.—H. H. B.—J. L.—H. and G.—S. B.—C. A. J.

## Intercommunication.

#### QUESTIONS.

[10303].—Area of Segment of Circle.—What is a simple method of obtaining the area of a segment of a circle?—ARTHUR SHAW.

[10304].—Architects and Art Decorators.—F., a firm of art decorators, are invited by B., an architect, to submit designs, working drawings, and estimates for elaborate internal fittings. B. hands tracings of same over to the contractor, who executes the work from F.'s designs and drawings. What remedy has F. against B. or his client?—F.

[10305].—Chemical Action in Roof Metals.—I should be obliged if one of your experienced readers would inform me what, if any, chemical action would take place in the contact of iron, zinc, and lead in the case of a glass roof composed of iron bars and zinc capping, with a lead capping at end bossed round same and extending over ridge, and what would be the result if any action took place?—LUX.

[10306].—Tall Chimney.—I would feel greatly obliged if some of your readers (perhaps Messrs. Bancroft) would kindly inform me as to which are the best materials to employ in the construction of ornamental top of a tall chimney 180ft. high; heat at top about from 600° to 700°. I would like opinions re advantages or otherwise of terracotta.—J. T.

#### REPLIES.

[10301].—Concrete.—There is no reliable rule to determine thickness of concrete foundations, because the strength of a beam of concrete, which we may suppose the foundation to be, would depend on the bearings or nature of subsoil, or the distance apart of two points of support. A thickness of 2ft. would certainly be twice as strong for the same width as a thickness of 1ft. A tenth of the crushing weight might be used with safety for brickwork; but care should be taken that the bricks have all been tested to the required strength.—G. H. G.

[10302].—Schools.—Robson's work on Schools will furnish "Evans" with examples. The Education Department gives 800ft. as minimum space per scholar, or 8sq.ft. for the floor space. For senior schools the floor area is about 10ft. For classrooms the requirements allow not less than 15ft. super. of floor per pupil.—G. H. G.

#### LEGAL INTELLIGENCE.

ATTEMPT TO SET ASIDE AN ARCHITECT'S AWARD AS ARBITRATOR.—A motion was heard on Monday by Mr. Justice Grantham (sitting by consent with all the powers of a Divisional Court) to set aside an award in the arbitration between Ward and Cave. E. J. Cave employed one R. Julian in large building operations, and advanced him sums from time to time. In August last Julian became bankrupt, and Cave took up the buildings himself and continued them. Questions arose between Cave and Ward, Julian's trustee in bankruptcy, as to certain omissions and additions by Julian in respect of 16 houses in High-street, Hampstead, and 19 others in Fitzjohn's Promenade, Finchley-road, and as to certain jobbing work and removal of clay. In October, 1889, these questions were referred to the arbitration of Mr. B. Catherwood, architect, who in March of this year found in favour of Ward for seven or eight thousand pounds. After taking into account the sums advanced, there was claimed by Ward under the award a sum of £3,348. The grounds on which it was sought to set the award aside were that the arbitrator had, on various occasions, allowed his clerk, Windsor, to go round the buildings in company with Julian, and without, on behalf of Cave, measuring and inspecting, and that the arbitrator had acted on his report; also that the arbitrator ought to have made a personal inspection of the premises, instead of deputing the work to his clerk. There was also the objection that the award was not final. The affidavits in support of the motion stated that a representative of Mr. Cave was always present with Julian when he and Windsor were together on the buildings. These affidavits also negatived most of the other points set up. Mr. Justice Grantham observed that it was often the case that when an award was given against a man for a larger sum than he expected, he grumbled. The mere fact that Julian was on the premises with the arbitrator's clerk did not show that evidence was taken behind the back of the parties. The arbitrator, who had made an affidavit in support of the award said, in cross-examination, that he thought he was at liberty to ask Julian whether he admitted matters on the list of omissions furnished by Mr. Cave, even though Mr. Cave was not there and not represented. He had held meetings on February 21 and 22, when he went through with Mr. Cave those items on the list that Julian disputed. He had the drawings, and he could tell without going into the houses what ought to be allowed for each. The list of omissions was almost correct. There were very few cases where the question of the quality of the work was raised. As to one of the sets of houses, Mr. Catherwood admitted that he had not been inside, and that as to what was actually done in them he had no other information than what his clerk Windsor had given him. Counsel for Mr. Cave then addressed the Court as to the finality of the award. One question left to the arbitrator was as to the sum to be allowed for certain jobbing work. The arbitrator had recited in his award, though he had not mentioned it in his affidavit or in his evidence, that this question was withdrawn by consent from his consideration. Another point left to him separately was "the allowance proper to be made to Mr. Cave in respect of getting out and carting clay for foundations of the above-mentioned houses." As to that the award found as follows:—"There is no sum proper to be allowed to the said E. J. Cave in respect of getting out and carting clay for the foundations of the above-mentioned houses, other than and so far as the same is taken into account in the sums before awarded in respect of the several sets of buildings." It was urged that it was the arbitrator's duty to find the "proper allowance." This finding did not do that, and what was the "proper allowance" was a matter left undecided, or, at any rate, uncertain. If an award was not final or uncertain it should be set aside. Mr. Justice Grantham refused to set the award aside. It was a case where a considerable sum was found against a man, who now tried to get a case against the award. Judgment was then by consent ordered to be entered for the £3,348 on the summons for that purpose, which had been adjourned to come on with the motion to set aside.

THE PERILS OF A TIMBER YARD.—GILBERT V. AVISS.—In this action, held on Monday, before Mr. Justice Mathew and a special jury, the plaintiff, J. C. Gilbert, builder and contractor, sued Robert Aviss, timber merchant, Putney, for damages in respect of personal injuries sustained by the former by reason of alleged negligence on the part of the servants of the latter.—The defendant denied such negligence, and alleged that the plaintiff was himself to blame.—According to the plaintiff's case, he went to the defendant's yard in August last to get some boards, entering the yard at the invitation of the defendant's foreman, and while the boards were being looked out by himself and a workman at a particular stack of timber, another stack, in consequence of defective stacking, fell upon them, injuring both his legs, one of which was broken. The case for the defendant was that the plaintiff was in the yard not by the invitation of the defendant or his servants, but in the face of a notice



exhibited on a board warning people, in case of accidents, not to go into the yard, and that it was through his own handling of the timber, and not through defective stacking, that the stack fell upon him and caused the injuries complained of. A board bearing the notice referred to was produced in court; but the plaintiff said he had not seen it. —The jury, after consultation, returned a verdict for the plaintiff for £75. —His Lordship gave judgment for the plaintiff, with costs, but stayed execution in view of an appeal.

**RE R. A. AND J. STEWART.** — This failure occurred in March, 1887, the bankrupts trading as timber merchants in Fen-court, City, and at New Brunswick. Proofs have been put in for £192,894, and a dividend of 3s. 4d. in the pound has been paid. The bankrupts recently applied for their discharge, and judgment was given on Saturday by Mr. Registrar Linklater. —His Honour said that the hearing had occupied eighteen days owing to the complicated nature of the case and the voluminous matters with which the Court had to deal. The bankrupts' course of trading was impeached upon various grounds, it being alleged that they had been guilty of rash and hazardous speculation, of trading with knowledge of insolvency, and other offences. Charges of fraud were also made. Prior to 1878 the bankrupts were in partnership with Mr. Guy, and in that year the partnership was dissolved, the Stewarts thenceforward trading in London as Stewart Brothers, and in Canada as R. and A. Stewart, their capital amounting to £40,000. Mr. Guy also went into partnership with Mr. Bevan, and the two firms carried on business separately until March, 1882. At first the Stewarts prospered, but not so the Guys, and in that year the business of the latter was taken over by the former. After reviewing the bankrupts' course of trading, the Registrar held that charges of fraud had been recklessly made, and he entirely acquitted the bankrupts therefrom. With regard to the charge of trading with knowledge of insolvency, he was of opinion that at the end of 1885 the bankrupts were insolvent, and if they did not know it, it was because they wilfully blinded themselves to their position. This charge was established, and the bankrupts had brought on their failure by rash and hazardous speculation in having improvidently taken over the business of Guy and Bevan in March, 1882, and in having embarked on a gigantic venture in relation to the Ottawa property. The bankrupts had more on hand than they could properly attend to, they were labouring under a mass of indebtedness, and their stoppage was inevitable the moment their credit was withdrawn. The charge of contracting debts without any reasonable expectation of being able to pay them had fallen to the ground, but the charge of having given an undue preference to the New Brunswick Trading Company had been made out. The failure was most disastrous for the creditors, and the bankrupts' course of trading was unjustifiable, but he was glad to be able to acquit the bankrupts of all charges of fraud. Their discharge would be suspended for five years from July, 1889, when the application was set down for hearing.

#### CHIPS.

A large clock with chimes has just been erected in the parish church tower, Oldbury, near Birmingham, which is fitted with all modern improvements so as to keep time with great accuracy. The dial is illuminated, and automatic apparatus is attached to turn the gas on and off. Messrs. John Smith and Sons, Midland Clock Works, Derby, have carried out the work.

On the 19th inst., Christ Church, the Quinton, Worcestershire, after restoration and rearrangement, was reopened by the Hon. and Rev. Canon Pelham, rector of Lambeth (formerly rector of Halesowen). The works have been carried out under the superintendence of Messrs. Osborne and Reading, architects, Birmingham, by Messrs. J. Smith and Sons, contractors.

A reredos has been placed in the church of St. Catherine, Nechells, Birmingham, as a memorial of the first vicar of the parish, the late Rev. T. H. Nock. The dedication was on Saturday last, when a sermon was preached by the Bishop of Worcester. The reredos is oak in panels, having carved canopied and crocketed gables between buttresses, and has been constructed by Messrs. Jeffery and Son, from designs by Messrs. Osborn and Reading, architects, Birmingham.

A new vicarage has just been completed at St. Arvan's, near Chepstow, Monmouthshire. The architects were Messrs. Osborn and Reading, Birmingham, and Mr. James Morgan, of Rockfield, Monmouth, was the contractor.

The scheme for making Berlin a port has come nearer to realisation of late. Its originators have just received permission to begin the preliminary works, with a view to connecting the capital with the Baltic and the North Sea by canals.

#### STATUES, MEMORIALS, &c.

**TAVISTOCK.** — By the will of the late Miss Bredall, directions were left that Mr. Harry Hems, of Exeter, should be commissioned to erect a memorial in the south or Clothworkers' Aisle at Eustachius parish church, Tavistock, in memory of the Bredall family. Mr. Hems has so far proceeded with the work that he has modelled the principal panel, which will be of white statuary marble, sculptured in high relief, and representing our Lord, just outside the city gate, bending over a poor woman who crouches against the wall with a child apparently sick unto death in her arms. The architectural accessories will be of polished and variegated alabaster, the whole being surmounted by the family arms and crest. The work is to be completed this year.

**THE SELLARS MEMORIAL.** — The memorial which has just been erected in Lambhill Cemetery, Maryhill, in memory of Mr. Sellars, one of Glasgow's best known architects, and who was the designer of the Glasgow International Exhibition, was unveiled last Friday. Designed by Mr. John Keppie, the memorial, which is Egyptian in character, is of red and grey granite, 14ft. high by 6½ft.

#### STAINED GLASS.

**BRISTOL CATHEDRAL.** — An addition is about to be made to the stained glass memorials in this cathedral, the Dolphin Society having undertaken to provide a new window in the north transept to the memory of Bristol's great philanthropist, Edward Colston. The new window will take the place of the existing window in the north transept, the removal of which is necessitated by its decayed condition. The design is by Mr. J. L. Pearson, R.A., architect to the Cathedral Restoration Committee, and the stained glass work has been entrusted to Messrs. Powell and Sons, of London, whose drawings have been submitted to the Dean and Chapter, and have received their approval. Running along the lower part of the window will be the memorial inscription, and above the six panels containing shields representing the arms of Edward Colston, the arms of the Society of Merchant Venturers, the badge of the Dolphin Society, the arms of the See of Bristol, together with those of the City of Bristol, and of Christ's Hospital, where Colston was educated. These shields will be surmounted by the Colston motto, "Go and do thou likewise," in connection with the six scenes of the parable of the Good Samaritan. The next tier will illustrate the Sermon on the Mount and Christ blessing little children, each subject being illustrated in three lights, and above this again there will be representations of six New Testament philanthropists — viz., the Centurion, St. John the Apostle, Joseph of Arimathea, St. Barnabas, St. Paul, and Cornelius. The canopies of these figures and the subjects below will be studies from examples of the 14th century. The upper tracery of the window will contain a design illustrative of Christ on His Throne surrounded by the symbols of the Four Evangelists. The new window will be of fine proportions, the dimensions being about 35ft. by 16ft., and a space of 17ft. will be allowed between the floor and the base. The work is already in hand. The Dean and Chapter have it in contemplation to re-open the long-closed north transept porch.

New electric works have been erected at Bushbury, and special attention has been paid to the ventilation, the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted through their improved air inlets.

The improvement commissioners of Mansfield considered at their last meeting a report on the water supply of the town, submitted by Mr. George Hodson, C.E., of Westminster and Loughborough. He condemns the present site of the works on the Southwell-road, and recommends that trial borings be made in the direction of Rainworth into the Bunter beds.

The Committee of the House of Commons to which the London County Council (General Powers) Bill was referred, decided on Tuesday that there was no reason for exempting the City from the operation of a Clause which provides that no building shall be erected above 70ft. in height without the written consent of the Council.

At the sale of the Perkins collection last week, Sir Frederick Burton purchased, for the National Gallery, a portrait of a Venetian nobleman for £289, by Pordenone, and "Ecce Homo," by Carlo Dolce, for £535 10s.

Mr. W. H. Stubbs, of Manchester, chief engineer to the Manchester, Sheffield, and Lincolnshire Railway Company, died suddenly on Monday while staying at Blackpool.

#### WATER SUPPLY AND SANITARY MATTERS.

**CARDIFF.** — The annual inspection by the Cardiff Corporation of the new reservoir in course of construction at Taff Fawr took place on the 19th inst. Mr. J. A. B. Williams, water engineer, explained the progress of the work, and stated that the operations, which had been going on for 4½ years, will be completed in about two more years. The contract was taken by Mr. John Mackay for £83,000, and the cost of the entire scheme will be about a million and a half. The Blackrock reservoir at Treherria, one of three balancing basins, was also inspected; it is of concrete, and is 120ft. by 70ft., and 12ft. in height, having a storage capacity of half a million gallons.

**STAPLEFORD AND SANDIACRE WATERWORKS.** — These works are now commenced, and a good supply of water has been found in the Bunter sandstone at a considerable depth. A steam-pump has been used to test the quantity of water, and 240,000 gallons a day has been pumped without any appreciable diminution. The engineer to the works is Mr. W. H. Radford, C.E., of Nottingham, and the contractor is Mr. W. Cooke.

**TAUNTON.** — Last week Mr. Arnold Taylor, an inspector of the Local Government Board, held an inquiry relative to an application from the Town Council for permission to borrow £9,000 for the construction of a new reservoir and other works in connection with the water supply of the town. The town clerk made a statement as to the population and ratable value of the town. He also mentioned that the receipts from water rates amounted in 1886 to £3,130, whereas in 1889 they reached the sum of £3,809, showing an average annual increase for the three years of £238. Mr. J. N. Taylor, engineer, explained his plan of the proposed new works.

**THE WATER SUPPLY QUESTION IN LONDON.** — Last week a conference was held at the St. James's Vestry Hall, Piccadilly, to secure to London municipal control over the water supply. The St. James's Vestry had convened the meeting, and presented an exhaustive report on the value of the water supply undertakings, with suggestions as to the acquisition of the powers now held by companies. A resolution was adopted, upon the motion of Mr. J. Beal, of the London County Council, seconded by Sir William Farrer, by which the meeting affirmed the necessity of the water supply of London being placed in the hands of a municipal body representative of the Metropolis. Mr. J. Beal moved a second resolution for requesting the Government to introduce forthwith a Bill to enable the London County Council to acquire the undertakings of the eight water companies now supplying London, or some of them, by agreement, or failing agreement, to create a board of arbitration to settle the terms of transfer by compulsory powers, or, failing both, to give powers for the establishment of an independent supply. This was seconded by Mr. May, of Islington, and the motion was adopted with several emendations.

#### PARLIAMENTARY NOTES.

**TRANSFER OF GAS AND WATER UNDERTAKINGS.** — In answer to Mr. O. V. Morgan, Sir M. Hicks-Beach said, last Friday: I am not aware that local authorities have any power to transfer gas or water undertakings acquired by provisional order or Act of Parliament without statutory authority; but provisions have been inserted in the Electric Lighting Orders, granted this Session, authorising local authorities to transfer their powers and liabilities to any company or person with consent of, and upon terms to be approved by, the Board of Trade. I am advised that such provisions are not *ultra vires*.

**FOOT PAVEMENTS.** — In answer to Mr. Rankin, Mr. Ritchie said, on Friday last: My hon. friend is, no doubt, aware of the decision of the Queen's Bench Division on the question as to the repair of footways of streets when such streets are main roads. I have no information as to whether it is the intention to appeal against the judgment in that case. But, however that may be, I cannot hold out any expectation that the Government will propose legislation on the question during the present Session.

The new altar cross which has been presented to St. Paul's Cathedral by the Duke of Newcastle is now in use. It is placed upon the high altar, and is upwards of 6ft. in height. The new wing or grille to the north side of the reredos has also been completed. The work consists of beaten iron and brass upon a base of dark-green marble. Both are from the designs of Messrs. Bodley and Garner.

The foundation-stone for the new building for the Royal College of Music, to erect which Mr. Samson Fox, of Leeds, lately gave £45,000, is to be laid by the Prince of Wales on July 8. It will be built on a site near the Albert Hall, the architect being Sir Arthur Blomfield.



## Our Office Table.

A MEETING will be held on Thursday next at 3 p.m., at the Mansion House, in support of the seventh International Congress of Hygiene and Demography, which is to be held in London in 1891. The International Congress of Hygiene and Demography has been held (biennially as a rule) in each of the following cities:—Brussels, Paris, Turin, Geneva, The Hague, and Vienna. The last of these was held at Vienna in 1887. Before the close of that congress a Permanent International Committee was appointed to decide on the time and place of meeting of the next congress of the series. On account of the fact that it had been decided to hold a Hygienic Congress in connection with the Paris Exhibition in 1889, it was resolved that the next International Congress of the series should be held in 1891, and London was chosen as its place of meeting. The time has now arrived to form a definite organisation, and to raise a fund to defray the necessary expenses. The aim of the congress is to awaken public interest in the progress of hygiene and demography, by which latter term is understood the study of the life conditions of communities from a statistical point of view; to afford persons interested in these subjects an opportunity of meeting, with the object of advancing their progress; and, by conference and debates, to elucidate questions relating to hygiene, demography, and public health.

THE 51st anniversary dinner of the Artists' Benevolent Fund, held on Wednesday night at Freemasons' Tavern, under the chairmanship of Sir Richard Temple, M.P., passed off very successfully. The annual report stated that during the past twelve months 49 widows and 16 orphans received annuities amounting to £1,077, and that since the institution of the fund a sum amounting to upwards of £53,000 has been distributed in relieving distress. Earl Derby responded, as president of the Fund, to the toast of the evening proposed from the chair, and a list of subscriptions and donations amounting to nearly £100 was announced.

An important improvement has been carried out at Gloucester Cathedral, at the suggestion of Sir J. E. Dorington, Bart., M.P., in the repair of the dilapidated and dangerous floor of the south transept. The whole floor has been taken up, the vaults repaired and filled in where necessary, and the entire surface of the transept levelled and covered with a bed of concrete 6in. thick. Every monumental slab that could be replaced has been so treated, and when from their perished condition this was impossible, they have been removed for preservation to one of the chapels of the crypt. The one remaining property required for the purpose of the improvement of the Cathedral approach has now been purchased; the company that has undertaken the widening of College-street will probably commence operations by the beginning of August.

A PICTURESQUE old tenement at the east corner of Cockburn-street and High-street, Edinburgh, is about to be demolished to make room for the new offices of the National Bank of Scotland. The old premises were built in 1689 by Robert Mylne, a nephew of the "master mason to the king," whose tomb stands in Greyfriars Churchyard, and himself held that same office. In its cellar it is said the Deed of Union was signed and sealed by the Commissioners, who had been driven out of Moray House by an infuriated mob. The building to replace it has been designed by Mr. J. M'Lachlan, York-place, Edinburgh, and is in the Scottish Baronial style, having the frontage to High-street of 30ft., and to Cockburn-street 60ft. An octagonal tower will be placed at the corner of the High-street and Cockburn-street, and will be carried up above the fifth story and finished with an embasured parapet. To the east of this, on the High-street front, a boldly projecting line of oriel windows is carried up from the first to the top floor, and is finished off with a crow-stepped gable. The oriels are each to be surmounted with a varied pediment, and on the first-floor level between the oriel and the tower is an open balustrade. We trust the building will be worthy of its interesting and important site.

THE death has been announced of Mr. Thomas Brown Jordan at the age of 82. Mr. Jordan, who was born in Bristol, began life as an artist, and, after turning his attention to physical

science, he established himself in Falmouth as a mathematical-instrument maker, and effected improvements in the dipping needle and the miners' dial. When Sir H. de la Beche was engaged on the geological survey of Cornwall, he made the acquaintance of Mr. Jordan, and obtained his appointment as keeper of the mining records, a position he held until 1845. Mr. Jordan invented a method of carving by machinery, for which he received the gold medal of the Society of Arts in 1847.

## Trade News.

### WAGES MOVEMENTS.

BRADFORD.—The dispute between the Bradford plasterers and their employers as to the demands made by the men for an advance of wages to 8d. per hour still continues. At a meeting of the master plasterers on Saturday it was decided to resort to arbitration, and this decision was communicated to the officers of the Plasterers' Association, who called a meeting of the men on Monday morning, when they resolved to stand out for their demand. The masters have previously offered the men 7½d. an hour, but this has been refused by them, their determination being to have the 8d. conceded. Originally there were about 200 men affected by the dispute, but now there are only 83 men on the books of the strike committee.

NORTHAMPTON.—A strike occurred on Saturday, affecting all the members of the National Operative Plumbers' Union in this town. The Master Builders' Association attempted the enforcement of a code of working rules to apply to all sections of the building industry. The plumbers claim the right to separate the code, in which the chief demands are for pay and a-half for overtime, not more than one apprentice to two men, not more than three apprentices in one shop, and five years' apprenticeship. The Central Union promises support to the men, who are hopeful of success.

### CHIPS.

The board schools, St. Alban's, are being warmed and ventilated by means of Shortland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

Among the adjudications in bankruptcy announced in Tuesday's *Gazette* the name appears of Hildebrand Attwood Wooster Reeves, of East Grinstead, architect.

The Oswestry Castle Grounds, which have been restored and adapted to the purposes of a public recreation ground and arboretum, chiefly by public subscriptions in commemoration of Her Majesty's Jubilee, were formally opened on Tuesday.

The parish church of Mexborough is about to be restored and enlarged by the addition of a north aisle. Mr. E. Isle Hubbard, of Rotherham, is the architect.

For the erection of a new ear and throat hospital in Edmund-street, Birmingham, the tender of Messrs. Gowing and Ingram has been accepted at £4,800. Messrs. Cossins and Peacock, of Colmore-row, Birmingham, are the architects.

The hotel erected by the Joint Station Committee at Perth was opened for business on Monday. Built from plans prepared by Mr. Andrew Heiton, architect, Perth, and costing about £12,000, it is Flemish in style.

The new Wesleyan chapel at Swinton, in the Irwell-street circuit, Manchester, of which the foundation-stones were laid on Saturday, will cost £6,100, and will provide accommodation for 870 worshippers.

The corner stone of the new police courts and offices for Bootle was laid in Oriel-road by the Mayor of that borough on Monday. The buildings will cost about £12,000, and are being erected from plans by Mr. J. C. Anderson, Mr. G. Woods being the contractor.

The authorities at Freiburg, Switzerland, have given permission for an electric-power station to be opened in October, for distribution to small surrounding industries. From the waterfall there are 300H.P. available, two-thirds of which will be distributed for running electromotors of a quarter to 25H.P., and the remainder will be used for electric lighting. The price for motive power to customers is 200fr.—about £8—per horse-power per annum.

A new Catholic church has just been commenced in St. Mary's-street, Crewe, from the design of Messrs. Pugin and Pugin, of 117, Victoria-street, Westminster, S.W. Messrs. Treasure and Son, of Shrewsbury and London, are the builders.

The partnership between Messrs. Parker and Ellis, of Manchester, architects, has been dissolved.

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### TENDERS.

\* Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BATTERSEA.—For repairs to stable buildings, Howie-street, Battersea, S.W., for Mr. E. Purchase. Messrs. Saville and Martin, 86 and 87, Strand, W.C., architects:

Lathes Bros. ... ..	£149 0 0
Jeffrey, G. ... ..	108 15 0
Williams, G. F. ... ..	105 0 0
Bowles, G. ... ..	85 0 0
Rhodes, W. ... ..	70 0 0
Byford, W. (accepted) ... ..	50 0 0

BARRY, GLAM.—For the construction of a subway between the Barry Co.'s general offices and the dock:—

Lovatt and Shaw (accepted) ... ..	£4,000 0 0
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BATLEY CARR.—For the erection of a new store shed, cellarage, drainage, &c. Messrs. P. Spencer and Son, architects:—

Oldroyd, J. and T., Batley (accepted).



**BATTERSEA.**—For alterations and repairs at the Duke of Cornwall, p.h., Stewart's-road, Battersea, S.W., for Messrs. W. and A. Purchase. Messrs. Saville and Martin, 86 and 87, Strand, W.C., architects:—

Builder's work:—		
Walker Bros.	£720	0 0
Spencer and Co.	635	0 0
Lathey Bros.	620	0 0
Bates, C. H.	598	0 0
Smith, W. T.	553	0 0

Pewterer's work:—		
Edwards, T.	120	0 0
Heath, T.	115	0 0
Watts and Co.	109	0 0
Helling, W.	107	0 0

Gasfitter's work:—		
Russell and Co.	129	10 0
Vaughan and Brown	107	10 0
Winn, W.	90	0 0
Pragnell, E.	72	0 0

**BATLEY.**—For the erection of two through houses, boundary-wall, &c., on the Healey-lane Estate, Batley. Messrs. P. Spencer and Son, Batley Carr, architects. Quantities by the architects:—

(Accepted tenders.)

Masons:—

Oldroyd, J. and T., Batley.

Joiner:—

Day, A., Hanging Heaton.

Plumber and glazier:—

Shepley, J., Dewsbury.

Plasterer:—

Parker, W., Heckmondwike.

Slaters:—

Thornton, J. M., Heckmondwike.

Ironfounders:—

James, W., and Sons, Dewsbury.

**BRACEBRIDGE, LINCOLN.**—For the erection of an entrance lodge to the county lunatic asylum:—

Wright and Son	£198	0 0
Harrison	192	0 0
Horton	189	19 0
Close, H. S. & W., Lincoln (accepted)	183	0 0

**BRISTOL.**—For certain alterations and improvements at Hebron Chapel, Bedminster. Mr. H. J. Jones, M.S.A., Bristol, architect:—

Lewis, T. R.	£670	0 0
Humphreys, G.	666	0 0
Aspinall, T. W.	619	0 0
Neale, H. W., and E. J.	540	0 0
Creedy, R.	537	0 0
Cowlin and Son (accepted)	530	0 0

All of Bristol.

**BRISTOL.**—For additions to the Manor House, Whit-church, near Bristol, for Mr. G. Lindrea. Mr. H. J. Jones, M.S.A., architect:—

Eastbrook and Sons	£484	0 0
Church, W.	478	0 0
Humphreys, G.	438	0 0
Bastow, J.	408	0 0
Lewis, T. R.	395	0 0
Perrott, J. (accepted)	389	0 0

All of Bristol.

**BERMONDSEY.**—For repairs at the Jubilee Stores, 192, Drummond-road, South Bermondsey, for the Directors of the Hatcham Brewery. Mr. W. F. Potter, architect:—

Wythe, W., Dalston	£51	10 0
Dawes, F., Peckham (accepted)	43	0 0

**CARMARTHEN.**—For building cottage, Parade-road, for Mr. H. Nichols. Messrs. G. Morgan and Son, Carmarthen, architects:—

Griffiths, D. C.	£289	0 0
James, H., and Jones, T.	250	0 0
Jones, J. and D., Carmarthen*	237	0 0

\* Accepted.

**CARMARTHEN.**—For building new kennels, for the Carmarthenshire Hunt. Messrs. G. Morgan and Son, Carmarthen, architects:—

Jenkins, D.	£360	0 0
Walters, W., Carmarthen (accepted)	297	10 0
Rees, J.	295	0 0
Griffiths, D.	268	0 0

**CHELtenham.**—For All Saints' District Schools, Cheltenham (schools for 602 children and parish-room). Mr. J. T. Darby, Cheltenham, architect. Quantities by the architect:—

Billings, A. C. and S., Cheltenham (accepted)	£3,190
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**CLAPHAM.**—For the formation of Kend-road and laying sewer, for Messrs. Williams and Rowe, under the superintendence of Mr. W. Eve, 10, Union-court, E.C.:—

Mayo	£372	0 0
Pizzey	331	0 0
Harris	300	0 0
Bell	268	0 0
Blackmore, Clapham*	230	0 0

\* Accepted with modification.

**DOVER.**—For building new offices at Castle-street, Dover, for Messrs. A. Levey and Co., brewers, Dover:—

Taylor Bros.	£3,141	0 0
Martin, Wells, and Co.	2,675	0 0
Denne and Son	2,674	0 0
Austin and Lewis	2,646	0 0
Adcock, W. J.	2,645	0 0
Denne, W. and F., and Son	2,605	0 0
Richardson, H.	2,602	12 9
Brooks, W.	2,567	0 0
Hayward and Paramor	2,549	0 0
Lewis, G., and Son	2,458	10 0
Stiff, H.	2,400	0 0

**EDINBURGH.**—For the construction of compensation works at Threepmuir reservoir, for the Water of Leith Commissioners. Messrs. Leslie and Reid, engineers:—

Young and Son, Edinburgh (accepted) £7,167 1 10

**ELSTREE, HERTS.**—For alterations and additions to the Oaks, Boreham Wood, Elstree, for the Misses Edwards. Mr. J. E. Still, 50, Finsbury-square, E.C., surveyor:—

Batchelor, A. J., Harrow	£1,250	0 0
Lascelles, W. H., City	1,249	0 0
Kelland, W. H., Stoke Newington	1,170	0 0
Roome, E. A., Clapton	1,145	0 0
Puzey & Lumley, Newman-street	1,120	0 0
Holland, J., Poplar	1,097	0 0
Roffey, H., Putney	1,050	0 0

**EXMINSTER.**—For extension of the female wards of Devon County Asylum, for the Devon County Council. Mr. E. H. Harbottle, Exeter, architect. Quantities by the architect:—

Lethbridge, A. R., and Son	£8,150	0 0
Stephens and Bastow, Bristol	7,699	0 0
Laphorne and Goad (accepted)	7,685	0 0
Reed, Blight, and Co.	7,252	0 0
Trevena, W.	7,259	0 0
Gibson, W., Exeter	6,900	0 0
Gooding, T., Exeter	6,295	0 0

Rest of Plymouth.

**FINSBURY PARK.**—For alterations to premises, Fonthill-road, Finsbury Park, N., for the Co-operative Supply Stores, Ltd. Mr. F. Boreham, architect:—

Wilkinson	£2,270	0 0
Macfarlane Bros.	2,220	0 0
Anley	1,890	0 0
Co-operative Builders, Ltd.	1,676	0 0
Bendon (accepted)	1,178	0 0

**HENDON.**—For alterations to the branch of the London and South Western Bank, Ltd. Mr. E. Gabriel, 42, Old Broad-street, E.C., architect. Quantities by Mr. G. R. Tasker, 38, John-street, Bedford-row, W.C.:—

Easterbrook	£2,248	17 2
Balaam	1,920	0 0
Young and Lonsdale	1,818	0 0
Allen	1,798	10 0
Dodd	1,751	17 0
Shepherd	1,751	0 0
Scott	1,711	0 0

**HIGHBURY.**—For painting and sundries at the Old Cock Tavern, Highbury, N., for Mr. R. Baker. Messrs. Saville and Martin, 86 and 87, Strand, W.C., architects:—

Spencer and Co. (accepted) £180 0 0

**HUNDON, SUFFOLK.**—For the erection of new barn and granaries at Hundon Hall Farm, for the Rt. Hon. W. H. Smith, M.P. Mr. C. P. Ayres, Watford, architect:—

Jarvis, Clare	£1,225	0 0
Mason, Haverhill (accepted)	1,207	0 0

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## IN USE AT

<b>Railway Stations.</b>	Broadstone, Dublin	Ealing Terminus	Kenilworth	Monkwearmouth	Slough	Westminster	Dublin Castle	<b>Schools, &amp;c.</b>	Stratford, Colgrave Road
Accrington	Burdett Road	Earl's Court	Kensal Green	Moorgate Street	South Bromley	Whitechurch	Police Barracks	Belfast Method-ist College	Stratford, Salway Place
Acton Green	Burscough Junction	Edgware Road	Kentish Town	Monument	South Kensington	Whitechapel	Eastney	Battersea, St. Sutton	
Aldersgate street	Farringdon Street	Fairbairn	Kilburn	Newcastle-under-Lyme	Southport	Whitley	Fleetwood	Mary's Church St. Jude's	
Aldgate	Finchley Road	Farringdon Street	Kilsby	New Cross	Speke	Widnes	Fulwood	Birmingham, Tayport	
Althorp Park	Finchley Road	Fenchurch Street	King's Cross	Newport	Spring Grove	Willenhall	Halifax	Cowper Street	Torrington
Altrincham	Mersey Tunnel	Finchley Road	King William Street	Newton Heath	Stepney	Willesden	Hamilton, Glasgow	Clapham	Upton Cross
Astern	Canonbury	Firsby	Langley Green	North Brentford	Stoke	Wood Green	Hulme	Colchester	Wandsworth
Ash Street	Camden Road	Forest Gate	Lea Bridge	North Bridge	Stourbridge	Wormwood	Knightsbridge	Forest Gate	
Birmingham	Chalk Farm	Forest Road	Leamington	Northampton	Stratford	Scrubs	Leicester, Glen Parva	Hanway Place	
Birmingham, New Street	Charing Cross	Level Crossing	Leman Street	Nottingham (Castle Station)	Sutton Coldfield	Worsley	Manchester	Harrow	Belfast County Lunatic Asylum
Banbury	Cheddington	Level Crossing	Leyland	Nottingham	Stratford	Wolverhampton	Newbridge	Haverstock Hill	
Barnsby	Cheetham Hill	Fulham	Leyton	Oldbury	Sudbury	Wolverton	Newcastle-on-Tyne	Orphan Working School	Greenwich Infirmary
Barnsley	Junction	Gedley	Leytonstone	Old Ford	Sunderland		Normanton	Jamaica Level	
Batley	Chequerbent	Gloucester Road	Lichfield	Oldham (Mumps)	Sutton		Northampton	Leyton, Gram-Guy's Hospital	
Bethminster	Clayton	Gower Street	Limehouse	Paddington	Temple		Norwich	mar School	Lincolnshire
Bescot Junction	Clifton	Greenwich	Lincoln	Parsons Green	Thornton		Portsea	Leyton, Church County Asylum	
Birmingham	Clietheroe	Hackney	Little Ealing	Patricroft	Torquay		Portsmouth	Road	Middlesex
Bishopsgate	Crew	Haggerston	Liverpool Road	Penzance	Tower of London		Preston	Newhaven	County Lunatic Asylum
Blackfriars	Crooked Billet	Hammersmith	Liverpool Street	Pickle Bridge	Tring		Regent's Park	North Bow	
Blackfriars	Level Crossing	Heaton Park	Llandudno	Pleak	Tynemouth		Salford	Old Ford	Netley Hospital
Bridge	Crumpsall	Hereford, Barr's Court	Long Buckby	Plymouth	Upton Park		Shorncliffe	Poplar, Byron & Peterborough	
Blake Street, Sutton	Cullercoats	Highbury	Ludgate Hill	Poplar	Victoria		Trim	Bright Streets	Infirmary
Blaydon-on-Tyne	Cannon Street	Highdryan Road	Mark Lane	Portsmouth	Walham Green		Warley	Southsea, Rubery Asylum	
Bletchley	Daubhill	Walsend	Maidstone	Prestdon	Wallsend		Winchester	Church Path	Northfield
Bolton	Daybrook	Hollinwood	Manchester	Radcliffe	Walsall		Woolwich	Southsea, Omega St. Thomas's	
Bolton Bridge	Denholme	Holyhead	Manchester, Exchange	Salisbury Road	Waterloo		Wrexham	Street	Hospital
Borabag, India	Derby	Holmerton	Manchester, Road	Seething Lane	Liverpool				
Bow	Dryden	Horslow	Manchester, Road	Shadwell	Dublin, Island				
Bowdon Central	Drighlington	Hounslow	Mansion House	Shedfield	Bridge				
Bristol	Dudley	Hounslow Bar-racks	Mildmay Park	Shorefield	Dublin, Ship				
Broadfield	Dudley Port	Keighley	Milhill	Sloane Square	Dublin Royal Barracks				
Broad Street	Dundee	Kimble Junction	Milverton	Snow Hill, Birmingham	West End Lane Dundalk				
	Ealing Common								

**WINDSOR CASTLE.** Government Offices, London School Board, &c., and in many Hundreds of Public and Private Buildings in Great Britain and Ireland.

Descriptive Circulars, with Prices sent on application.



ISLINGTON.—For alterations and repairs at the White Lion public-house, High-street, Islington, N., for Mr. C. H. Belsey. Messrs. Saville and Martin, 86 and 87, Strand, W.C., architects:—

Kellaway, W. L.	£657	0	0
Gould and Brand	636	0	0
Goodall, S.	615	0	0
Anley, J.	567	0	0
Spencer and Co. (accepted)	525	0	0

ISLINGTON.—For alterations and repairs to be executed at the Angel Hotel, Islington, N., for Messrs. Baker Bros., Ltd. Messrs. Saville and Martin, 86 and 87, Strand, W.C., architects:—

Builder's work:—			
Bywaters, G. H., and A.	£2,190	0	0
Spencer and Co.	2,075	0	0
Chappell, J. T.	1,986	0	0
Goodall, S.	1,950	0	0
Gould and Brand (accepted)	1,912	0	0

Pewterer's work:—			
Helling, W.	£119	10	0
Ruse, F. J.	87	15	0
Heath, T.	87	0	0
Sanders and Sons (accepted)	83	0	0

Gasfitter's work:—			
Vaughan and Brown	58	0	0
Pragnell, E.	55	10	0
Russell and Co. (accepted)	49	10	0

ISLINGTON.—For repairs at the Britannia Tavern, 22, Orchard-street, Ball's Pond-road, Islington, for the Directors of the Hatcham Brewery. Mr. W. F. Potter, architect:—

Duffill, H., Stamford Hill	£41	5	0
Wythe, W., Dalston (accepted)	40	0	0

KING'S CROSS.—For the erection of stabling and dwelling-house, for Messrs. Charrington, Sells, Dale, and Co., at their depot, King's Cross, under the superintendence of Mr. W. Eve, 10, Union-court, E.C.:—

Lascelles	£1,760	0	0
Harris and Wardrop	1,729	0	0
Salt	1,712	0	0
Kirk and Randall	1,686	0	0
Holland	1,664	0	0
Johnson	1,540	0	0
Godfrey and Son, Evering Works, Clapton, N.E. (accepted)	1,527	0	0

KIMPTON.—For the building of a house and shop at Kimpton, for Mr. F. Gray. Mr. J. Shilcock, Hitchin, architect:—

Raves, Welwyn	£537	0	0
Stapleton	510	0	0
Willmott and Son, Hitchin	498	0	0
Willis and Goldhawk	399	0	0
Chalkley, C. G., Kimpton	380	0	0

KINGSLAND.—For Nos. 64 and 66, High-street, Kingsland. Mr. J. D. Mathews, architect:—

Goodall	£1,142	0	0
Yardley	979	0	0
Killby and Gayford	962	0	0
Shurmer	945	0	0
Hayworth (accepted)	917	0	0

KENT.—For works of painting and repairs at county police stations, for the county council. Mr. F. Ruck, of Maidstone, county surveyor:—

Seabrook, near Hythe:—			
Wallis, G. E., and Sons	£85	0	0
Jeal, J. J.	82	1	1
Pryer, A. N., and Co., Maidstone	80	0	0

Sheerness:—			
Hughes, E. T.	£95	1	1
Denne, T. A.	93	3	1
Pryer, A. N., and Co., Maidstone	77	15	0

Sandwich:—			
Denne, G. H., and Son, Sandwich	£198	0	0
Pryer, A. N., and Co., Maidstone	189	0	0
Denne, W. and T., Sandwich	167	1	1

\* Accepted.

LLANDILO, CARMARTHEN.—For building farm dwelling-house at Llwynfod, for Rev. T. Evans, M.A., vicar, Llanfalletg. Messrs. G. Morgan and Son, Carmarthen, architects:—

Thomas, T. R., Llandilo (accepted)	£382	10	0
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LLANRWST.—For laying 76yds. of water main in Watling-street, Llanrwst, for the rural sanitary authority:—

Jones, D. H. (accepted).

LONDON.—For sanitary works at Dyers' Hall, Dowgate-hill, E.C., for the Dyers' Company. Mr. J. Slake, architect:—

Holloway Bros.	£125	0	0
Shurmer (accepted)	117	0	0

LONDON.—For warehouse, Playhouse-yard, E.C. Mr. C. J. C. Pawley, 66, Victoria-street, Westminster, S.W., architect. Quantities by Mr. W. W. Browne, 1, Boxworth-grove, N., building surveyor:—

Blyton, C., Garlick Hill, E.C.	£1,030	0	0
Simmons, C., Shepherd's Bush	975	0	0
Osborne and Co., East Grinstead	936	0	0
Neil, W., Burdett-road, E.	925	10	0
Evans, R. and E., Peckham	898	0	0
Deering, C., and Son, Islington	864	0	0
Ford, G. W., Vauxhall	844	0	0
Turtle & Appleton, Wandsworth	835	0	0
Scharen and Co., Chelsea	834	0	0
Battley, R. G., Old Kent-road	833	0	0
Mansbridge, J., West Hampstead	819	16	0
Mollett, J. H., New North-road	698	0	0
Gill, F., Minorities	677	0	0

LONDON.—For rebuilding No. 27, Whetstone-park, Lincoln's Inn, W.C. Mr. Huntly Gordon, architect:—

Perry and Co.	£1,458	0	0
Faulkner	1,367	0	0
Higgs, F. and H.	1,360	0	0
Brass	1,346	0	0
Charteris	1,326	0	0
Toms, E.	1,299	0	0
Shurmer	1,296	0	0
Crocker	1,239	0	0
Lawrence	1,235	0	0

LONDON.—For new front wall and party-wall, No. 26, Whetstone-park, Lincoln's Inn. Mr. Huntly Gordon, architect:—

Perry and Co.	£496	0	0
Higgs, F. and H.	490	0	0
Brass	460	0	0
Shurmer	450	0	0
Toms, E.	439	0	0
Faulkner	437	0	0
Charteris	426	0	0
Lawrence and Son	417	0	0
Crocker	393	0	0

LONDON.—For alterations and repairs at 72, Lancaster-gate, W. Mr. W. J. Gibbon, 36, Great James-street, Bedford-row, architect:—

Nunn	£692	0	0
Nare Bros.	628	0	0
Foxley	598	18	0
Brass and Son	577	0	0
Chapman	467	0	0
Oldrey and Co.	440	0	0
Macfarlane (accepted)	347	0	0

LONDON.—For alterations and repairs to No. 49, Cleveland-square, W. Mr. W. J. Gibbon, 36, Great James-street, Bedford-row, architect:—

Chapman, H.	£1,063	0	0
Oldrey, W., and Co.	914	0	0
Macfarlane	892	0	0
Nunn, E. L. (accepted)	794	0	0

LONDON.—For proposed new public baths and wash-houses, St. Mary Stratford, Bow, E. Messrs. E. Harnor and F. Pinches, 5, John-street, Adelphi, W.C., joint-architects. Quantities by Mr. A. J. Turner, 1, Tudor-street, E.C.:—

Downs, W.	£27,956	0	0
Stimpson and Co.	27,600	0	0
Hunt, J. R.	27,473	0	0
Kirk and Randall	27,442	0	0
Killby and Gayford	27,380	0	0
Holland, J.	27,363	0	0
Nightingale, B. E.	27,225	0	0
Pattinson	27,100	0	0
Brass and Son	26,855	0	0
Perry and Co.	26,479	0	0
Calman, M., and Co.	26,406	0	0
Patman and Fotheringham	25,953	0	0
Allen and Sons (accepted)	25,665	0	0

OFFICES—  
22, QUEEN'S ROAD,  
Bayswater, London, W.  
**TURPIN'S**  
Parquet Floor, Joinery, and  
Wood Carving  
Co. (Ld.)

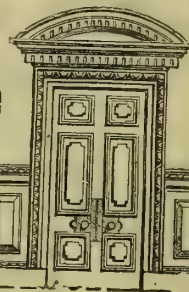
## PARQUET FLOORINGS

One inch and  $\frac{1}{2}$ -inch thick.  
Immense Stock always ready for Laying.

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Turpin's Patent,  
5-16in. thick, laid in Patent Composition on  
Concrete, Stone, and Deal Floors. (See section).



### WOOD CARVING.

Architectural  
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## OAK BLOCK FLOORINGS

One inch thick, 4s. 6d. per yard super.  
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Turpin's System  
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Floor on Concrete or Stone.



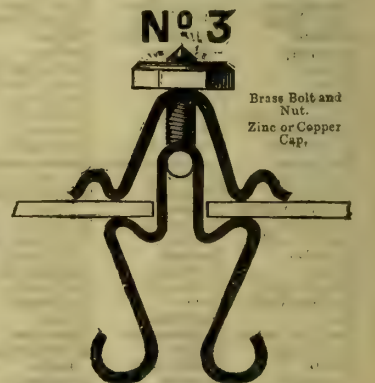
Section B. Full Size.  
STEEL BAR.  
Strong enough to form part of Construction of Roof.  
"KING'S CROSS BAR."

# HELLIWELL'S PATENT GLAZING WITHOUT PUTTY

AND  
ZINC ROOFING WITHOUT EXTERNAL  
FASTENINGS OR SOLDER.

MANY MILLIONS OF FEET FIXED  
For H.M. Government, principal Railway Com-  
panies, Corporations, and Leading Engineers and  
Architects throughout the Kingdom.  
ALL WORK ABSOLUTELY WATERTIGHT.

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"PERFECTION BAR," in Zinc or Copper.







THE BUILDING NEWS, JUNE 27, 1890.

NETHERHALL, LARGO, AYRSHIRE.  
FOR PROFESSOR SIR WILLIAM THOMSON, LL.D., D.C.L.  
CAMPBELL DOUGLAS FRIBA ARCHT

Plan of Principal Floor

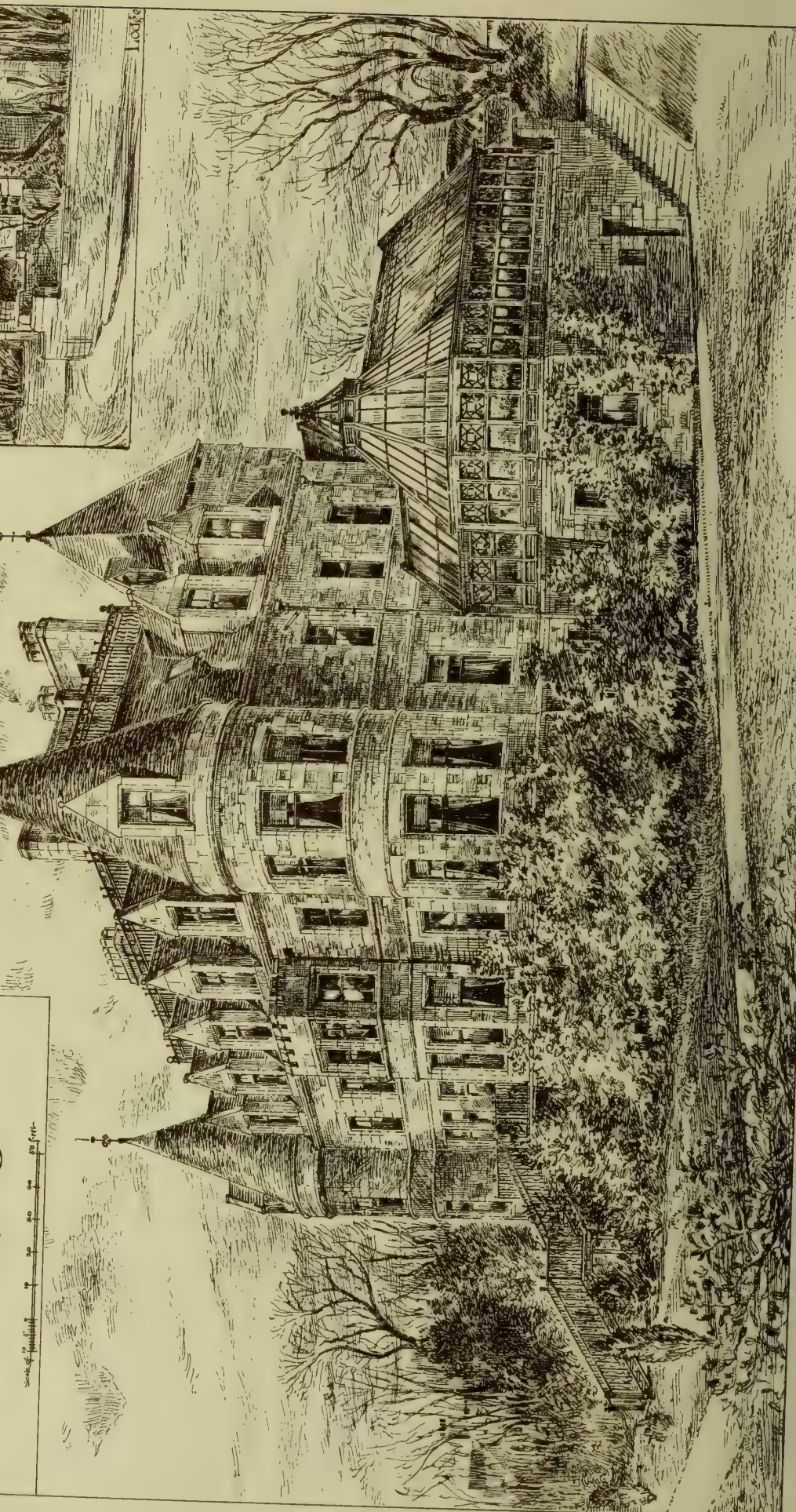
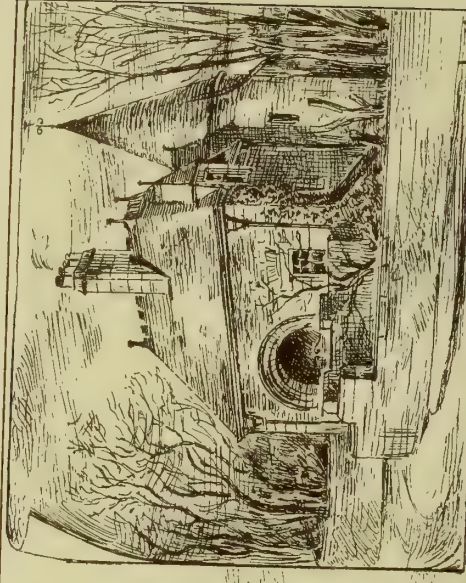
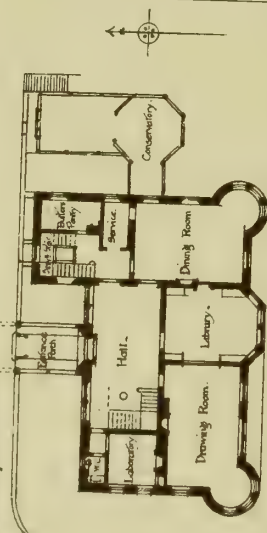






PHOTO TINT. BY J. H. B. LONDON. W.

"THE YOUNG SOPHOCLES LEADING THE CHORUS OF VICTORY."  
AFTER THE BATTLE OF SALAMIS BY JOHN DONOGHUE.



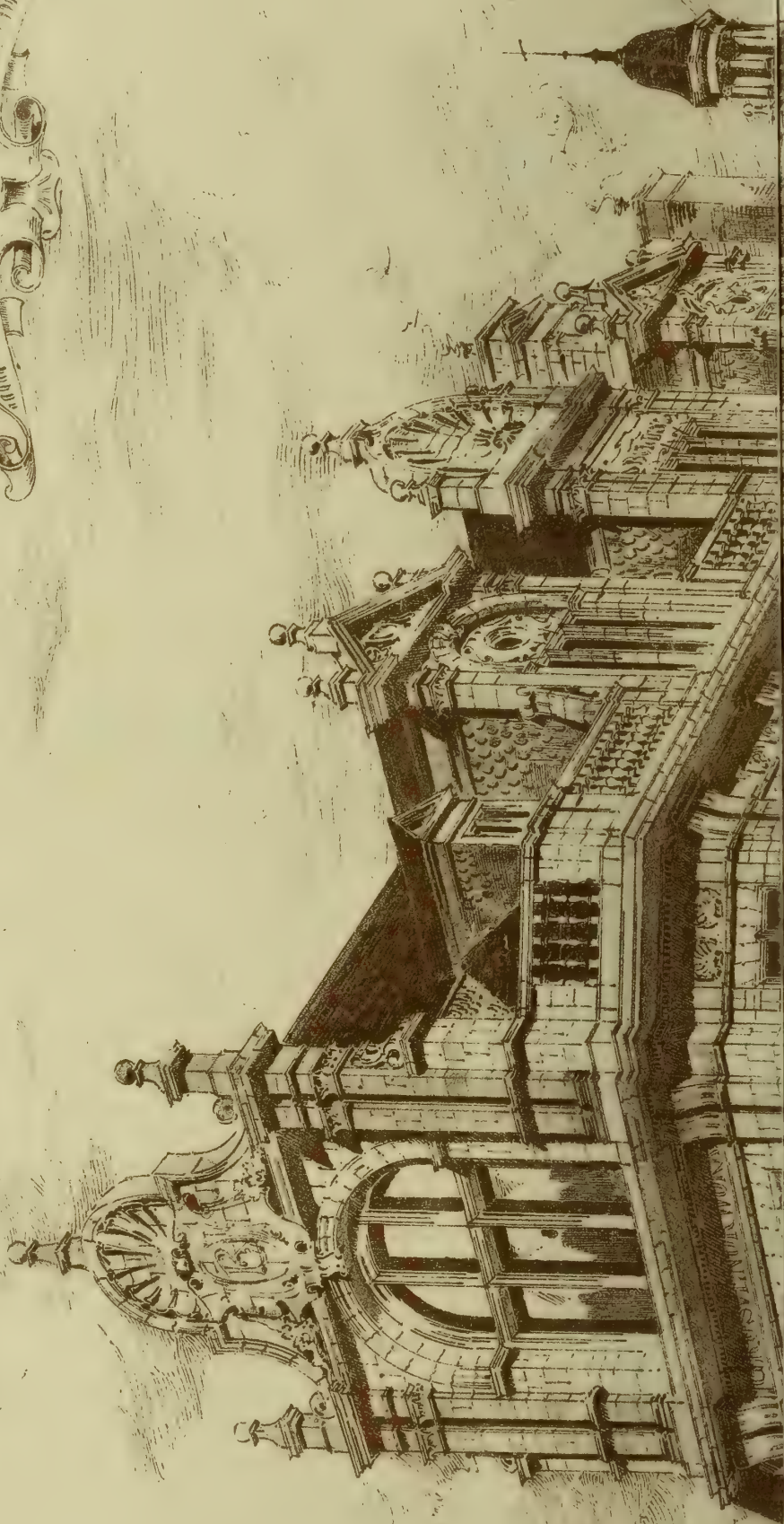
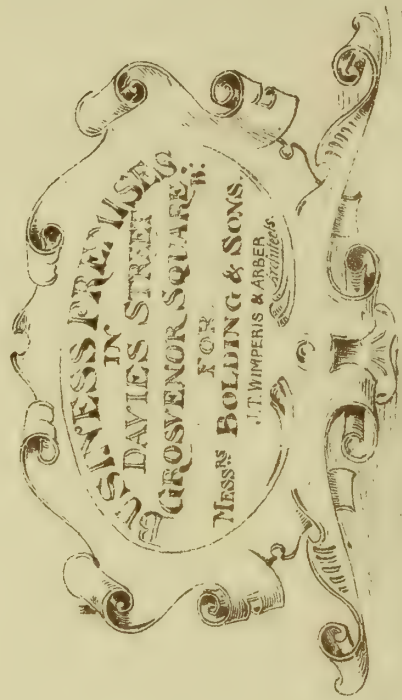








The Building Pews, June 27, 1890.





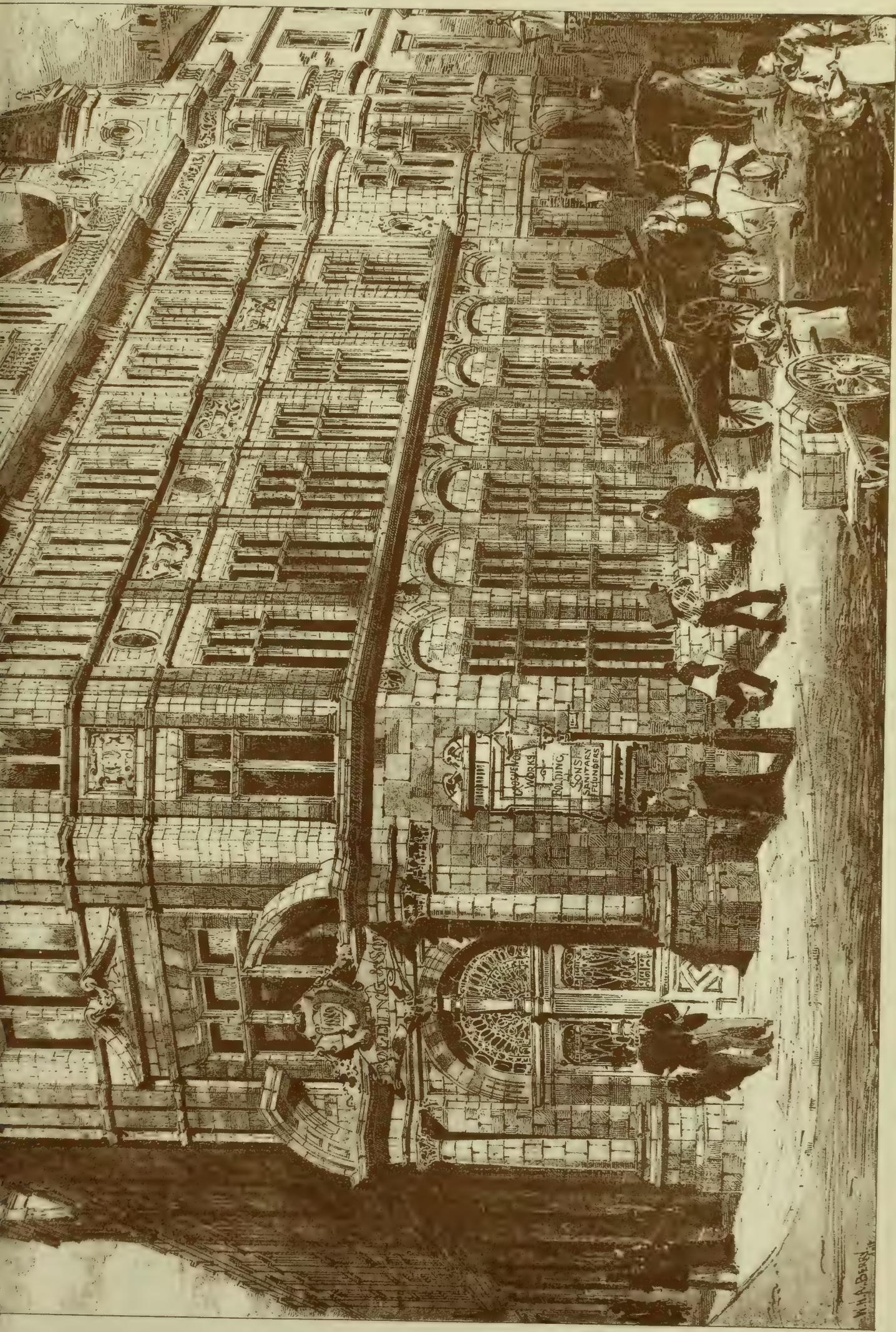


PHOTO TINT. — The Avenue, London, W.

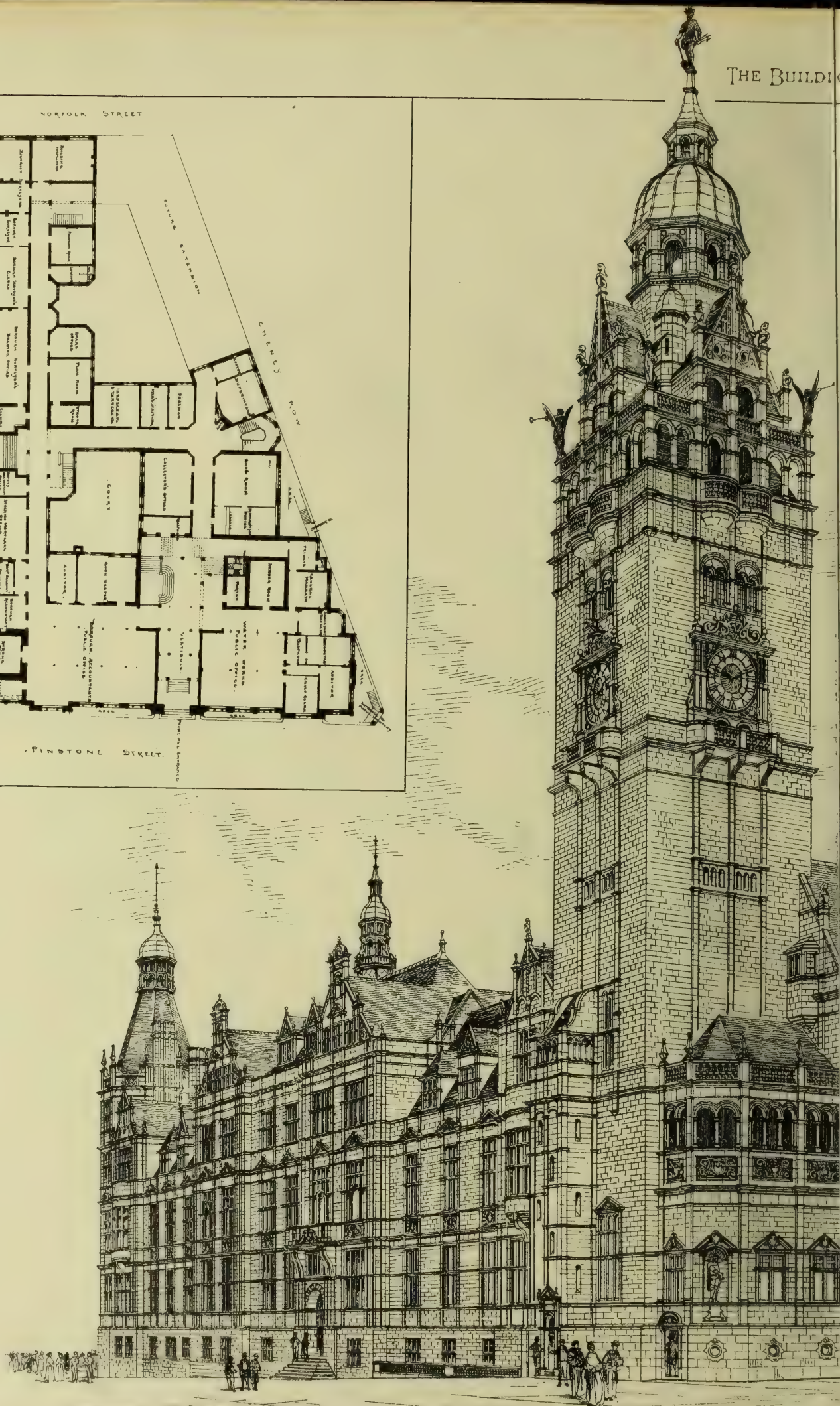
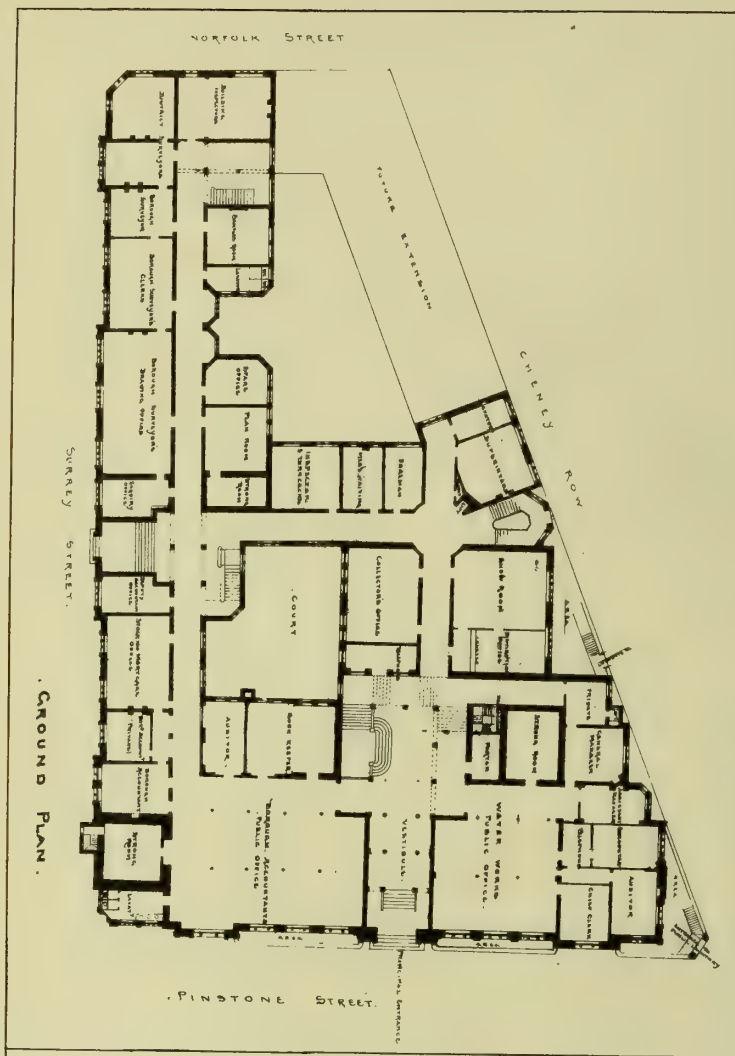






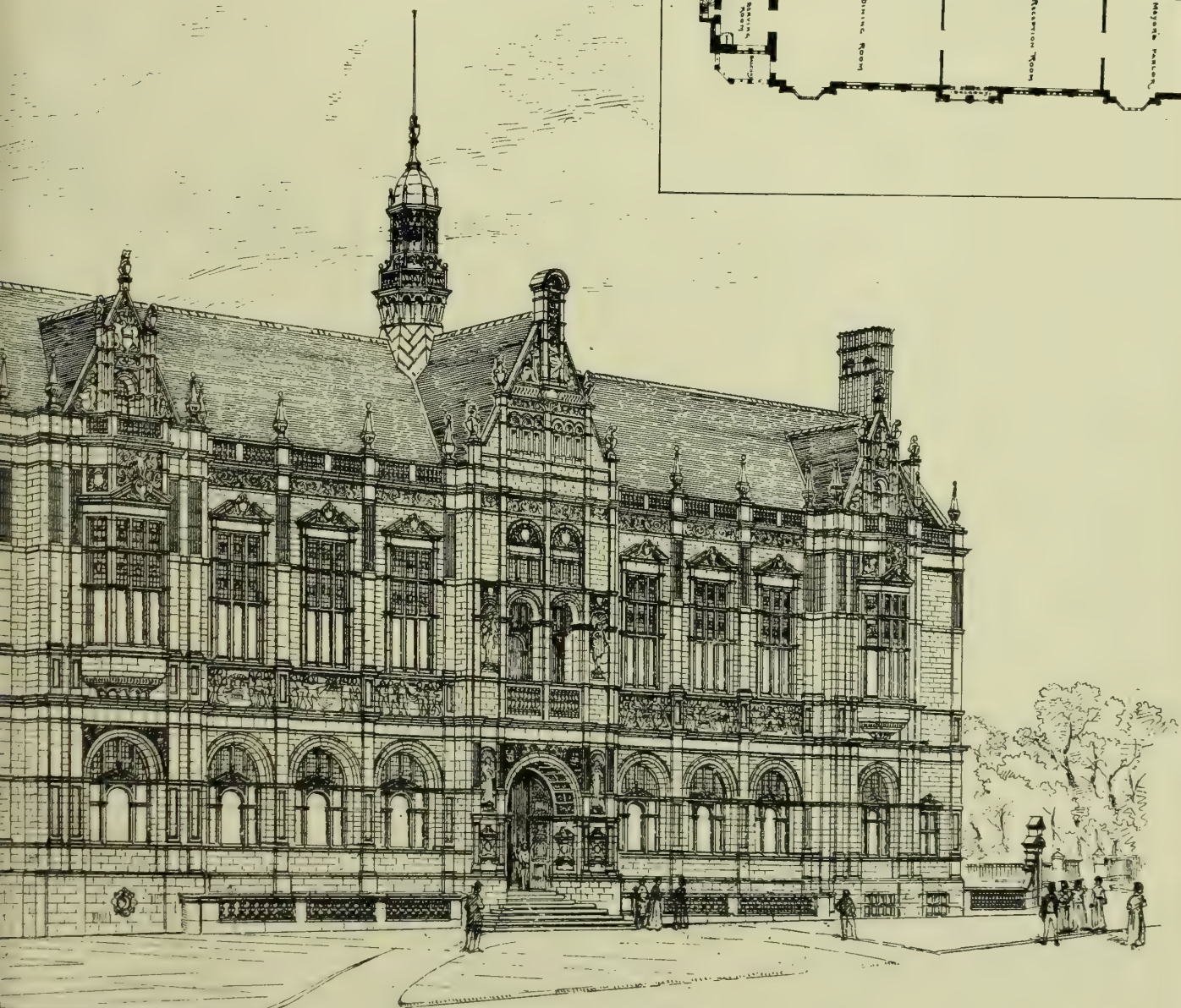
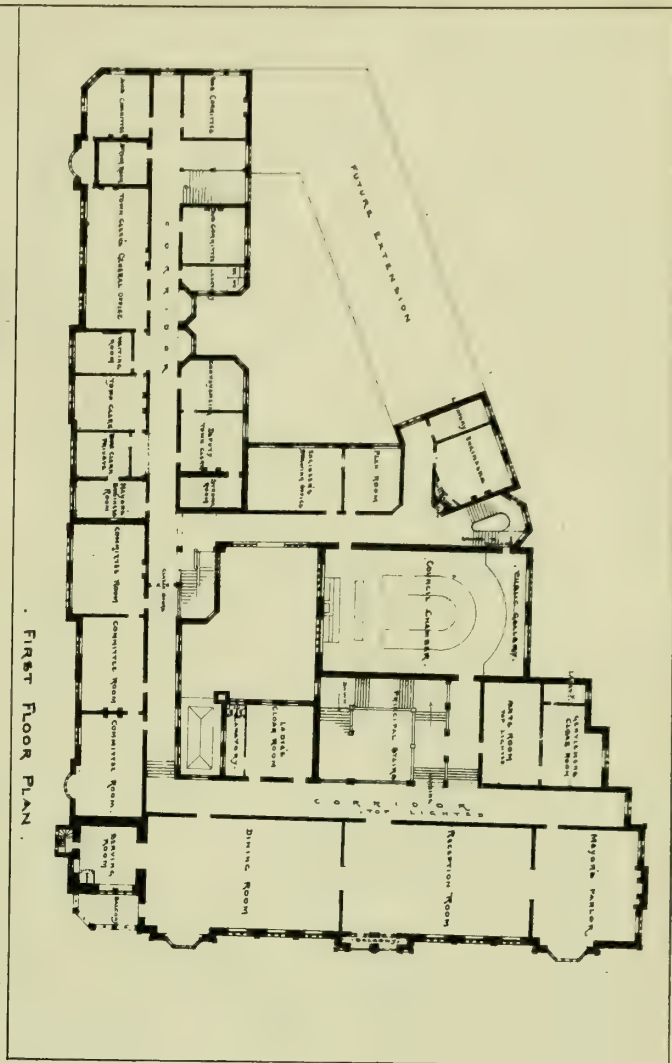








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